



Director's Report

Introduction

I am pleased to share that Indian Institute of Technology Bombay (IIT Bombay) continues to be ranked as one of the top universities of the Country and among the best in the world. IIT Bombay attracts the brightest students from the Country for its Bachelor's, Master's and Doctoral programmes, and in the 56 years of its existence, more than 46,000 students have graduated from IIT Bombay. The alumni of the Institute have made their *alma mater* proud through their achievements and contributions in diverse fields and our engagements with them are steadily growing. Research is an increasing focus of activity of the Institute coupled with strong efforts to see that the fruits of the research are translated into commerce through licensing or through start-ups. The Institute has been able to attract outstanding faculty members from not just India but other parts of the globe. Today, I am happy to inform you that we have 572 faculty members on rolls – the largest by far among all the IITs – with many of them globally acknowledged for their research contributions. We have also been able to further our links with international and national peer universities, enabling us to enhance research and educational programmes at the Institute.

ACADEMIC PROGRAMME

IIT Bombay has taken several initiatives in restructuring and strengthening its academic programmes at undergraduate (UG) and postgraduate (PG) levels over the past year: M.Tech.+Ph.D. Dual Degree (DD) programme; M.Tech. in Civil Engineering with specialisation in Ocean Engineering; Four-year Bachelor of Science & a five-year Bachelor of Science and Master of Science (DD) programme in Chemistry, in place of the five-year Integrated M.Sc. in Chemistry have been introduced. Other new initiatives including the TDSL (Technology and Development – Supervised Learning) projects of CTARA have been made accessible to more students, including PG students, Workshops of the Forum for Academic Culture on Teaching and Learning Methods have been organized;

Larger number of courses are being made available in video and other modes; and attempts have been made to employ Flipped Classrooms and Peer based learning, at the Institute.

IIT Bombay continues to be the most sought-after destination for UG and PG studies and attracts the top performers in national examinations such as GATE, CEED, NET, JAM and JEE. Among 16 IITs in the country, 44 out of top 50 rankers and 58 of top 100 rankers in JEE 2014 have joined IIT Bombay and 9 of the top 10 All-India JEE rank holders have chosen to join IIT Bombay. Similar trends are observed for the candidates qualifying in other entrance examinations as well.

The characteristics of the student population at the Institute are undergoing a significant change in the recent times. The on-roll strength in 2009-2010 was 6359 students of which 2838 (45%) were UG and 3521 (55%) were PG. During 2013-2014, the on-roll strength has increased to 9207 of which 3900 are UG students and 5307 are PG students. With the existing programmes, the UG population saturated at 3900 (42%) in the academic year 2013-2014, while the PG population will saturate at 7601 (69%) during the year 2018-2019, with a total of 11062 students in the Institute. The Institute has responded pragmatically to the large increase in its intake by substantially reorienting itself academically, technologically and administratively and using it as a great opportunity to retain its leadership in engineering education.

The Ph.D. student strength has been steadily increasing. While we had 771 Ph.D. students on roll in the academic year 2001-02, in the academic year 2011-12 the number rose to 1879, an increase of over 150% in a span of just 10 years. We are on course to achieve our target of 2775 Ph.D. students i.e. approx. 30% on roll among 11062 students in the academic year 2018-19. On the Ph.D. output front, as compared to 73 Ph.D. degrees awarded in 2001, the number of degrees awarded were 179, 175, 180, 181 & 227 in the years, 2009-2010, 2010-11, 2011-12, 2012-13 and 2013-14 respectively. An interesting aspect of our Ph.D output, observed in

the recent years, is the fact that around 65% of the degrees are in the engineering disciplines. All students involved in research at the Institute are given an opportunity to interact with research community at the national and international level by providing funds to attend international conferences. Besides research scholars, few UG and PG students have also benefited from this scheme. The annual funding utilised by students has increased from Rs. 2,37,00,000/- last year to Rs. 4,05,89,800/- this year. With effect from April 1, 2013, the funding for participation in international conferences was enhanced to Rs. 1,00,000/- for North and South America; Rs. 90,000/- for Europe and Rs. 60,000/- for neighbouring countries. During the academic year 2013-14, 203 students were granted financial assistance for attending international Conferences as against 294 for the previous year.

This year five M. Tech. students and one M. Des. student got selected for the DAAD Scholarships 2014-15 under the Sandwich System for Master's students compared to two M. Tech. students, selected last year (2013-14).

Cell for Human Values: The Cell was started in the year 2001 with an objective to bring out the values, ethical and societal dimension of Science & Technology education being imparted at the Institute. Three major activities carried out in the Cell include Computer Literacy Programme; Sangeetanand and Tabla; Drawing and Painting classes, where the latter two allowed IIT Bombay students to pursue their interest in classical music and fine arts. Around 1000 students, from underprivileged background, benefited from the Computer Literacy programme. The teaching was done by staff, NSS volunteers and other IIT Bombay students.

Student Mentor Programme: The Student Mentor Programme has been operating successfully for years. The programme provides a support structure for the undergraduates, targeted largely to the first and second year students, and is essentially managed by the senior students under the supervision of a faculty coordinator. This programme has been extended to mentor needy senior students at the department level. For undergraduates, whose academic performance does not meet the requirements for continuation in their programmes, a final chance for continuation in the form of the Academic Rehabilitation Programme (ARP) has been in effect since 2008-09. A Senate appointed committee prescribes a customised academic load and necessary support for ARP students. An ARP student is rehabilitated into her/his programme on successful completion. Academic probation, a feature similar to ARP for the postgraduates, gives a PG student a second chance to continue in the programme.

UG Teaching Assistantship: In an effort to make the senior UG students more self-sufficient and

responsible towards academics, UG Teaching Assistantship was introduced during the academic year 2009-2010. This year, 146 UG Teaching Assistants (61 in Spring Semester and 85 Autumn Semester) were appointed to assist the faculty in conducting the various UG courses.

Kontemplat (previously StuDe Club): This is an initiative under the Dean (AP) Office to set up programmes targeting a student's overall development. The club conducts motivational seminars by eminent speakers and technical workshops, in addition to publishing its newsletter and maintaining a website.

In this year's Convocation, a total of 2256 degrees were awarded. These included 216 Ph.D., 6 Dual Degree (M.Tech. + Ph.D.), 5 Dual Degree (M.Sc. + Ph.D.), 4 M.Sc by Research, 15 M.Phil., 619 M.Tech., 114 M.Mgmt., 57 M.Des., 227 five-year B.Tech. + M.Tech. Dual Degree, 15 PGDIIT, 14 five-year integrated M.Sc., 198 two-year M.Sc. and 528 B.Tech. Degrees. 8 joint Ph.D's were also granted along with Monash University. Additionally, 27 Research Scholars were selected for the 'Award of Excellence in Ph.D. Thesis' for the year 2014 as compared to 25 awards in the year 2013 and 20 awards in the year 2012.

Research and Development Activities

Research and development activities at IIT Bombay are growing rapidly. During the last five years, R&D receipts grew at a compound annual growth rate (CAGR) of over 24 per cent. The R&D revenues for the FY 2013-14 is Rs.213.6 crores. Figure 1 shows the growth of research funds in the last few years. The drop in 2013-14 funding could be partly due to lower receipts on account of deferred release of funds from government sponsorships and due to higher receipts in 2012-13 on account of NME-ICT project releases.

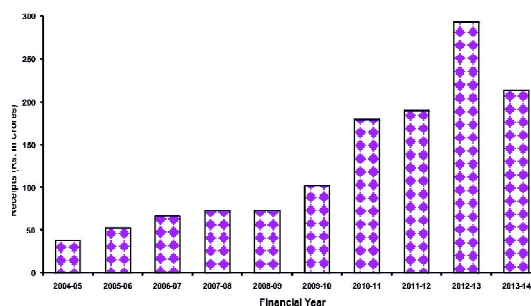


Figure 1: Growth of R&D receipts in the last decade

1. Overview

During the year 2013-14, new R&D projects were initiated in all areas of science, engineering, management and social sciences, typically ranging from two to five years duration. These included short

term consulting projects and longer term sponsored research projects (Table 1).

Table 1: Information on new projects sanctioned during last 3 years

Year	Sponsored projects		Consultancy	
	Number	Sanctioned outlay (Rs. in crs)	Number	Project outlay ('Rs. in crs)
2011-12	210	182.0	510	23.0
2012-13	240	343.5	517	29.5
2013-14	225	285.2	523	35.2

External Grants for R&D

The total money received for R&D activity in 2013-14 was Rs.215.52 crores (Table 2). This includes grants received in the year for the new projects sanctioned and the ongoing projects.

Table 2: Money received for R&D in 2012-13

Project Type	Number	Funds received (Rs. in crores)
Sponsored Projects	482	183.56
Consultancy Projects	570	30.03
Royalty	-	0.29
Equipment usage	-	1.64
Total	1052	215.52

The R&D work continues to be mainly supported by government entities (Figure 2 and Table 3). Table 4 indicates some of the major sponsors from industry.

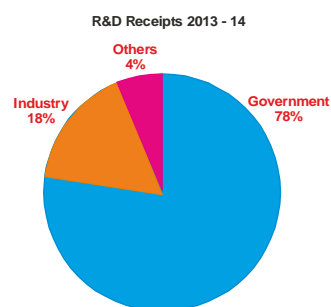


Figure 2: Distribution of receipts from different agencies

Table 3: Main sponsors

Agencies	Grant received (Rs. in crores)	Number of new / ongoing projects funded
Department of Information Technology	42.96	23
Department of Science & Technology	6.64	156
Ministry of Human Resources Development	19.57	8
Ministry of New And Renewable Energy	19.14	5
Steel Development Fund	11.89	1
Sir Dorabji Tata Trust	5.93	1

Agencies	Grant received (Rs. in crores)	Number of new / ongoing projects funded
Ministry of Culture	5.50	1
Department of Biotechnology	5.09	31
Defence Research & Development Organisation	4.75	20
Board of Research in Nuclear Sciences	2.69	27
Power Grid Corporation of India Limited	2.10	1
Indian Space Research Organisation/ Department of Space	1.79	7
Council of Scientific and Industrial Research	1.62	26
Aeronautical Research & Development Board	1.58	10
Hindustan Aeronautics Limited	1.50	1
Tata Consultancy Services Ltd., Mumbai	1.24	1
Rajiv Gandhi Science and Technology Commission	1.05	2

Table 4: Sponsors from Industry and other organisations

Applied Materials Inc., USA Asian office of Aerospace Research and Development, USA. CISCO, USA Hewlett Packard Co., USA Holcim Foundation for Sustainable Construction, Switzerland Intel Mobile Communications GmbH, Germany International Business Machines Corporation, USA LSI Corporation, USA NVIDIA Corporation, USA Petrofac International (UAE) LLC, UAE Riber SA, France Samsung Electronic Ltd. USA Siemens Power Generation Inc., USA Synopsis Inc., USA Volkswagen Ag, Germany Wadhvani Foundation, USA YAHOO Inc. USA	Bharat Heavy Electricals Limited Bhilai Steel Plant Crompton Greaves Limited Cummins India Foundation GE India Technology Centre Pvt. Ltd Intel Technology India Pvt. Ltd. Maxim India Integrated Circuit Design Pvt. Ltd. New India Assurance Company Ltd. NRB Bearings Ltd. Oil & Natural Gas Corporation Limited Power Grid Corporation of India Limited Powerdeal Energy Systems (I) Pvt. Ltd. Reliance Industries Ltd. Runwal Homes Pvt. Ltd.SAP Labs IndiaShakti Sustainable Energy Foundation State Bank of India Tata Consultancy Services Ltd. Tata Power Company Ltd. Tata Steel Ltd.
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Some major sponsored projects initiated

- Localisation of solar energy through local assembly, sale and usage of one million solar study lamps by IIT Bombay
Sanctioned outlay: Rs. 50 crores over two years
Funding agency: PPP Model of funding
 - Rs. 18 Crores - Ministry of New and Renewable Energy
 - Rs. 20 Crores - Philanthropic partners - Tata Trust, State Govts. (Madhya Pradesh & Rajasthan)
 - Rs. 12 Crores - Students
- Biomedical Engineering and Technology Centre Incubation
Funding agency: Rajiv Gandhi Science and Technology Commission
Sanctioned outlay: Rs. 39.39 crores over five years
- Indian Nanoelectronics Users Programme (INUP) Phase – II
Funding agency: Department of Information Technology

- Centre of Excellence in Steel Technology
Funding agency: Ministry of Steel
Sanctioned outlay: Rs. 33.06 crores over five years
- Nano Fabrication Prototyping facility for SMEs and Start-ups in the area of MEMS
Funding agency: Department of Information Technology
Sanctioned outlay: Rs. 23.85 crores over three years
- e-Yantra - Robot enhanced teaching in engineering colleges and schools (Phase-II)
Funding agency: Ministry of Human Resource Development
Sanctioned outlay: Rs. 17.09 crores over three years
- Synchrophasor Analytics for Electrical Transmission Systems
Funding agency: Power Grid Corporation of India Limited
Sanctioned outlay: Rs. 6.84 crores over two years

Efforts were made to disseminate information and provide support to faculty regarding project funding from sponsors (both national and international).

Consultancy activities: Consultancy activities were taken up for government, public sector and industry, both Indian and international. The types of consultancy provided included retainership, expert advice, product / process / software development, analysis, evaluation, product design and limited testing.

Some consultancy projects initiated

- Algorithm Development for numerical protection relays
- Characterization of Cathode materials
- Coastal erosion protection works
- Design and development of textile dyeing unit
- Design of blast proof wall for LPG control room
- Design of new prototype for computer game
- Developing of automatic English text correction software
- Development of hybrid air conditioning system
- Development of open source tool kit for continuum mechanics
- Development of solar PV technology for agrarian applications
- Emission inventory and air quality model development for industrial city centres
- Feasibility analysis of anodes for application in marine conditions
- Leveraging editorial input through statistical relational learning for machine translation
- Mathematical analysis of measuring instruments and algorithms for corrections
- Metal injection moulding of coarse powders
- Motor cycle seat base polypropylene cracking
- Reliability analysis of HKMG devices for sub 20nm technology nodes
- Rewriting of legacy applications into optimized SQL
- Road safety audit study

- Sensors audit for locomotive applications
- Spatial statistics and characterization of microstructure
- Spray system for *Neem* based biopesticides
- Strain distribution based failure prediction and intelligent process study
- Studies on new transmission pricing for intra state transmission system
- Study (production and Distribution) of medical nutrition therapy
- Study of efficiency of control devices and stack smoke visibility
- Surge analysis of water supply system
- Synchrophasor analytics for transmission system

Internal Grants for R&D

The Institute provided internal funding for supporting faculty research and student activities. Grants of around Rs.9.6 crores were sanctioned for these activities, which included the following:

- Seed grant for initiation of research for new faculty
- Augmenting research resources of faculty recipients of research/ review paper/ Young Investigator awards
- Research internships and fellowships for Ph.D. student
- Student research/competition — projects such as Automotive Racing, Robot Design, Intelligent Ground Vehicle, Solar Decathlon and Underwater Vehicle
- Upgradation of central and national research facilities
- Leverage grants and bridge grants
- R&D Exhibitions

c) R&D Award Grants from External Agencies

The Institute's research was recognised by peers and society in the form of award grants conferred on faculty, students and groups. Faculty Research Awards included Innovation in Science Pursuit for Inspired Research (INSPIRE) grant by DST in Chemical Engineering, Civil Engineering, Computer Science & Engineering, Electrical Engineering, Mathematics and Mechanical Engineering and IBM Award in Centre for Urban Science & Engineering and Electrical Engineering.

2. Licensing Activities

a) Technology Transfers:

We continue to receive royalties for different IPs licensed in the past. Some of the technologies licensed in this year are:

- Games Design
- Low energy successive approximation register analog to digital converter technique and circuit
- Potential bioactive organic compound
- Software for bid matching in power exchange

b) Dissemination/Outreach:

- IIT Bombay participated in the 'Global R&D Summit 2013' organised by Federation of Indian Chambers of Commerce and Industry (FICCI), New Delhi, during July 25-26, 2013. A large number of dignitaries, academics and general public visited the exhibition.



- 'TechConnect 2014' was organised during Techfest held at IIT Bombay, from January 3-5, 2014 to showcase R&D exhibits from different academic units and included demos and visits to labs and facilities. About 15,000 student and general public visited the exhibition.



3. Augmentation of Research Infrastructure

As a part of creating and upgrading infrastructure for enabling R&D activities, the Institute has been establishing state-of-the-art equipment, based on the recommendations of the Research Infrastructure Funding Committee (RIFC). Under this initiative, procurement of 17 new equipments worth nearly

Rs.34 crores were sanctioned during the last financial year. These facilities are either 'Central Facilities' which are made available to all at the Institute, or 'Institute Facilities,' which cater to specific needs of major users academic units, or 'Department facilities,' primarily used in teaching laboratory courses and for student projects. A list of the sanctioned facilities is given below:

Central Facility

- Conductive Atomic Force Microscope
- ESCA
- High resolution XRD system
- PPMS-VSM Magnetometer
- Universal Milling &Turning Machining Centre

Institute Facility

- Micromachining and Micro-metrology Facility
- MPMS SQUID with i-Quantum helium facility and Fiber Optic Sample Holder system
- Two SR research eye link 1000 eye-trackers

Department Facility

- 75GHz Vector network analyser
- Circular Dichroism Spectro polarimeter
- In- flight earthquake actuator with allied accessories for large beam centrifuge facility
- Lab-scale Autoclave & Universal Testing Machine
- Solvent Drying Systems
- Ultra High Pressure Liquid Chromatography
- Ultracentrifuge (very high speed centrifuge)
- Up – gradation of Shake Table Facility
- Vacuum Arc Melting with Suction casting and cold- water circulator and laboratory stripe roller

In addition, several equipment and facilities were procured through external grants some of which are listed below:

- Atomic layer deposition plasma system
- Automated electron probe micro-analyser
- Chemical mechanical polishing system
- Cryogenic probe station
- Gas turbine electrical generation system
- High performance clusters system
- High temperature thermal diffusivity and conductivity measuring system
- Integrated cryogen-free system for measurement of physical properties at low temperatures and high magnetic fields
- Integrated ultrafast laser system
- Mask aligner
- Molecular beam epitaxy for Nitride growth
- Multi-pocket electron-beam evaporator experimental vacuum coating system
- Solar simulator for PV Modules
- Spinning disc confocal microscope
- Sputtering system

- Thermal cyler and spectrophotometer
- Transient high speed optical absorption measurements
- Ultra high resolution scanning electron microscope
- X-Ray photoelectron spectrophotometer

4. Intellectual Property (IP) Protection Activities

During the year, 61 Indian patent applications were filed. The growth of patent filings in the last few years is given in Figure 3. Table 5 gives a list of all Indian and international IPR filings.

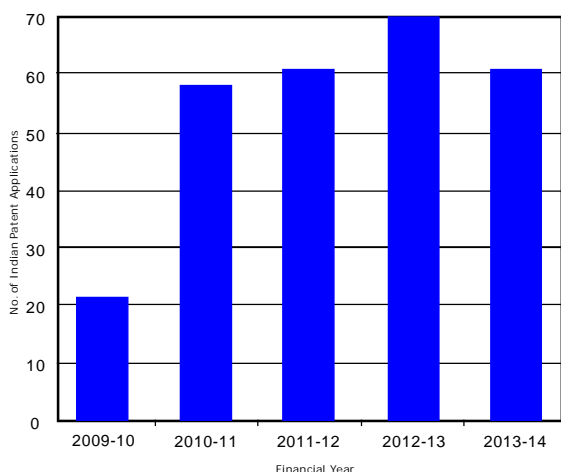


Figure 3: Growth of patent applications from 2009-10 to 2013-14

Table 5: Patents Applications filed during 2012-13

Territory	No. of Applications
Patents	
Indian	61
PCT	1
US	11
EU & Brazil	4
Trademarks and Design	
Indian	4
Copyright	
Indian	1

Two Indian patents and 11 US patents were granted during the year. In addition, one Indian Designs, three Trademark and one Copyright were registered during this period. Proactive efforts continued for licensing of these technologies, products and designs.

Areas of IP filings included: Antenna, Audio systems, Biomedical, Bioscience, Coal Gasification process, Compressor techniques, Device engineering, Fracture Engineering, Frequency modulation, Geo-synthetic, Heat and Mass Exchange, IC, Materials & Machinery, Nanoparticles, Optical Networks,

Polymer, Power engineering, Signal processing, Soil engineering, Solar power & photovoltaic systems, Synthesis, Thin films and others.

As in the previous year, proactive efforts were made to assess the possibility of intellectual property in the work of M.Tech./Dual degree students to file for possible protection. For this, almost 690 abstracts were reviewed, out of which about 60 were shortlisted for a possible filing of patent applications. Five patent applications filings have been initiated so far.

Nearly 200 agreements were reviewed or negotiated during the year – including those for research collaboration, licensing, non-disclosure agreements, student sponsorships, consortia formation, endowment, etc. – with industries, organisations, universities and government, both national and international.

5. Focused Initiatives

Several initiatives have been taken to further promote and facilitate R&D activities, especially among students. Some of them are:

a. Enhancing industry partnership

There have been continued interactions with industries, both national and international, to explore collaboration opportunities in research. Tata Consultancy Services (TCS) and IIT Bombay signed an MoU on May 16, 2013 to form a **TCS-IITB Research Cell** in the Institute. The Cell aims to undertake research in the areas of Computers Science & Engineering and Electrical Engineering, among other areas. A total outlay of Rs. 10 Crores for a period of five years was sanctioned. Eight research projects and one student initiative have been approved in this financial year.

Few Industry visits:

BASF, BCIL, C-DOT, DHI, Efkon, Epcos (India), Havells, HEC, Infosys, InnAccel, J&J, Konecranes, NTT Data (Japan), Pidilite, TCS, Tech Mahindra, Thales (France).

A proposal on **Centre of Excellence in Emerging Manufacturing Technologies (CoEEMT)** was jointly submitted by IIT Bombay and several industry partners to the Department of Heavy Industry, Government of India to promote collaboration between IIT and the manufacturing sector, specially the MMEs and SMEs. The objective is to address technology issues persisting with the Indian Capital Goods Sector. Some of the industry partners in the proposal include L&T, Thermax Ltd., EWAC Alloys Ltd., BHEL, Textile Machinery Manufacturer's Association (India), Godrej and Boyce Mfg. Co. Ltd., among others.

A high level brain storming session with industry on 'Building Indian Capabilities in Strategic Technologies & Manufacturing' was organised jointly

by Confederation of Indian Industry (CII) and IIT Bombay, in November 2013. The sectors for deliberations included aerospace, biotechnology, nanotechnology, IT, renewable energy. It was decided that CII would form smaller groups of domain areas and take the discussion forward.

A meeting with Mr. Alexander Stubb, Ministry of European Affairs and Foreign Trade and Finnish Business delegation was held at IIT Bombay in October 2013 to promote R&D interactions between Finnish companies and IIT Bombay.

b. Consortia/Partnership

Healthcare Consortium:

An overview of the healthcare consortium activities was presented to the MHRD in October, 2013. The activities of Healthcare Consortium included:

- A joint workshop was organised by Tata Centre, MIT and IIT Bombay in the last week of January 2014, which was attended by the students of the Institute and clinicians from Hinduja. The workshop provided pointers to clinicians on identifying needs and translating them into low cost and non-invasive diagnostics, in association with the student teams.
- Dr. Rajiv Sarin, Director, Advanced Centre for Treatment, Research and Education in Cancer (ACTREC), Mumbai gave a talk on 'Challenges in T2 Translational Research: Bench to Bedside to Community!' on July 26, 2013.

- Dr. Farokh Wadia, HN Reliance Hospital delivered a talk on 'Clinical needs in the area of paediatric orthopaedics' on February 28, 2014.

c. Award received

* Prof. Samir Maji's research on p53 amyloid formation, funded by the healthcare seed grant initiative, has earned him the 'Young Researcher Award' from the Lady Tata Memorial Trust.

* Periodical visit to ACTREC for IIT Bombay researchers was initiated during this year.

d. Incentives for R&D

Rewards for research excellence, technology development efforts, research/review publications, and industry impact were given in the year as earlier (Table 6). Recognition included cash awards and research grants and arranging institute-wide dissemination through lectures and electronic media.

e. Dissemination/Outreach

A workshop on 'Central Facilities' was held on September 4, 2013, where the 13 Conveners of central facilities made presentations on technical specifications and capabilities, the types of experiments carried out and the usage. About 100 faculty members and students attended the workshop.

Lectures by domain experts (institute faculty and outside experts) on the work of winners of the Nobel Prize 2013 were organised at the Institute on October 31, 2013.

Table 6: Award recipients in 2013-14

Awards	Names of Recipients
Research Paper Award	Prof. S.K. Maiti , Department of Mechanical Engineering Prof. Anuradda Ganesh , Department of Energy Science and Engineering Prof. Anirban Sain , Department of Physics Prof. M. Ravikanth , Department of Chemistry
Review Paper Award	Prof. Chebrolu Pulla Rao , Department of Chemistry Prof. P. I. Pradeepkumar , Department of Chemistry
Young Investigator Award	Prof. P. Vedagiri , Department of Civil Engineering Prof. Debraj Chakraborty , Department of Electrical Engineering
Industrial Impact Award	Prof. Milind D. Atrey , Department of Mechanical Engineering
Dr. P. K. Patwardhan Technology Development Award	Prof. N.G. Shah , Centre for Technology Alternatives for Rural Areas Prof. S.M. Mahajani , Department of Chemical Engineering
S.C. Bhattacharya Award for Excellence in Pure Sciences	Prof. Sudhir R. Ghorpade , Department of Mathematics
H.H. Mathur Award for Excellence in Applied Sciences	Prof. Soumen Chakrabarti , Department of Computer Science and Engineering
Research Internship awards	Given to bright students across the country to undertake research at IIT Bombay for six months, based on national advertisement and selection process: • No. of applications received: 419 • No. of Intern selected: 49 • No. of Intern joined and completed: 40

f. Review of IRCC Seed Grant

Seed grant review was initiated and recipients (Faculty members) of IRCC Seed Grant during the year 2005-06 made presentations to IIT Bombay academic community on January 22, 2014. Around 15 faculty members made presentations on the objectives of the projects undertaken, research output, R&D personnel trained, publications, patents applications filed & granted, awards & recognition received and so on.

g. Ensuring safety

Keeping in mind the importance of safety, a video on 'Fire Safety in laboratories' has been recently prepared and will be soon circulated to IIT Bombay academic community.

h. Online processes

Automation of activities related to project management, central facility and project staff recruitment (online application and selection) continued. Modules have been created for access to H10A Hall Manager. In addition, FAQs for various processes and existing processes and modules have been updated.

i. Manpower

The number of project staff involved in various projects as on March 31, 2014 is 1037. Of them, 543 joined during the financial year 2013-14.

Outreach Programmes

The Continuing Education Programme (CEP), Quality Improvement Programme (QIP) and the Curriculum Development Programme (CDP) continued to attract wide interest from industry, academia and our own faculty during last year.

The CEP courses of IIT Bombay are aimed primarily at working professionals, though in the last couple of years students have also been admitted to specialized training programmes. The courses on Urban Drainage Management, Human Computer Interaction, Energy Management, Technology Innovation Using Triz, Elements of Chemical Engineering, Executive Programme in Management, Leadership Development Centre, Dynamics and Control in State-Space (DCSS), Expo CD and Expo PDI, etc., have all been well received by the industry.

The highly popular QIP courses of the Institute, are fully funded by the All India Council for Technical Education (AICTE) and are generally meant for teachers working in various degree level engineering institutions, keen to upgrade their knowledge and skills. In order to provide participating teachers an opportunity to interact with industry professionals, special efforts have been made to permit a few industry participants as part of the QIP courses, in the normal CEP mode, which has been much appreciated by all.

The certificate course on "Piping Engineering" has reached another milestone and has crossed its 64th edition in 2013. About 10000 engineers have registered in the last 24 years. Online version of the course started in July 2009, has attracted registration from about 500 participants from across the globe, which is expected to grow further.

In terms of the overall performance of CEP & QIP during 2013-14, a total of 160 CEP courses were conducted with about 3500 participants, generating a revenue of around Rs.7.29 crores. Under QIP category, four M.Tech. and 13 Ph.D. students of engineering were admitted. In addition, five teachers were inducted into Ph.D. programme under the Advance Admission Scheme. Further, 12 short-term courses (STC), sponsored by the AICTE, were conducted and were attended by 307 college teachers. Lastly, one book was completed and one new book-writing proposal was sanctioned under the Curriculum Development Programme (CDP) of QIP.

INTERNATIONAL RELATIONS

International relations have assumed a greater significance for the Institute in recent times. It was our privilege to host heads and deputy heads of states last year including Mr. Joe Biden, Vice President of USA, who met and interacted with some of our students, on July 25, 2013. The Governor General of Canada, His Excellency the Right Honourable David Johnston and other delegates visited IIT Bombay on February 28, 2014. The Governor General shared his views on "Driving Economic growth through Innovation," on the occasion. He also visited the Industrial Design Centre and Society for Innovation and Entrepreneurship (SINE) on campus and interacted with students and faculty members. Mr. Vicente Fox, former President of Mexico also visited the Institute on February 12, 2014 and met the Institute functionaries. He moreover delivered a TechniGraphicS Lecture on "Contributions of IITs to India and the world: An international perspective."

The reputation built over the years, has helped IIT Bombay in attracting bright and young researchers from all over the world, as faculty of the institute. A good number of international students have also come to the Institute either as full-time pupils or as exchange students.



Mr. Joe Biden, Vice President of USA, interacting with IIT Bombay students.



Visit of the Governor General of Canada, David Johnson to the Industrial Design Centre

Our reputation and efforts are enabling us to collaborate with leading universities and institutions at various levels. During the year, IIT Bombay signed 20 MoUs with various foreign universities and received governmental and ministerial delegations, from countries across the globe, for exploring areas of collaboration and cooperation.

MoUs with Foreign Universities

- Extension of MoU with Technical University of Munchen, Germany
- ETH Zurich, Switzerland
- The University of Queensland, Australia
- Student Exchange Agreement with KTH Royal Institute of Technology, Sweden
- Deakin University, Australia
- Technical University of Mombasa, Kenya
- Dhofar University, Sultanate of Oman
- The Institut National Des Sciences Appliquees De Lyon, France
- The Korea Advanced Institute of Science & Technology, Republic of Korea
- N o s o v Magnitogorsk State Technical University, Russia
- The Cooper Union for the Advancement of Science and Art, USA
- Bilateral MoU with Technical University of Denmark, Denmark
- Kyungpook National University, Republic of Korea
- The University of Massachusetts Amherst, USA
- Simon Fraser University, Canada
- The National Commission for Scientific and Technological Research (CONICYT)
- The University of Notre Dame, US
- Extension of MoU with Kyushu University, Japan
- Extension of MoU with National University of Singapore, Singapore
- State University of New York at Binghamton



MoU Signing with University of Massachusetts Amherst, January 9, 2014



MoU with Simon Fraser University on January 22, 2014



MoU with University of Notre Dame, on February 5, 2014

MoUs with other Institutions

- French Language Tutors in India Programme 2014-15 with Embassy of France, New Delhi
- University of Delhi
- PSG Institute of Advanced Studies, Coimbatore

Visits of Major International Delegations

- Canadian delegation led by Mr. Simon Kennedy, Deputy Minister of International Trade, Canada
- Swedish delegation lead by Mr. Johan Britz, State Secretary, Coordination Secretariat, Prime Minister's Office
- A group of 100 students from UK, organized by UK India Education and Research Initiative (UKIERI)
- Prof. Mark Welland, Vice Chancellor and Prof. Ashwin Seshia from University of Cambridge
- Prof. Josphat K.Z. Mwatelah, Vice Chancellor from Technical University of Mombasa
- Dr. Hassan Said Kashoob, Vice Chancellor, Dr. Heba Ahmed Hassan, Dean, College of Engineering, Dr. Syed Ahsan Jamil, Dean, College of Commerce and Business Administration and Dr. Israr Ul Hasan, Acting Director for Research from Dhofar University
- Mr. Alon Ushpiz, Ambassador of Israel and Mr. Jonathan Miller, Consul General of Israel
- US delegation led by Prof. Munson, Dean of Engineering, University of Michigan
- Ms. Holly Luffman, Assistant Director of the Centre for International Experience and Ms. Lucy Fromowitz, Assistant Vice President for Student Life from University of Toronto
- A Chinese delegation led by Mr. Zhou hongyu, Hubei Provincial International Academic Exchange Center
- Dr. Kumble R. Subbaswamy, Chancellor, Prof. Jack Ahern, Vice Provost of International Programs and

Prof. Om Parkash (Dhankher), Professor in Plant Biotechnology from University of Massachusetts, USA

- Canadian delegation led by Mr. Richard Bale, Consul General, Govt. of Canada
- Dr. Ana Santos Koehn, Director, International Center and Prof. Liqiu Meng, Vice President from Technische Universitat Munchen (TUM), Germany
- Rev. John I. Jenkins, President, J. Nicholas Entrikin, Vice President, John Affleck-Graves, Executive Vice President, William Lies, Vice President, Jonathan Noble, Assistant Provost and Ms. Anita Garg from University of Notre Dame, US
- Mr. Richard Bale, Consul General, Govt. of Canada, Prof. Andrew Petter, President, Simon Fraser University, Mr. Philip Steenkamp, Vice President, External Relations, SFU, Dr. Mario Pinto, Vice President, Research, SFU and two British Columbia Govt. Representatives
- A Quebec delegation lead by Dr. Alain Olivier, Director & Consul, Quebec Government Office

Also, several individuals visited IIT Bombay as representatives of their respective universities.

International Students

A total of 55 international students from Australia, Bangladesh, Canada, Denmark, Ethiopia, France,

Germany, Iran, Malaysia, Nepal, Netherlands, Pakistan, Singapore, Spain, Sweden, Switzerland, and USA joined the Institute for course work/project work/post graduate studies.

Student Exchange Programme

IIT Bombay students also went to other institutions as a part of student exchange programmes.

The Institute also organized foreign language courses in French, Japanese, German, and Chinese for its students and staff.

EMINTE Project under the Erasmus Mundus Programme

IIT Bombay has secured funding for a EMINTE project under the Erasmus Mundus Programme. EMINTE is an Erasmus Mundus Partnership project funded by the European commission that aims to promote institutional cooperation and mobility activities between European and Indian higher education institutions (HEIs), largely by encouraging exchange of people, knowledge and skills. The major tool is a scholarship scheme, consisting of approx. 107 scholarships. Lund University, Sweden, is the lead university and there are other European and Indian universities partnering in this project.

Sr. No.	University	No. of students/ Programmes
1	Dongguk University, Korea	One M.Des. Student from Industrial Design Centre
2	University of Toronto, Canada	Two Dual Degree (DD), 2nd year student from Electrical Engineering and one B.Tech. (3rd year) student from Metallurgical Engg. & Materials Science
3	Nanyang Technological University, Singapore	One DD student from Civil, one B.Tech. student from Civil Engineering, two B.Tech. students from Electrical Engineering, and one B.Tech. student from Mechanical Engineering
4	National University of Singapore	One DD student from Metallurgical Engg. & Materials Science, two DD students from Mechanical Engineering, one B.Tech. student from Mechanical Engineering, one B.Tech. student from Chemical Engineering and one B.Tech student from Civil Engineering
5	University of South Australia	One DD student from Electrical Engineering
6	Universitat Politecnica de Valencia, Spain	One B.Tech. student from Electrical Engineering and one from Aerospace Engineering
7	ETH Zurich, Switzerland	One B.Tech. student from Mechanical Engineering and one DD student from Electrical Engineering
8	Northeastern University, USA	One DD student from Mechanical Engineering
9	Ecole Centrale Paris, France	One DD student from Energy Science and Engineering
10	University of South Australia	One B.Tech. student from Electrical Engineering
11	Tallinn University of Technology, Estonia	One B.Tech. student from Mechanical Engineering
12	Ecole Centrale De Nantes, France	One DD student from Mechanical Engineering

EUPHRATES Project under the Erasmus Mundus Programme

EUPHRATES is an Erasmus Mundus Partnership (Action 2, Lot 13 Agreement) project funded by the European commission. The project provides scholarships for the mobility of students at undergraduate, master, doctoral and post-doctoral level as well as for university staff in academic or administrative positions. Universidade de Santiago de Compostela, Spain, is the lead university. There are other European and Indian universities who are also partnering in this project and have signed a Consortium Agreement to facilitate it.

Global Tech Student's Competition

Following the success of the first student competition "Building the Tower of Babylon: What on Earth is Sustainability?", GlobalTech organised the second student competition focusing on portable power generation. The competition was initiated by Dr John O. Dabiri (Caltech) and coordinated by the Energy Research Institute at NTU.



The task was to design, build and demonstrate a power generator that can create electricity from a renewable source (e.g. solar, wind, biomass) and store it for later use. The IIT Bombay team won the competition.

European Roadshow 2014

An information session for the Delegation of European Union to India (New Delhi) was organised on February 19, 2014. Representatives from consulates of various countries had presented the different mechanisms for research collaborations between India and Europe, as well as higher education opportunities open to Indian students in Europe.

IITB-NUS Joint Research Workshop – ENERGY 2014

In collaboration with the National University of Singapore (NUS), the Institute organized the first IITB–NUS joint research workshop (ENERGY 2014) on February 24-15, 2014, with the idea of promoting and strengthening the collaborative research and joint PhD programme. The theme of the workshop was 'Energy conversion and storage' and it consisted of invited lecturers from faculty of both the Institutions, as well as posters presentation from Masters and PhD students of IIT Bombay.

ALUMNI & CORPORATE RELATIONS

The Dean Alumni and Corporate Relations (ACR) Office integrates two strategic thrusts for IIT Bombay. One is nurturing and enhancing Alumni Relations and other is the same with Corporations. The Institute requires substantial financial resources for continued modernization of facilities. Although the Government of India continues to be the primary source of funds for the Institute, the Office of Dean ACR performs the important task of raising additional resources from the alumni and other well-wishers of the IIT Bombay.

This year a sum of Rs. 19 crores was received by the Institute through donations – Rs.13.5 crores from the alumni and Rs.5.5 crores from corporations. The major corporate donors, among others, were Applied Materials Inc., Bharat Forge Ltd., DS Foundation and Boeing. The major activities for which these donations were received are as under:

Institute Development Fund: This fund primarily caters to the needs of the institute, such as modernisation and the establishment of new academic, research and campus infrastructure.

Young Faculty Awards (YFA): In an endeavour to enable IIT Bombay attract quality faculty, the alumni have instituted the Young Faculty Awards programme, which provides a grant of Rs. 1 lakh per year for the first four years to newly recruited young faculty members. This grant acts as an incentive to the prospective faculty.

Chair Professorship: The Chair Professorship is a distinguished academic position of the institute. Besides acting as a recognition for the permanent faculty of the institute, it is also used to attract outstanding academicians to join the institute as visiting faculty. Each Named Chair is supported by an endowment created from a donation to the institute. At present, more than 20 named Chairs are endowed by the donors along with the Institute Chairs.

Hostel Development: The Hostel Alumni Team Stewardship (HATS) is an important alumni-driven

initiative that aims to channel the affinity and affection that many alumni have for their former hostels. This activity is run exclusively through the alumni support and contributions. The key goals of HATS are as follows: (a) Improve hostel infrastructure and facilities, (b) Assist the current and retired mess workers, (c) Increase interaction between the alumni and students, (d) Empower students to improve their living conditions under the aegis of Make Hostel My Home (MHMH), and (e) Organize hostel-level reunions in each hostel on the Alumni Day.

Student Development:

(a) Scholarships: One way to nurture excellence amongst students is by awarding scholarships to deserving candidates. The scholarships funded by the alumni, trusts and corporations supplement the scholarship available from government funds and enable the institute to provide support to a larger number of deserving students. During the year 2013-14, 149 scholarships of varying amounts were granted. (b) Awards and Prizes: As every year, 50 awards and prizes of varying amounts and forms (certificates, medals, etc.) were given away during 2013-14.

Major Events:

(a) Alumni Day: The Alumni Day, celebrated on December 29, 2013, saw six of the alumni, who have contributed in a notable and sustained manner to the progress of the institute, being honoured with the Distinguished Service Award. Their names are : Mr. Ruyintan Mehta, B.Tech. (1970), Chemical Engg. Mr. Sameer Katdare, B.Tech. (1975), Chemical Engg. Mr. Dhananjay Saheba, B.Tech. (1977), Electrical Engg. Dr. Amol Gokhale, B.Tech. (1978), Metallurgical Engineering and Materials Science Mr. Paresh Vora, B.Tech. (1981), Electrical Engg. Mr. Ajay Bhagwat, B.Tech. (1985), Electrical Engg.



Awardees with Prof. Devang V. Khakhar, Director, IIT Bombay in centre

The Silver Jubilee Batch of 1988 expressed their desire to help attract young faculty, support retired faculty and provide additional financial assistance for underprivileged students through their Legacy Project and handed over a ceremonial cheque of Rs. 2 crores, on the occasion.

The Golden Jubilee batch (1963) and the Decennial batch (2003) also addressed the meet. The 'Make Hostel My Home' project was also unveiled during the function and was launched in January 2014 under the auspices of HATS.

(b) Foundation Day: The Foundation Day of the Institute was celebrated on March 10, 2014. During the function, 10 alumni were honoured with the Distinguished Alumnus Award and four alumni with the Young Alumni Achievers Award. The Distinguished Alumnus Award is conferred on those alumni who have reached positions of eminence in the areas of Business, Academics, Research, Government, Public Service and Entrepreneurship. The Young Alumni Achiever Award is presented to those who have shown outstanding achievements in their chosen fields of work and are below 40 years of age.

The recipients of the Distinguished Alumnus Award are as follows:

Dr. Ing. Anil Anwikar, B. Tech. (1964), Civil Engg.
Mr. Veerappa Baligar, B.Tech. (1978), Civil Engg.
Mr. Ashish Kumar Chauhan, B.Tech. (1989), Mechanical Engg.
Mr. Toos Daruvala, B.Tech. (1977), Electrical Engg.
Dr. Shyam Dighe, B.Tech. (1974), Chemical Engg.
Dr. Rajesh Gokhale, M.Sc. (1990), Biotechnology
Mr. Ram Kelkar, B.Tech. (1980), Electrical Engg.
Dr. Kasim Mookhtiar, M.Sc. (1980), Chemistry
Mr. Suresh Shenoy, B.Tech.(1972), Metallurgical Engg.
Mr. Deepak Vaidya, B.Tech. (1970), Chemical Engg.

The following were presented with the Young Alumni Achievers Award:

Dr. Sundar Iyer, B.Tech.(1998), Computer Science & Engineering
Mr. Mayank Bawa, B.Tech. (1999), Computer Science & Engineering
Dr. Rohit Karnik, B.Tech. (2002), Mechanical Engg.
Mr. Bhavish Aggarwal, B.Tech. (2008), Computer Science & Engineering

(c) Meeting of Deans of Alumni/ External Relations of all old IITs (IITs established prior to 2008): A meeting of Deans of Alumni/ External Relations of all old IITs (established prior to 2008) was held during August 23-24, 2013 with an intention to hold strategic discussions about alumni relations and to bring uniformity in the approach of various IITs, learn from experiences of each other and to develop common standards. The meeting was addressed by Prof. Devang Khakhar, Director, and Prof. H.S. Pandalai, Deputy Director (FEA), IIT Bombay. Mr. Mark Dollhopf, Executive Director, Association of Yale Alumni and Kathy Edersheim were special guests for the meeting. Strategic Discussions were held on issues like Alumni Engagement, Development Office, Internal Engagement/Communications & IIT-wide initiatives.

(d) Student Alumni Meet: Started in 2011, Student Alumni Meet (SAM) is a flagship event of the Student Alumni Relations Cell (SARC), which acts as a platform to facilitate Student-Alumni interactions and enable students to avail the benefits of IIT Bombay's pool of experienced alumni. Last year, SAM witnessed the participation of 150 alumni who visited the campus and interacted with the current students.

(e) Inauguration of Parimal & Pramod Chaudhari Cell Culture Laboratory: The Parimal & Pramod Chaudhari Cell Culture Laboratory was inaugurated at the Department of Biosciences & Bioengineering on October 3, 2013. The funding for the lab was provided by Mrs. Parimal Chaudhari and Mr. Pramod Chaudhari, Distinguished Alumnus and Founder & Chairman of Praj Industries, who also inaugurated the lab. The areas of research, where this facility could prove to be beneficial include host pathogen interactions, Alzheimers and Parkinsons diseases, Cell Biology, Malaria, mechnobiology, microfluids, tissue engineering, immunology, nanotechnology and nano-medicine, among others.

(f) Inauguration of Tinkerers' Lab: Tinkerers' Lab, the fully equipped, non-academic student technical laboratory at IIT Bombay, was inaugurated on January 4, 2014. The lab has been set up with an intention of promoting experimentation, creativity and innovation among students. It will be kept open 24x7 and will be completely managed by the students. Funded by the batch of 1975, the lab was set up under the aegis of Students' Technical Activities Body, which is a student run body under the Student Gymkhana.

(g) Desai Sethi Centre for Entrepreneurship Announced: In a major leap towards encouraging entrepreneurship spirit among its students, the intention to establish an Entrepreneurship Centre was announced on February 1, 2014. The Centre is being set up with a funding from Syntel Co-founders Distinguished Alumnus Mr. Bharat Desai and Ms. Neerja Sethi, under the aegis of The Desai Sethi Foundation. The new Centre, which will be named 'IIT Bombay Desai Sethi Centre for Entrepreneurship', will foster entrepreneurship and technology innovation through new programmes for education and research, multi-disciplinary courses, research laboratories and partnerships.



i) Lecture Series: The following lectures were organised with the involvement of Dean ACR Office.

Girish Sant Memorial Lecture: The 2nd Girish Sant Memorial Lecture was delivered on September 18, 2013, by Dr. Harish Hande, Founder and Managing Director SELCO India, Bangalore. The title of the lecture was "Poverty Reduction and Sustainable Energy – is there a link?".

Indira Foundation Distinguished Lecture: The 1st Indira Foundation Distinguished Lecture was delivered on September 23, 2013, by Prof. George Church, Professor of Genetics at Harvard Medical School & Director of NIH Center for Excellence in Genomic Science & Director of Personal Genomes. org. The title of the lecture was "Biologically Inspired Engineering".

Professor C.V. Seshadri Lecture Series: A lecture in memory of Prof C.V. Seshadri was delivered on November 12, 2013 by Prof. Ashok Bhaskarwar from the Department of Chemical Engineering, Indian Institute of Technology Delhi. The title of the lecture was: "On Research and Researchers".

TechniGraphics Lectures: TechniGraphics Lectures were delivered by Bharat Ratna Prof. CNR Rao on "Doing Science in India: A story of agony and ecstasy" and Mr. Vicente Fox. Former President of Mexico, on "Contributions of IITs to India & the world: An international perspective" on January 3 and February 12, 2014 respectively.

Professor K.C. Khillar Lecture Series: The Professor K.C. Khillar Memorial lecture was delivered by Dr. Ashok Lele of Polymer Science and Engineering Division of National Chemical Laboratory, Pune, on April 1, 2013. The title of the lecture was: "From Macromolecular Structure to Polymer Processing: Bridging length and time scales".

IITB-Westinghouse Lecture: The 3rd IITB-Westinghouse Lecture was delivered on March 27, 2014 by Dr. Chaitanyamoy Ganguly, who was the Head of Radiometallurgy Division, BARC (1986-95) and Director of the Central Glass and Ceramic Research Institute (CGCRI), Kolkata (1995-98). He was promoted to 'Distinguished Scientist' in 2002. The title of the lecture was: "Atoms for Prosperity: Uranium Resource & Fuel Cycle - Geopolitics and Safeguards".

FACULTY AFFAIRS

During the year, 22 faculty members on regular basis and five on contract basis were appointed. The number of full-time faculty members on the roll of the institute has risen to 572 comprising 252 Professors, 120 Associate Professors, 182 Assistant Professors,

and 18 Assistant Professors (Contractual Basis). In addition, there are 27 adjunct faculty members on the roll. Around 15 faculty members retired – ten of whom were re-employed and three resigned.

The institute provided financial assistance to 217 faculty members for participating in international conferences. In addition, 161 faculty members travelled abroad for attending international conferences using external funding and 16 faculty members went abroad on Fellowship for research work.

Apart from educational and research pursuits, the faculty of the institute meet national and global obligations in diverse ways. Many of them have accepted membership of various national committees and editorship of journals. They also review manuscripts for publications. We are proud that their efforts have received recognition in the form of many awards and distinctions, some of which are listed below:

Prof. Deepak B. Phatak, Department of Computer Science and Engineering, has been awarded the prestigious ‘Padma Shri’ by the Government of India, for his distinguished service to the nation in the field of Science and Engineering.

Prof. Abhay Karandikar, Department of Electrical Engineering, has been selected for the prestigious ‘VASVIK Award 2010’ in the category of Electrical and Electronics Sciences and Technology.

Prof. Amit Agarwal, Department of Mechanical Engineering, has been selected by the Indian Society of Heat and Mass Transfer for the prestigious K.N. Seetharamu Medal and the Prize for Excellence in Research 2013 in recognition of his research in the area of Heat and Mass Transfer.

Prof. Ashwin Gumaste, Department of Computer Science and Engineering, has been conferred Swarnajayanti Fellowship for the year 2013, in the Engineering Science discipline.

Prof. B. Krishna Mohan, Centre for Studies in Resources Engineering, has been awarded National Geospatial Award for Excellence for his contribution in Geoinformatics Research and Capacity Building given by Indian Society of Remote Sensing.

Prof. K.P. Kaliappan, Department of Chemistry, has been inducted into the Advisory Board of the renowned RSC Journal “Organic & Biomolecular Chemistry”.

Prof. Prakriti Tayalia, Department of Bioscience and Bioengineering, has won the Innovative Young Biotechnologist Award (IYBA) for the year 2013 given by Department of Bio-Technology of Government of India.

Prof. Ramagopal Rao, Department of Electrical Engineering, has been awarded the Infosys Prize 2013.

Prof. Rohit Srivastava, Department of Biosciences and Bioengineering, has been bestowed upon the ‘Senior IYBA Award’ by DBT.

Prof. Rohit Srivastava, Department of Bioscience and Bioengineering has been selected for the prestigious ‘Tata Innovation Fellowship’ from DBT.

Prof. Sambasivarao Kotha, Department of Chemistry, has been invited to join the International Advisory Board of European Journal of Organic Chemistry (EurJOC).

Prof. Santanu Bandyopadhyay, Department of Energy Science and Engineering, has been awarded the ‘Education Leadership Award’.

Prof. Shilpa Ranade, Industrial Design Centre, has won this year’s FICCI FRAMES Award for best feature film, for her film titled “*Gopi Gawaiyaa Bagha Bajaiyaa*”

Prof. Souvik Mahapatra, Department of Electrical Engineering, has been awarded the IBM Faculty Award for 2013.

Prof. V. Jothiprakash, Department of Civil Engineering, has been selected for the ‘R.J. Garde Research Award’ for the year 2013.

INFRASTRUCTURE DEVELOPMENT

Infrastructure augmentation has remained a major theme with Rs. 367 crores worth work executed over the period 2008-13. This year too the impetus to enhance the infrastructure manifold has been maintained.

The infrastructure projects that were completed during the year include ‘Student Hostel-15’ (of 1000-capacity), ‘IITB-Applied Materials Research Laboratory of 500 sqm’ and ‘Type II-B buildings’ (56 Flats). Some other projects, namely, ‘Hostel 16’ (1000 - capacity) and ‘Computer Centre’ (10000 sqm) building are also nearing completion.

In addition, various projects including the ‘Guest House’ expansion with 100 rooms and 50 utility apartments, ‘Ladies Hostel’ (790 rooms), state-of-the-art sports facilities (10000 sqm), construction of a light weight structure for the ‘K.V. School’ and ‘IITB-Monash Research Academy’ (5350 sqm) and reconstruction of ‘Entrance Gates’, renovation of the Central Library, 84 existing ‘C-Type quarters’, are at various stages of construction.

A wide array of projects are at various stages of design and tender like the DESE/ CCESE building (18100 sqm) National Centre for Mathematics (6200 sqm), H1 building (5000 sqm) with 60 flats for staff, 30 flats of A type (8400 sqm), SINE/IDC, construction of Steel Centre, Technology development Centres like NCAIR, Biomed Equipment Centre, Central Animal Facility, and Central Stores/ Estate Office are slated for execution in the coming years, and will create about Rs. 936 crores of assets.

CENTRAL LIBRARY

IIT Bombay's Central Library is user-focused, innovative, and excellence-driven. It manages knowledge, both in print and digital formats, ensures seamless discovery and access to these scholarly resources, and provides faculty, students, and staff with professional support to find, evaluate, manage, and use such resources. It provides high-quality ambiance for both reflective and collaborative work and study.

The library collection of about 4.43 lakh items was used by more than 11,000 members and others who made 3,54,560 visits to the library during the year. In addition, over two million downloads were made from the collection of over 40000 e-journals, e-books, and databases. The library homepage - a single window to all its resources and services and a popular interface between users and the library – was updated during the year. The institutional repository of IITB publications which now has over 14,000 records also attracted more than 91,047 hits during the year.

The library extensively uses social media (Facebook and Twitter) for improved communication and interaction and has created a blog to post current and interesting information and news items.

Collection building - a core activity of the library - has been undergoing a transformation. From print-only environment where all our acquisitions were in hard copy format, it has shifted to print-and-online and to online-only formats. The library currently subscribes to over 80 per cent of its journals in online-only format. It also acquired 814 e-books during the year, though most of the books are still preferred in print-only format. The library added over 3500 items including books, journals, theses, reports, standards, pamphlets and other reading material during the year. Its collection can be accessed through Online-Public-Access Catalogue, which received 3,27,964 hits during the year.

The library also rendered services like reference and consultation, document delivery, arranging material from other libraries through inter-library loan, allowing needy students to borrow textbooks from the book bank and organizing user education programmes to enhance awareness about various resources and services of the library. The library allows self check-out of books as well as online renewal of borrowed books. It handled over two lakh loan transactions of books and other documents for its members during the year. It also offers services to industry and corporates, IITB alumni and engineering (educational) institutions, and has earned over Rs.40 lakhs for the services rendered.

The Central Library supports electronic submission of theses and dissertations by the postgraduate and doctoral students. It maintains a full-text database of

over 10000 items submitted since 1999-2000 on Intranet. During the year, 922 M.Tech. dissertations and 198 Ph.D. theses were submitted online.

The renovation of the library building including addition of a new floor is nearing completion. The renovated library building will reflect the current trends in ICT and the changing needs of library staff, students and faculty in the use of library resources and services.

COMPUTER CENTRE

The Computer Centre continues to provide computational, network infrastructural facilities and services to the IIT Bombay user community.

Network and Connectivity

The Centre manages the campus network and is responsible for the availability of intra-campus connectivity of all the departments, hostels, residential complexes and internet connectivity of Institute with the outside world. The following activities were undertaken during last year:

The network connectivity to the new students' hostels (Hostel 10A and 15) has been completed.

The total Internet bandwidth for campus users have been increased from 2580 Mbps to 3250 Mbps. For optimum utilisation of internet, following has been implemented:

- BGP routing to connect to the three ISPs through simple load balancing using open source software.
- Internet access is by NATting via four Class C address ranges recently acquired from APNIC.
- Web access is through proxy and "direct access" where a legitimate user authenticates the IP address.
- Separate web access accounts for users, other than employees, at residences.
- Transport layer security has been purchased via digital certificate from GeoTrust.

About 700 WiFi access points have been deployed on campus to cover large part of the academic area, Guest Houses and Central Library.

High Performance Computing Facility

The old computing cluster CORONA continue to function as before with 130 user accounts. Given the space constraint, the cluster continues to be housed in the premise of the Chemistry Department. The cluster 'Spacetime Supercomputing' facility consisting of 380 nodes built using the Intel quad core processors has been operational on the ground floor of the old Computer Science and Engineering Department building.

The installation of Building Management System (BMS) for the Spacetime HPCC facility has been undertaken to bring complete automation of the peripheral equipment. It is expected that the DG-Set together with the automation offered by BMS will provide a better and smoother operation of the HPCC facility in terms of reducing the possibility of hardware failures and data being lost due to unexpected power failures. Enhancement of data storage facility is being undertaken, to improve the SAN device performance and to address the increasing number of research groups using the Spacetime resources.

National Knowledge Network

IIT Bombay continued to be a member of the National Knowledge Network (NKN) during the year. This multi-gigabit network initiative started by the National Informatics Centre (NIC) is being used by CDEEP to conduct distance education programmes. Staff from the Computer Centre also participated in the national level meet of the NKN.

Grid Computing Facility GARUDA

The grid computing facility GARUDA is also supported by the Computer Centre allowing the users of the Institute to access the available resources on the National Grid.

Hardware/Software Infrastructure

All service offerings at the Computer Centre are based on OPEN SOURCE Software Systems. Computer Centre has registered as official mirror for various flavors of Linux Operating Systems on its anonymous FTP server which is available to the user community at large.

The Institute continues to be a member of Microsoft Developer Network Academic Alliance (MSDNAA) software licensing programme. This allows the user community to use most of the Microsoft software products in a non-production environment. Campus-wide license of AVG anti-virus software has also been in operation.

Software packages meant for scientific and technical computation such as ANSYS, MATLAB, MATHEMATICA, MAPLE, Dytran / NasTran / Partan, Tecplot and Libraries from Numerical Algorithm Groups (NAG), AutoCAD, Labview, OriginLab etc that are available through appropriate licenses schemes are procured, upgraded and administered by Computer Centre as per the requirements of the students, faculty, scientists and staff.

The Computer Centre encourages and has installed Open Source Software Systems for Office Automation in about 800 PCs deployed in the various Administrative sections of the Institute, which has eliminated the spread of computer virus on computers to a great extent.

The Computer Centre continues to play a secondary role by providing technical support to run the IP-based Security Surveillance Systems for the Security Section. The verifocal fixed direction IP (10/100 BaseT ethernet interface) cameras 'for indoor use only' (25 nos) have been installed at the entry points of various departments, Main Building and Convocation Hall to monitor and record human activities as well as object movements. Similarly verifocal fixed direction IP-based Day and Night cameras (10 nos) with IP66 certified 'for outdoor use only' installed at the Main Gate, Y-Point Gate, and Lakeside Gate continue to monitor and record the inward and outward traffic movements of the campus.

PTZ IP Surveillance cameras (5 nos) having automatic Pan, Tilt, Zoom for 24/7 operation, PTZ control over network, minimum 270 degree Pan with auto flip and 180 degree tilt, Day and Night functionality with 0.5 lux in color, minimum 18x optical zoom, 12x digital zoom have been installed at the Guest House, Hostel 12 & 13, QIP Building and Ananta to keep an eye over the fencing of the campus.

The computer network set up by the Computer Centre enables the Electric Maintenance Division to monitor the Power Distribution Systems, check the status of various Lifts, functioning of UPS Systems, etc. in the Institute. The Telephone Exchange also runs few IP telephones (Voice over IP) using the computer network of the Institute.

Projects for the Near Future

Expansion planned for WiFi access: Steps are being taken towards smooth integration of all communications services (phones, cellular, TV and Internet). Process for providing additional 400 wireless access points for the academic for "blanket coverage", 200 specialised APs (access points) for the classrooms, and 300 wireless access points in the common areas of hostels and open areas in cooperation with 4G service providers, have been planned for near future.

The HPC roadmap: Current infrastructure is about six years old and upgradation of this facility is planned in west wing on the Ground Floor of the Old CSE building.

Space for about 100 racks divided into three parts viz. Central HPC facility of the Institute; Data Centre for the Computer and backup services for the different services in IITB (mail servers of departments, data from ASC, IRCC, Academic Office, etc.); and Bring Your Own Hardware facility: Resources to house high performance computing hardware acquired by different research groups through their funding sources. These will be provided housing, power, cooling and networked access.

Email and storage: Following are some of the proposed facilities that would be available in the near future for email and storage.

- An integrated mail and calendar system for the Institute
- Extend IMAP service to all departments
- Increase storage allocation for email and BigHome.
- Lifetime email to alumni and all faculty/staff.

SOCIETY FOR INNOVATION AND ENTREPRENEURSHIP

The Society for Innovation and Entrepreneurship (SINE) is an umbrella for promotion of entrepreneurship at IIT Bombay. It administers a business incubator, which provides support for technology-based entrepreneurship, and facilitates the conversion of research activity into entrepreneurial ventures.

SINE has so far incubated 54 companies. This year SINE hosted 15 companies, of which two have graduated and one exited. Of the current companies, two have received investments from Venture Capital/Angel investments. The existing companies are from various technologies such as education, cleantech, mechatronics, audio technologies, nanotechnology, engineering software, web security, geometric simulation for foundries, and marketing solutions for retail network.

With a view to expanding its incubation activity, SINE is focusing on promoting pre-incubation and enabling virtual incubation outside Mumbai. SINE launched I-ASCEND, a joint flagship entrepreneurship forum formed with IIT Bombay Alumni Association (IITBAA) on April 19, 2014. This will help to tap into the talent pool of the alumni network for mentoring, partnering, funding support for start-ups. SINE is also part of the initiative of the IIT Bombay 2002 alumni batch's legacy project to help support student based innovative ideas and projects towards prototype development and proof-of-concept. SINE has been operationally self-sufficient since inception.

CENTRE FOR DISTANCE ENGINEERING EDUCATION PROGRAMME (CDEEP)

During the year, CDEEP recorded 15 semester-long courses of IIT Bombay, covering 11 disciplines. Many institutions, teachers and students are using these courses, which are available to them even offline. CDEEP provided 161 recorded courses to individuals at a small fee. It has an archive of 282 IIT Bombay coded courses. It also provided access to its recorded courses, through web, to 115 participants by charging Rs. 1000 per course.

CDEEP recorded around 88 events on campus including 51st Convocation, 55th Foundation Day, Institute Colloquiums, talks by distinguished speakers

and so on. CDEEP team worked on specific improvements in the visible quality on the courses available through web. Now the display of courses/events available through web bears a much improved look.

CDEEP has a total of 75 institutions connected as Remote Centers (RCs), including the two which joined during the year. It also supports several MHRD projects.

INSTITUTE EVENTS

51st Convocation

The 51st Convocation of the IIT Bombay was held on August 10, 2013. **Shri S. Ramadorai, Vice-Chairman, Tata Consultancy Services**, was the Chief Guest and delivered the Convocation Address. **The Degree of Doctor of Science (*Honoris Causa*)** was conferred on Dr. Ashoke Sen, Professor at the Harishchandra Research Institute (HRI), Allahabad, for his seminal contributions to fundamental physics, especially String theory, and for bringing worldwide recognition for research being carried out in India. **The Degree of Doctor of Literature (*Honoris Causa*)** was conferred on Dr. Kaushik Basu, Professor of Economics and Carl Marks Professor of International Studies, Department of Economics, Cornell University, for his outstanding contribution in theoretical economics both as a researcher and as a teacher, and for his significant contribution as a policy maker in India.

55th Foundation Day

IIT Bombay celebrated its 55th Foundation Day on March 10, 2014. **Prof. Spenta R. Wadia, Distinguished Professor and Director International Centre for Theoretical Sciences of TIFR**, was the Chief Guest. As mentioned earlier, the Institute honoured 10 of its alumni with the Distinguished Alumnus Award-2014 and four with the Young Alum Achiever Award-2014. The "Prof. S.C. Bhattacharya Award for Excellence in Pure Sciences-2013" was conferred on Prof. Sudhir R. Ghorpade, Department of Mathematics, and The "Prof. H.H. Mathur Award for Excellence in Research in Applied Sciences-2013" was presented to Prof. Soumen Chakrabarti, Department of Computer Science and Engineering.

Teacher's Day

The 55th "Teacher's Day" was celebrated on September 5, 2013. **Prof. M.S. Ananth, Former Director, IIT Madras and Visiting Professor, IISc, Bangalore**, was the Chief Guest. The "Excellence in Teaching Award-2013", "IRCC Research & Industrial Consultancy Award-2012" and the "Dr. P. K. Patwardhan Technology Development Award-2012" were presented on the occasion.

Vanamahotsav 2013 was celebrated on August 24, 2013. Saplings were planted at the Hill Slope across pipeline, near Hostel-4 subway, at the IIT Bombay campus.

Centre for Urban Science and Engineering

A new centre, Centre for Urban Science and Engineering was inaugurated by the **Hon'ble Chief Minister of Maharashtra, Shri Prithviraj Chavan** at IIT Bombay on September 30, 2013.

1MW Solar PV Power Plant

IIT Bombay, installed a 1MWp (1 MW peak PV power) distributed rooftop Solar PV Power Plant on the roofs of its academic buildings. The Solar power Plant was inaugurated by **Dr. Satish Agnihotri, Secretary, Ministry of New & Renewable Energy, Govt. of India**, on January 28, 2014.

Conferences/Colloquia/Lectures/Seminars

Many conferences and lectures were organised during the past year. Some of them have mentioned earlier and few are listed below:

Prof. Aibing Yu, School of Materials Science and Engineering, The University of New South Wales, Australia, spoke on "Computational Particle Science and Technology", at an Institute Lecture on April 22, 2013.

Prof. Sir Michael Pepper, FRS, Department of Electronic and Electrical Engineering, London Centre for Nanotechnology, University College London, UK, spoke on "Semiconductor Nanoelectronics – the Engineering of Physics", at the Cockcroft - Walton Lecture under the Institute Lecture series on May 2, 2013. The lecture was supported by Institute of Physics, UK, and Indian Physics Association under bilateral exchange of lecturers.

Dr. Jennifer Smith, Dean of the College of Arts and Sciences, Washington University, US, spoke on "The Role of Climate in Human Migration in the Archaeological Past: Case studies from Paleolithic Egypt", at an Institute Lecture on June 5, 2013.

Dr. Rajiv Sarin, Director, Advanced Centre for Treatment Research & Education in Cancer, Tata Memorial Centre, Mumbai, spoke on "Challenges in T2 Translational Research: Bench to Bedside to Community!" at an Institute Colloquium, July 26, 2013.

Prof. K.R. Sreenivasan, President, Polytechnic Institute of New York University, Dean of Engineering, New York University, spoke on "Convection in the Sun" at an Institute Lecture, July 15, 2013.

Dr. Richard Corkish, Head, School of Photovoltaic and Renewable Energy Engineering, The University of New South Wales, Australia, spoke on "Renewable Energy Engineering Education and Silicon Solar Cell

Research at UNSW" at an Institute Lecture on August 6, 2013.

Prof. Tani E. Barlow, T.T. and W.F. Chao Professor of Asian History and Director, Chao Center for Asian Studies, William Marsh Rice University, USA, spoke on "China in the world, the world in China" at an Institute Colloquium on August 13, 2013.

Professor Sir Mark Welland, Nanoscience Centre, University of Cambridge, UK, spoke on "Nanoscience and Human Disease" at an Institute Colloquium on August 22, 2013.

Mr. Rajat M. Nag, Managing Director General, Asian Development Bank, Manila, spoke on "Sustainable Growth: The challenges for emerging economies in balancing the economic growth aspirations with inclusive and green growth" at an Institute Colloquium on September 2, 2013.

Prof. Inder Verma, Laboratory of Genetics, American Cancer Society Professor of Molecular Biology, Irwin and Joan Jacobs Chair in Exemplary Life Science, Salk Institute for Biological Studies, USA spoke on "Cancer Stem Cells: Reprogramming, Dedifferentiation and Transdifferentiation" at an Institute Colloquium on October 28, 2013.

Prof. Eric Mazur, Harvard University, Cambridge, MA, spoke on "Interactive Teaching, Flipped Classrooms and Peer Instruction" at the Institute Colloquium on November 11, 2013.

Sir David King, FRS, The British Foreign Secretary's Special Representative on Climate Change, and Former Chief Scientific Advisor, UK Government, spoke on "The Economics of Climate Change" on December 5, 2013.

Prof. James Schwaber, Director and Professor, Daniel Baugh Institute for Functional Genomics and Computational Biology, Pennsylvania, spoke on "What is it to be Conscious?" at an Institute lecture on December 20, 2013.

Prof. M. Ram Murty, Queen's Research Chair Professor of Mathematics and Philosophy, Queen's University, Canada, spoke on "Ramanujan and the Zeta Function" at an Institute Colloquium on January 8, 2014.

Prof. Robert G. Griffin, Director, Francis Bitter Magnet Laboratory and Department of Chemistry, MIT, Cambridge University, USA, spoke on "Atomic Resolution Structures of Amyloid Peptides, Proteins and Fibrils" at an Institute lecture on January 31, 2014.

Dr. Phyllis M. Wise, Chancellor, University of Illinois at Urbana Champaign, United States, spoke on "Medical Research and Information Technology: New Initiatives at University of Illinois at Urbana Champaign" at an Institute Colloquium on March 26, 2014.

The **Department of Mathematics and ATCM** jointly organised the “ATCM+TIME 2013” - sixth national conference on Technology and Innovations in Math Education, December 7-11, 2013.

The **Shailesh J. Mehta School of Management** organised the Second International Conference on Management of Intellectual Property and Strategy (MIPS), from January 30 – February 2, 2014.

Industrial Design Centre organised Dandi Marchers Sculptures’ Workshop, November 7-24 and December 7-22, 2013.

IIT Bombay and Indian Institute of Mineral Engineers (IIME) jointly organised a workshop on “Bauxite Beneficiation and Waste Recycling in Aluminum Industry” during October 28-30, 2013.

A three-day national Workshop on GPU Programming & Applications (GPA-2014) organised by CUDA Center of Excellence (CCOE), in association with NVIDIA Corporation, USA, was held during February 24-26, 2014 at IIT Bombay campus.

HINDI CELL

Hindi Cell is actively engaged in providing support for implementation of Hindi in the Institute. The Institute’s circulars, registers, forms, visiting cards, signboards, and degree certificates are prepared in bilingual form. The use of Hindi in the Institute’s email system (GPO) has also increased.

“Hindi Pakhawada” was celebrated in the month of September, where competitions in essay writing, story writing and Hindi translation were organised. Awards to institute employees for significant contributions in Hindi implementation were conferred during the event.

The Central Library also organised a Hindi Book exhibition within its premises. Institute’s students forum “*Vaani*” jointly with Hindi Cell organised “*Kavya Sandhya*” as well.

STUDENT ACTIVITIES

The students at IIT Bombay explore their interests in a plethora of activities. There are excellent recreational facilities for sports, including gymnasiums, swimming pools, courts for tennis, basket ball, volleyball, hockey, football and cricket, athletics tracks, and many more. Along with studies, sports activities too are carried throughout the year, with the Inter-IIT Sports meet in December. All the events are organized by a capable Institute Sports Council headed by General Secretary, with the able guidance of Sports Officers, Chairman Sports and Dean Students Affairs.

National Sports Organisation (NSO): The new batch of 602 undergraduate students was enrolled for the Senate-mandated NSO activity.

Inter-hostel General Championship (GC): Inter-hostel matches for 19 sports including all team and individual sports. Hostel-4 won back the Boys General Championship trophy after a span of three years and Hostel-10 won the Girls’ General Championship.

Inter-IIT Sports Meet: The 49th Inter-IIT Sports Meet was held in IIT Guwahati in December 2013. IIT Bombay made an impressive performance in diverse sports. IIT Bombay’s Boys contingent won its second consecutive Gold in Lawn Tennis, Silver in Athletics, Table Tennis, Water-polo & Weightlifting, Bronze in Squash and 4th position in basketball. Our Girls contingent showed equal grit with Silver in Swimming, Bronze in Athletics and 4th position in Volleyball & Basketball.

Sports Mentorship Programme: IIT Bombay initiated a Sports Mentorship Programme which encourages the participation and learning of students in sports by providing accomplished players a platform to coach and mentor. There were 16 mentors that covered teaching in multiple sports.

PG Sports: There was a substantial increase in the number of participants in the Inter-Departmental PG Sports which was held over the year. This programme is aimed at generating enthusiasm and encouraging participation of PG students in sports and general fitness.

Games: Chess Club, The DARK KNIGHT was formed this year with a large number of popular events held across the year. IIT Bombay students participated in tournaments held in Mumbai and other nearby cities for Chess and Carom.

Cultural Activities

Paathshaala: All cultural activities were brought under a single umbrella branded as *Paathshaala* thus ensuring that these could be publicised and organised in a coherent manner and that people could maximise this opportunity for learning most cultural forms that they might be interested in.

Summer School of Cult (SSoC): Summer vacations provide an ideal opportunity for students who stay back on campus to cultivate their interests in areas beyond just academics. Classes offered in multiple genres including Music, Dance, Film and Fine Arts generated good response.

Initiatives:

IITB’s Got Talent: ‘IITB’s Got Talent’ was a talent hunt contest organised for IITB students to showcase their talent in various ‘unconventional’ art forms that otherwise do not fall under any category defined in culturals at the institute.

NSO Culturals: NSO Culturals was approved in Fine Arts and Dramatics.

IITB Radio: A live IIT Bombay web radio was initiated to give updates and entertainment to IIT Students through an interesting medium. This saw around 200 views per show, with the total of 3 shows happening in the year.

Professional Exposure: “Live your Passion” was introduced this year for the first time which aimed at giving professional exposure and showcase platform to the winners of the GCs. This further motivated the students by giving them an invaluable incentive for performing well.

ROOTS: An Indian Arts festival, ROOTS was organized in association with SPIC MACAY. A new Roots council was proposed this year to strengthen the foundation of classical arts in the institute. SPICMACAY Concerts and ‘*Virasat*’ were organised spanning a week including the first ever, overnight concert.

The Performing Arts Festival (PAF)

This year, PAF saw a close competition, ultimately leading to a tie at the top position. The overall PAF season was overwhelming experience for both the performers as well as participants.

General Championship (GC)

The Hostel-3 bagged the GCI championship. This year Cultural GCs saw a huge participation. Two new GCs were introduced this year: Design GC and AD-making GC, which saw fairly good participation, enthusiasm and quality.

National Service Scheme (NSS) Activities

The main aim of NSS is to sensitise students about various social issues and encourage them to address and solve these issues. The body is divided in four departments addressing various issues, viz. Educational Outreach, Events, Green Campus Initiative and *Vikas*. NSS organised field trip to Yusuf Meharalli Centre, Disability awareness workshops, Disability access Audit, Interactive talks, and “I am kalam” Documentary screening, during the year.

NSS collaborated with various NGO’s to take education to underprivileged students. Various activities such as cloth donation, paper bag making, blog writing, Scientific toy making and so on, were also organized on Campus . The group members also participated in *Vanmahotsav* and other tree plantation activities.

National Cadet Corps (NCC)

In the year 2013-14, 77 Cadets (75 Boys & 02 Girls) from IIT Bombay and 45 Boys & 15 Girls Cadets from IIT Campus School & Jr. College enrolled for NCC. The NCC Cadets took part in social service activities such as ‘Drink and Drive Campaign’ and helped in creating better awareness on the same. The

10-day annual training camp was also held, where about 155 cadets participated in firing, obstacle activities, daily parades etc. as well as in extracurricular activities such as dance, drama and music.

TECHFEST

Techfest 2014, IIT Bombay’s annual international science and technology festival, celebrated its 16th anniversary this year. The event was supported by the embassies and cultural institutions of UK, Australia, France, Canada, Sri Lanka, Israel, Hungary, Poland, Switzerland, Germany and Italy. A rise of 44% in student participation was witnessed this year. Some of the activities organised as a part of Techfest 2014 are as follows:

Competitions

Techfest saw over 30,000 students participating in 22 competitions, including three international competitions. With the incentive of prizes worth Rs. 30 lakhs, competitions have constantly been a source of learning and experience for the students from various parts of the world.

Inter IIT Tech Meet: This pan-IIT competition held in Mumbai this year was executed by Techfest. Around 100 participants from 12 IITs participated in three competitions making the event a huge success and triggering Inter IIT Tech meet culture for future years.

ISMOKE: A student campaign against smoking with participation from more than 80 colleges in over 15 major cities of India. It was acknowledged by the LIMCA Book which registered the highest number of doodles received (over 23,000) as a record for any social campaign. A mobile application was made to make the user aware of the causes and treatments to cancer.

Launch of Reliance 4G in India: Techfest 2014 introduced the most advanced form of mobile telecommunications technology in India. Very high speed internet service was available for more than 3 months exclusively in the campus of IIT Bombay.

Lecture Series: The key speakers this year included Bharat Ratna Dr. C.N.R. Rao, Pranav Mistry - Director of Research in Samsung, Kiran Bedi; Nobel Laureate Dr. R. K. Pachauri, Stephen Wolfram, Michael Sandel, Rajat Sharma, Developer of Photoshop - S. Narayanan and many more.

Exhibitions: 23 international exhibits, some of them from universities such as ETH Zurich, EPFL, Osaka, Cambridge, RMIT etc. were at display including BINA 48, world’s most advanced social robot.

Synchronization with Institute Bodies: Techfest collaborated with STAB and Cultural Council for organising Inter-IIT Tech Meet and Techfest International Model United Nations (TIMUN) respectively. Over 280 delegates, some of them from

Singapore, Bangladesh and Afghanistan and 310 participants made TIMUN 2014 one of the biggest MUN in India.

Ozone: ‘Ozone’ – an on-the-spot zone – was a big crowd-puller. International street artists, adventure games, creative workshops and a wall artist from Poland were huge attractions in Techfest. Ozone Workshops were also conducted.

Technoholix: Night shows by performers at 2004 Athens Olympics, 2010 FIFA World Cup and other artists were mesmerizing experiences for people of all ages and interests.

Mood Indigo

The annual cultural festival Mood Indigo held during December 20-23, 2013, witnessed a lot of structural changes and inclusion of additional national and global genres, making the festival more hospitable and enjoyable for the participants. The fest saw invitations sent across to 2000 colleges and a footfall of 1,04,000, last year.

Competitions: Competitions extended their domain to previously unexplored avenue of Digital Arts. National Debate was revamped in collaboration with Institute Cultural Council bringing international adjudicators to the festival for the first time. Attractive incentives were given to the competitions winners under the “Live Your Passion” campaign which included Internship under Neeta Lulla, Performances at NCPA, Prithvi Theatre, etc. Multicity was explored by taking a few competitions to Delhi, Pune, Kolkata, Guwahati, Bangalore and Guwahati.

Media: The coverage of Mood I substantially increased in both mainstream and regional papers due to dedicated efforts. A 12 page newsletter was prepared and distributed with the help of Bombay Times enlisting all the highlighting events. BEST Bus shelters at strategic locations were used to portray unique events. Mood Indigo App was also created, which included all the new updates of the festival and the results of the various competitions.

Popular and Cultural Events: A blend of popular and cultural/experience based events included interactive sessions with Aamir Khan, S. Hussain Zaidi, Mir Ranjan Negi et al. The performances included folk music of Ireland, France and Germany. Comedy as a genre was explored under the title of “Humour Fest” that included stand up and comedy acts. EDM music was introduced for the first time as a concert and was well received by the crowd. World’s top rated drummer, Mike Portnoy performed for the first time in India during the Livewire Nite. A Guinness World Record was also made during the festival in collaboration with Oreo.

Entrepreneurship Cell (E-Cell)

The E-Cell at IITB was founded around 15 years ago, with a vision to create an entrepreneurial ecosystem by enabling an easy and efficient interaction between students, faculty, aspiring and existing entrepreneurs, mentors and investors. E-Cell has brought in a new era of entrepreneurship in the Institute and has contributed towards an increase in the number of start-ups by students and alumni, in the recent times. The major initiatives of E-Cell were:

Eureka: Organized annually, it is the Asia’s largest Business Plan competition that encourages people from across the globe to flesh out their ideas and form global enterprises that combine technology, vision and business acumen. Eureka received over 6000 registrations and around 150 teams from the institute participated. Mentoring sessions by experts were held over a period of two months and the final pitching was held during the Entrepreneurship Summit 2014. The winners received huge cash prize and an opportunity to go to Stanford University for entrepreneurship camp. Eureka through the years has produced several successful startups.

Entrepreneurship and Business Club (EnB Club)

The vision of the EnB Club is to create a platform of entrepreneurship enthusiasts where students, faculty and professionals can interact on a regular basis for discussions, brainstorming sessions, informal sessions and networking. The team is dedicated to enhancing the learning experience of those students who are curious about entrepreneurship and to providing an action-oriented road map for those looking to launch a start-up.

Entrepreneurship Summit: The Entrepreneurship Summit is an initiative by E-Cell, IIT Bombay, to serve as a platform for bringing together budding entrepreneurs, investors and other major contributors to the entrepreneurial ecosystem. E-Summit 2014 witnessed renowned speakers from various domains of the entrepreneurial ecosystem, who shared their own life experiences, including Syntel Co-Founder Bharat Desai, Jim Beach, Tim Malbon, Sachin Bansal, Rana Kapoor, Mukund Mudras, Alok Kejriwal, Celina Jaitly et al.

National Entrepreneurship Challenge (NEC): This is a competition created with the vision to promote entrepreneurship amidst all the college campuses in India. In the first year of its inception it got a huge response and over 150 colleges participated. NEC involved completing series of structured tasks divided into Awareness, Idea generation, Club activities and Stand up for Society aiming to make a steady progress towards establishing an e-cell in the respective colleges.

Several other competitions, workshops and panel discussions were held during E-Summit.

Student's Technical Activity Body (STAB)

As mentioned earlier, fully-equipped centralized technical lab 'Tinkerer's Lab', was setup in two phases using the funding obtained from alumni of 1975 batch, during the year. An electronic notice board has been setup within the Campus to reduce the paper wastage. Tum Tum Tracker (TTT) is also ready for implementation to ease commuting woes of students. Some of the major events organised by STAB were:

Inter-IIT Tech: The technical version of Inter-IIT was hosted by IIT Bombay during January 2-4, 2014, with more than 10 IIT's sending their representatives for three different events viz., 'Social Impact', 'Software Development' and 'Messier Marathon'.

MIT Media Labs: A week-long workshop on health care was organised, where 25-30 students participated to come up with 20 prototypes.

Industrial Learning Program: About 10 industrial projects were floated in collaboration with the Academic Council and Placement Cell to provide opportunities to apply the theoretical knowledge.

Institute Summer Technical Projects: It is a platform to help the students (especially freshmen) develop a prototype of their idea during the summer with required mentorship, guidance, lab facilities and funds. As a result of strong mentorship program, weekly review meetings and discussion forum, 97 projects were completed involving 300 students.

General Championship: The weightage of technical activities was increased from 20 to 30 per cent to get more attention. The number of low-prep GC's were increased to encourage the participation from hostels. General Championships were held in the field of: Electronics, Logic, Aeromodelling, Robotics, Coding, Rocket on Spot, M n P and Astronomy & ARC. Several other initiatives were taken to increase participation.

Online Presence and Newsletter: A new and better website was created, integrating with the TechID. A technical newsletter 'LIGHTSABER' was launched this year, which covers the major technical activities within the institute.

PLACEMENT

Even though 2013-14 was characterized by economic uncertainties in India and abroad, IIT Bombay entered the 2013-14 placement season with confidence, largely due to its quality of students and strong corporate relations. The first phase of IIT Bombay's campus placement in December 2013 saw participation from around 257 companies that offered 895 jobs. Up to June 2014, a total of 316

organisations took part in campus placement and offered over 1042 jobs. The final year students – doing B.Tech., M.Sc. Dual Degree, M.Tech., M.Des., M.Phil., and Ph.D. programmes in various fields of engineering, science and technology, design and humanities – participated in the placement process. A total of 1621 students registered for campus placements in 2013-14, which was the largest number ever.

The process began in July 2013 with sending an invitation to companies to visit the Institute for pre-placement talks and provide their job announcements. The company interview process began on December 1, 2013, the first day of formal placements, which saw 37 firms representing some of the most well known organisations in the global industry vying for our students. An unprecedented number of 182 jobs were offered on the day, reconfirming the commitment of top recruiters to the IIT Bombay graduates.

Engineering and Technology

Our students continue to demonstrate strong commitment to their core educational background in their choice of employment. Majority of students opted for science, engineering and technology-oriented jobs with companies operating in various sectors of the economy.

Data Analytics

The reputation of superior analytical and reasoning skill of IIT Bombay graduates continued to draw recruiters from the rapidly growing field of data analytics. There were 119 job offers from 32 organisations making it one of the biggest recruiters after engineering and information technology.

Consulting Sphere

Over 28 leading management consulting firms, including several global leaders, visited IIT Bombay for recruitments. These companies are known to be highly selective and follow a rigorous recruitment process. Over 89 offers were made in this sector.

Financial Services

The financial service sector was a major recruiter this year as well. In appreciation of the analytical and quantitative analysis capabilities of our students, many top global companies in financial sector visited the Campus and made over 70 offers.

Research & Development

Due to an ever-growing demand for high-end products and services, a larger number of companies now develop products on the forefront of technology. This has perhaps led to an increase in the number of organisations hiring fresh graduates in the R&D sector. A total of 18 R&D organisations offered 42 positions this year.

Education

IIT Bombay continues to provide faculty to several educational institutions through campus placement. Over 55 students, including some with doctoral degree, have been offered jobs in public and private educational institutions through campus placement.

Diverse Recruiters

While the placement season eventually saw recruiters from the entire spectrum of the industry, the initial part of the season was dominated by firms from sectors like engineering and manufacturing, computer software and hardware, management consulting, finance/banking, and FMCG. Most of these firms are world leaders in their respective domains.

Preparing well-rounded students

This year a key focus of the Placement Office was to prepare the students for placement. A large number of preparatory activities were conducted this year for the graduating students, including refresher lectures on various technical subjects. In addition, preparatory programmes to enhance communication skills, interview skills and group dynamics were also organised. Talks with the alumni working in diverse sectors were also planned to orient the students to different job requirements. Around 700 preparatory sessions were organised by the Placement Office.

Conclusion

The highly successful student placement in 2012-2013 clearly demonstrates the demand of IIT Bombay graduates among the top recruiters in various segments of the economy. A majority of our past recruiters held their faith in the abilities of our students and came to recruit in large numbers. This year several new organisations visited the institute, and we look forward to fostering long-term relationship with all these organisations.

Program-wise placement data 2013-2014:

Academic Programme	Registered	Placed*	% Placed
B.Tech.	503	365	72.56
Dual Degree (B.Tech.+M.Tech.)	244	193	79.9
M.Tech.	554	387	69.85
5-yr M.Sc.	12	6	50.00
2-yr M.Sc.	133	61	45.86
M.Des.	-	14	-
Ph.D.	-	21	-

(* All registered students do not necessarily participate actively in campus placements. Some eligible students may have alternate plans like higher

education etc. but still register for campus placements.)

Placement detail by type of organisation:

Sr. No.	Sector	Number of Organisations	Number of Offers Received
1	Analytics	32	119
2	Consulting	28	89
3	Education	14	55
4	Engineering and Technology	76	324
5	Finance	17	71
6	FMCG	8	25
7	Public Sector/Government	4	27
8	Research & Development	18	42
9	Services	11	53
10	Software, IT	65	262
Total		273	1067

Placement detail by range of salary offered:

Range of Gross Salary (in Lakh Rupees per annum)	Number of Organisations	Number of Offers Received
Above 11	65	344
Between 9.5 to 11	43	161
Between 8 to 9.5	33	107
Between 6.5 to 8	38	162
Between 5 to 6.5	64	200
Less than 5	30	93
Total	273	10

Internship Report 2013-14

The academic year 2013- 2014, was the second year in which Placement Office handled student internships. The year saw 921 internship offers from around 650 organisations. There were 88 Pre-Placement Offers (PPO) made to students for final placement based on their internships last year, of which 60 were accepted by students.

The internship season started in July 2013 and continued till mid of May. The students in the 3rd and 2nd years of Bachelor of Technology (B.Tech.), 5 - year Master of Science (M.Sc.) and Dual Degree (D.D.) programmes in various departments participated in the internship process.

**Department-wise Internship Data
(2012-2013 data in brackets):**

Department	Number of Internships
Aerospace	66(53)
Chemical	143(151)
Civil	90(102)
Computer Science	154(169)
Engineering Physics	22(15)
Electrical	138(140)
Energy Science	30(40)
Mechanical	168(137)
Metallurgy	77(90)
Chemistry	24(12)

Summer vs. Winter Internships:

Total Number of Internships	Winter Internships	Summer Internships
921	684	237

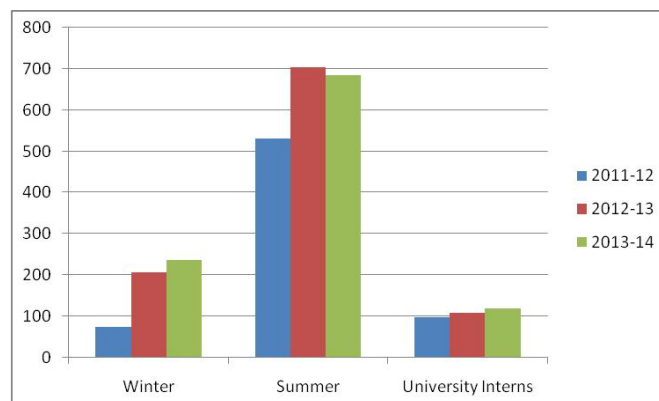
Companies vs. Universities

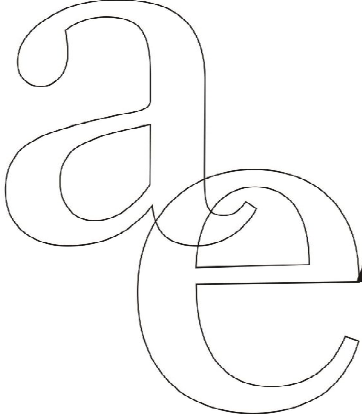
Total Number of Internships	Company Internships	University Internships
921	802	119

Country-wise offers from Universities:

Country	No. of Universities	No. of Interns
Germany	9	18
USA	12	23
Canada	6	11
UAE	2	11
Hong Kong	2	9
Malaysia	1	4
Australia	1	3
Austria	1	3
France	1	1
Singapore	1	4
UK	2	6
Switzerland	2	3
Israel	1	4
Italy	2	3
Taiwan	2	2
Japan	1	2
Ireland	1	1
India	4	11
Total	51	119

**Comparison of Internship Offers
2013-14 vs. 2012-13 vs. 2011-12**





Aerospace Engineering

Introduction

Established in 1966-67 as “Department of Aeronautical Engineering”, the department was renamed as “Department of Aerospace Engineering” in 1992. The academic programs of the Department focus mainly on science and engineering/ technology behind flight vehicles and their sub-systems. The courses cover fundamentals of fluid dynamics, propulsion, structural mechanics, vehicle dynamics, control and guidance etc., as well as applications of these fundamentals to the analysis of aerospace vehicles and other jobs.

The Department runs strong undergraduate and graduate programs in Aerospace Engineering and carries out basic and applied research as well as continuing education activities in various sub-disciplines of Aerospace Engineering such as Aerodynamics, Propulsion, Structures, Dynamics and Control, Design and Systems Engineering. The academic programs include the four year B. Tech degree program, the five year Dual Degree program, the two year M. Tech program and the Ph.D. program.

The Department has also redesigned the Minor in Aerospace Engineering for UG students of other departments which is a basket of five selected courses dealing with basics of flight mechanics, performance and design. Three new PG electives in the area of dynamics and control, specifically related to spacecraft navigation, guidance and control were introduced. Two landmark projects initiated by the students of the Department are: “Mars Rover Project” and “Autonomous Underwater Vehicle Project”. These projects involve complete design, development and launch of the vehicles, under the design-build-fly initiative nurtured during the past few years by the department.

The vision & mission

The Department seeks to establish traditions which will foster creativity and growth of excellence. It has the following broad objectives:

- To provide the best possible educational facilities for training bright students for the careers in Aerospace Engineering.
- To provide a creative atmosphere in which higher studies and academic research of high quality thrive both amongst the students and the faculty.
- To organize a short intensive courses, conferences and seminars on current technological developments which will be of benefit to the surrounding community.
- To undertake sponsored research of practical relevance and provide developmental consultancy which will promote contact with and be of service to industries and to government aerospace programs.
- To provide leadership in curriculum design and development.

The Department faculty strength includes 17 full-time faculty members, one Adjunct Professor, one Professor on contract and two Emeritus Fellows. The department has 355 students out of which about 117 are graduate and 238 undergraduates.

New Infrastructure

Recently, a Laser-Doppler-vibro-meter set-up was added to Aircraft Structures laboratory and video conferencing set-up was added to office complex. A laboratory is being developed for experimental study of Cardio-vascular Flow Dynamics.

The Department is currently in discussion with the Defense Research and Development Organization (DRDO) for establishment of Centre for Propulsion Technology.

Academic Programme

Student Intake		
B.Tech.	:	62
Dual Degree -		
M.Tech.	:	62
Ph. D.	:	15
Degrees Awarded		
B.Tech.	:	17
M. Tech.	:	30
Dual Degree	:	26
Ph. D.	:	7
PGDIIT	:	1

Student activities

Mars Rover Project: The Mars Society India is an initiative of students of Aerospace Department, of IIT Bombay to further the space and planetary exploration in India. The team currently consists of various departments of the institute like Aerospace, Mechanical, Electrical and Bio-science Engineering. The team has been working on the developing a prototype Mars Rover over the past one year and has succeeded in the endeavour. The prototype developed participated in the “Arkaroola Annual Robotics Challenge- 2014, A Space bound Expedition” held from July 4-20 at Mars Analogue Research Station, Arkaroola Australia. The team hopes that the prototype provide a solid foundation for developing actual space grade technologies in the near future.

The project is funded by Boeing and the Aerospace Engineering Dept. provided the infrastructural support.

MSI Mars Rover: The MSI Mars Rover is a six wheel mobility system, on which various subsystems are integrated. The mobility system consists of rocker-bogie suspension system and four wheel steering system. The steering system allows for sharper and easier turns on tough terrains and also enables on the spot rotation for the rover. The various subsystems hosted by the rover includes – robotic arm (coupled with a digger and a gripper mechanism), communication system, feedback systems, bio-science payload, soil collection system and the supporting control and circuit systems.

List of Sponsored Projects initiated in 2013-14

Sr. No.	Project Title	Sponsored by	Status
1	RCS Analysis of Flying Wing Configuration on Parallel Platform	Aeronautical Development Agency (ADA)	Ongoing
2	Flow Characteristics in the IUSAV Intake Duct with Cowl-lip and Fore-body	ADA	Closed

Autonomous Underwater Vehicle Project: AUV-IITB is a group of highly enthusiastic and hard working technocrats from various branches of engineering like Mechanical, Electrical, Software, Aerospace, Material Science and Civil.

The team works towards participating at AUVSI Robosub Competition, which is held annually in July at San Diego, California. The competition demands designing and manufacturing of an unmanned autonomous underwater vehicle that can perform predefined tasks.

The team constantly researches ways to optimize and minimize energy & cost incurred while creating the vehicle. The objective is to learn about AUVs so that they can be developed in-house for various purposes.

Zephyr: Twelfth edition of Aerospace Engineering Annual Aviation Festival Zephyr was organized on February 9, 2014. To encourage students towards core carrier, it organized panel discussion by experts in aviation industry. The day was full of workshops, competitions and exhibitions.

R & D Activities

The department has maintained and nurtured the close association with the Aeronautical, Space, Defense and the other industries of the country through invited lectures, faculty participation in continuing education. In addition to providing high technology support and inputs to the National projects like LCA, IGMDP and GSLV through sponsored and consultation projects, the research had spin-off benefits to other fields such as bio-medical engineering.

Sponsored Research Projects:

The incomes received from sponsored research and consultancy projects:

Sponsored Research Projects :			40
New	:		5
Ongoing	:		23
Completed	:		12

Sr. No.	Project Title	Sponsored by	Status
3	Experimental investigations on lifted spray flames	Aeronautics Research and Development Board (ARDB)	Ongoing
4	Workshop on autonomous MAV	Defence Research & Development Organisation (DRDO)	Closed
5	Intelligent system for health monitoring of aircraft structure	Department of Science & Technology (DST)	Ongoing
6	Doppler Velocity Log (DVL) based Autonomous Underwater Vehicle (AUV), Localization and Navigation for Detecting Underwater Acoustic Sources	Naval Research Board	Ongoing
Sponsored Projects initiated in 2012-13			
7	Analysis and modeling of turbulence amplification across a shock wave	ARDB	Ongoing
8	Design Fabrication and Flight Testing of an autonomous airship	ARDB	Ongoing
9	Support for Five Internees @Rs 5000/- per months for two months	ARDB	Closed
10	Multi-disciplinary Design Optimization (MDO) for MAV	ARDB	Ongoing
11	High Altitude Airship Research Initiative	ARDB	Technically Closed
12	Investigation of secondary flows and its control in Axial compressor cascade with and without Tip-Gap	ARDB	Ongoing
13	Development of Coaxial Thermocouples for Shock Tunnel Applications	ARDB	Ongoing
14	Shock Instability and Carbuncle Phenomenon in Numerical Computations: Analysis and Cure	ARDB	Ongoing
15	Modeling of Periodic Structure with Application to Dynamic Analysis of Carbon Nano-tubes.	DST	Ongoing
16	Development of a six-component accelerometer balance for use in shock tunnels	Indian Space Research Organisation (ISRO)	Ongoing
17	Ignition delay studies of fuels using a shock tube	ISRO	Ongoing
Sponsored Projects initiated in 2011-12			
18	Thermo-Mechanical Failure in CT Tubes under Severe Accident Conditions	Atomic Energy Regulatory Board (AERB)	Ongoing

Sr. No.	Project Title	Sponsored by	Status
19	Unsteady Incompressible Turbulent Flow Computations on Static/ Moving Grids	ARDB	Technically Closed
20	Parametric study of contra-rotating axial flow fans under different inflow conditions and design modifications based on the parametric study	ARDB	Ongoing
21	Development of non-linear Lamb wave based techniques for prediction of damage modes and their propagation in composite laminates	ARDB	Ongoing
22	Engineered Surfaces on Pyrolytic Carbon for Bio-Medical Applications	Council of Scientific and Industrial (CSIR)	Ongoing
23	Development of principles of eco-friendly technologies of gas combustion on the base of micro channels technologies	DST	Closed
24	Hardware in loop simulation (HILS) for collaborative missions	DST	Ongoing
25	Manufacturing of MAVs	ARDB	Ongoing
26	R&D in collaborative missions-Phase I	ARDB	Technically Closed
27	Compact Linear Fresnel Reflector (CLFR) for Solar Thermal Power and Process Heat	Indo-German Sci. & Tech. Centre	Ongoing
28	FOSSEE: Free/Open Source Software in Science and Engineering Education (Assimilation of Open source Software in Science and Engineering)	Ministry of Human Resource Development (MHRD)	Ongoing
Sponsored Projects initiated in 2010-11			
29	Centre for Aerospace Systems Design and Engineering (CASDE) - Phase-III.	ARDB	Technically Closed
Sponsored Projects initiated in 2009-10			
30	DST – First to the Aerospace Engineering Department	DST	Ongoing
31	IIT(B)STC / Study of Shock Turbulent boundary layer interaction in high speed air intake - Phase II	ISRO	Technically Closed
32	Assimilation of open source software in science and engineering education	MHRD	Ongoing
33	Virtual laboratory experiments	MHRD	Ongoing
34	De-sensitized Tip Design for Axial Flow Compressors.	Pratt & Whitney- Canada	Ongoing

Sponsored Projects initiated in 2008-09

Sr. No.	Project Title	Sponsored by	Status
35	Development of Baseline Free Damage Detection Technique for Laminated Composite Structures.	ARDB	Closed
Sponsored Projects initiated in 2007-08			
36	Capability development to meet MAV08 mission requirements.	DRDO	Closed
37	Siemens Power Generation Inc./ Annular diffuser aerodynamics for turbine delivery system.	International Collaboration	Ongoing
38	Garuda Grid Computing Workshop at IIT Bombay on 28-30.06.2007	Private Org.	Ongoing
Sponsored Projects initiated in 1991-92			
39	Multi block grid generation in three dimensional domains	ARDB	Ongoing

Consultancy Projects

Number of Jobs	: 16
Number of Faculty Involved	: 5

Patents

Sr. No.	Title of the patent	Inventor	National/ International	Status: filed/granted	Date of patent filed/granted
1.	Fluid injection device	Takeshi Seto, Kazuyoshi Takyama, Atsuhiko Nakagawa and Menezes Viren Ivor	US	filed	April 23, 2013
2	Fluid injection device (ver. 2)	Takeshi Seto, Kazuyoshi Takyama, Atsuhiko Nakagawa and Menezes Viren Ivor	US	Filed	January 7, 2014
3	Strength Enhancing Insert Assemblies	Naik, N.K. and Nageswara Rao Ganji	US	Granted	February 4, 2014

Conferences/Symposia/Workshops/ Seminars (Chaired/Organised)

Bodi, K.

Organizing Committee Member, Third National Symposium on Shock Waves, February 21-22, 2014.

Menezes, V.

Organised the Third National Symposium on Shock Waves, February 21-22, 2014, IIT Bombay.

Ramchandran, P.

SciPy India 2013, Conference on Python for education and scientific computing. Conducted at IIT Bombay, during December 13-14, 2013.

Sinha, K.

Member of Organizing Committee “National Shock Wave Symposium,” IIT Bombay, Mumbai.

Joshi, A.

9th SIG-MDO, December 2013, Alleppey.

Following CEP and short-term QIP courses were conducted by the department faculties:

‘Systems Engineering Principles’ (For HMA Bangalore), August 2013.

‘Systems Engineering Principles’ (For DIAT Pune), October and November 2013.

‘Dynamics and Control in State – space’, June 2013.

‘Systems Engineering Principles’ (For HMA Bangalore), July and October 2013.

‘Analysis and Design of Classical Control Systems’, November 2013.

Two day CEP course on *Design and Development of UAVs and LTA Systems*, February 15-16, 2014.

‘Systems Engineering Principles and Practices’, April 2013.

‘Dynamics and Control in State – space’, June 2013.

‘Analysis and Design of Classical Control Systems’, November 2013.

Short-term course: “Integrated Navigation of Flight Vehicles” (with Matlab/Simulink codes and illustrations) July 8-12, 2013.

Each summer, some 30-35 teachers from engineering colleges and practicing engineers/scientists from industries, private companies such as Honeywell, Tata

Power attend the course. So far, since the summer 2010, 92 teachers and 63 professional engineers have been trained in navigation of flight vehicles, satellite orbits, and spacecraft attitude dynamics and control.

Visitors to the Department

Prof. Sharath Girimaji, PhD, Aerospace Engineering Department, Texas A&M University, USA. He delivered a talk on “Future of Turbulence Modeling: Vision 2030” on June 17, 2013.

Prof. Krishna Dev Kumar, Reyson university, Toronto, Canada delivered the lecture on “Space Dynamics and Control: Evaluation and current challenges” on July 5, 2013.

Dr. Harshad Khadilkar, M.I.T, visited the department and delivered the talk on “Demonstration of reduced airport congestion through pushback rate control”, on August 7, 2013.

Conferences/Symposia/Workshops/ Seminars (Participated/ Papers Presented)

Joshi, A.

“Heterogeneous UAV Swarm System for Target Search in Adversarial Environment”, Paper ID: IS 13, ICCS 2013, The Residency Tower, December 13-15, 2013, Thiruvananthapuram, India.

Pant, R. S.

Presented a keynote paper “Surrogate Based Analysis and Design Optimization of Aerostat Envelopes”, at a *Symposium on Applied Aerodynamics and Design of Aerospace Vehicles (SAROD-2013)*, November 23, 2013.

Presented a keynote paper “Airships for regional air transportation in remote areas: A case study for Uttarakhand”, at an *International Workshop on Exploring Science of Transportation Systems*, at National Institute of Technology, Hamirpur, held during April 11-12, 2013.

Kumar Sudershan

Participated in the 40th National conference on *fluid Mechanics and Fluid Power*, National Institute of Technology Hamirpur, India, December 12-14, 2013.

Vinod Kumar, Hablani, H. B., and Pandiyan, R.

Presented a paper titled “Relative Navigation of Satellites in Formation using Monocular Model-Based Vision,” at *Advances in Control and Optimization of Dynamic Systems (ACODS) Conference*, IIT Kanpur, March 2014.

Sharma, R. and Hablani, H.B.

Presented a paper “High-Accuracy Integrated GPS-INS Aircraft Navigation for Landing using Pseudolites and Double-Difference Carrier Phase measurements,” at *Advances in Control and Optimization of Dynamic Systems (ACODS) Conference*, IIT Kanpur, March 2014.

Kadam, S. and Hablani, H.B.

Presented a paper “Trajectory Optimization and Control of Reentry Vehicles,” at *Advances in Control and Optimization of Dynamic Systems (ACODS) Conference*, IIT Kanpur, March 2014.

Saini, V. and Hablani, H.B.

Presented a paper “Air-to-Air Tracking Performance with Inertial Navigation and Gimballed Radar: A Kinematic Scenario,” at *Advances in Control and Optimization of Dynamic Systems (ACODS) Conference*, IIT Kanpur, March 2014.

Chatterjee, S. and Hablani, H.B.

Presented a paper “Satellite and Payload Motions: Effects of Multibody Dynamics on Image Stability,” at *Advances in Control and Optimization of Dynamic Systems (ACODS) Conference*, IIT Kanpur, March 2014.

Awale, V. and Hablani, H.B.

Presented a paper “Navigation of Autonomous Underwater Vehicle with Multiple Sensor Aided Inertial System,” at *Advances in Control and Optimization of Dynamic Systems (ACODS) Conference*, IIT Kanpur, March 2014.

Vinod Kumar, Hablani, H. B. and Pandiyan R.

Presented a paper “Relative Kinematic Navigation of Geostationary Satellites Formation using IRNSS Differential Carrier Phase Measurements”, at *Astronautical Society of India-Satellite Based Navigation conference*, paper no. 84 OP NAAP II, April 17-18, 2013.

Panchal, A., Gopalakrishnan, S., Bodi, K.

Presented a poster on “Development of Discontinuous Galerkin Formulation for Magneto-hydro-dynamic Shocks”, PPS-02, Third National Shock Wave Symposium, held on February 21-22, 2014, Mumbai, India.

Mandal, J.C.

Participated in an *International Conference on Mathematical Modeling & Computer Simulation with Applications (ICMMCSA)* during December 31, 2013 – January 2, 2014 under the auspices of Indian Society for Mathematical Modeling and computer Simulation (ISMMACS), IIT Kanpur (IITK), U.P., India.

Pant, R. S.

Presented a keynote paper “Design and Development of Lighter-Than-Air Systems”, *International Conference on Innovative Design, Analysis and Development Practices in Aerospace and Automotive Engineering (IDAD-2014)*, during February 22-24, 2014, Avadi.

Presented a keynote paper “Safety-by-Design in Lighter-Than-Air systems”, *International Conference on Safety by Design (ISBD-2013)*, during August 16-17, 2013, Pallakad.

Ramachandran, P.

Presented a paper, “Building applications for scientists using the Enthought Tool Suite”, Python conference in Science, May 16-18, 2013, Puerto Madryn.

Delivered a Keynote address on “Crushing numbers with Python: some lessons learned”, at Python conference in Science, May 17, 2013, Puerto Madryn, Argentina.

Kumar Sudarshan

Participated in 10th *International conference on flow dynamics*, Tohoku University, November 25-27, 2013, Sendai, Japan.

Participated in 24th *International Colloquium on Dynamics of Reactive and Explosive Systems*, July 28-August 3, 2013, Taipei, Taiwan.

Vinod Kumar, Hablani, H. B. and Pandiyan R.

Presented a paper titled “Smoothed Real-Time Navigation of Geostationary Satellites in Formation using Regional Navigation Satellites Differential Carrier Phase Measurements”, *AIAA Guidance, Navigation and Control Conference, Boston*, August 19-22, 2013.

Irimpan, K. J. and Menezes V.

Presented a paper “Development and Validation of Fast Response Thermocouples for Shock Tunnel Applications,” *Tenth International Conference on Flow Dynamics (ICFD – 2013)*, held during November 25-27, 2013, at Sendai, Japan.

Varpe, M. and Pradeep, A.M.

Presented a paper titled “Numerical Investigation of the Effect of Moving Endwall and Tip Clearance on the Losses in a Low Speed Axial Compressor Cascade”, *GTIndia-3596, Proceedings of the ASME GT India Conference*, 2013, NAL Bangalore.

Alone, D., Satish Kumar, Reddy, S.J.R., Iyengar, V., Ramamurthy, and Pradeep, A.M.

“Experimental Studies on Stall Behaviour in a Single Stage Transonic Axial Flow Compressor, *GT India-3620, Proceedings of the ASME GT India Conference*, 2013, NAL Bangalore.

Mistry, C. and Pradeep, A.M.

Presented a paper title “Study of the Velocity Flowfield under Distorted Inflow Conditions for a High Aspect Ratio Low Speed Contra Rotating Fan”, GT India 2013-3594, at *Proceedings of the ASME GT India Conference*, 2013, NAL Bangalore.

“Investigations on the Effect of Inflow Distortion on the Performance of a High Aspect Ratio, Low Speed Contra-rotating Fan Stage”, GT2013-94311, *Proceedings of 2013 ASME Turbo Expo*, 2013, San Antonio, Texas, USA.

Halbe, C., Chiranthan, R.N., Pradeep, A.M. and Roy, B.

“Effect of Rotor Tip Shape on the Performance of a High Hub-to-Tip Ratio Low Speed Axial Compressor”, Paper No. ISABE 2013-1102, *Proceedings of the 21st International Symposium on Airbreathing Engines*, 2013, Busan, Korea.

Puri K., Ramachandran, P. and Godbole P.

Presented a paper, “Dynamic Load Balancing for Particle Methods”, in proceedings of the 3rd *International Conference on Particle-Based Methods (Particles 2013)*, September 18-20, 2013, Stuttgart, Germany.

Puri, K., Ramachandran, P., Pandey, P., Kaushik, C. and Godbole, P.

presented a paper, “PySPH: A Python framework for SPH”, in *proceedings of the 8th International SPHERIC Workshop and Conference*, 4-6 June 2013, Trondheim, Norway.

Shweta Dobhal, Pradeep, A.M. and Roy, B.

“Effect of Geometry Changes in an Aggressive Turbine Exhaust Delivery System”, GT2013-94144, *Proceedings of 2013 ASME Turbo Expo*, 2013, San Antonio, Texas, USA.

Invited Lectures

National**Joshi Ashok**

“Quality and Reliability,” HAL Management Academy, 18 November 2013.

Hablani, H.B.

“Satellite-Based Navigation of Low-Earth-Orbit Satellites: A Review”, *Advances in Control and Optimization of Dynamical Systems (ACODS) Conference*, Indian Institute of Technology Kanpur, March 2014.

“Mathematic in Guidance and Navigation in Aerospace Engineering,” *Educational Interfaces between Mathematics and Industry Conference*, Institute of Chemical Technology, Mumbai, January 2014.

“Trajectory Optimization of Reusable Launch Vehicle, Guidance, Navigation and Control of Flight Vehicles,” *National Conference on Pure and Applied Mathematics – 2013*, College of Engineering, Pune, December 2013.

“High-Accuracy Integrated GPS-INS Aircraft Navigation for Landing using Pseudolites and Double-Difference Carrier Phase measurements,” *DISHA-2013, Airports Authority Officers Association Seminar, Delhi, India*, November 25-26, 2013.

Pant, R. S.

“Lecture series on Design & Development of LTA Systems”, Engineering Staff College of India, Hyderabad, during March 28-29, 2014.

“Lecture-cum-Demonstration on Design and Development of LTA systems”, Jawaharlal Nehru Engineering College, Aurangabad, during March 22-23, 2014.

“Lecture-cum-demonstration on Principle of Flights through Chuck Gliders”, mechanical Engineering Department, IIT Patna, February 29, 2014.

“Design Fabrication and Flight Testing of Lighter-Than-Air systems”, Department of Aeronautical Engineering, St. Peter’s College of Engineering and Technology, Chennai, February 22, 2014.

“Design and development of outdoor remotely controlled airships”, Department of Aerospace Engineering, Amity University, Noida, February 14, 2014.

“Technical Textiles for Inflatable Structures”, CIPET Center, Lucknow, February 3, 2014.

“Lecture-cum-demonstration on Lighter-Than-Air Systems” as part of 6th Science Expo held at Regional Science Center, Lucknow, January 31- February 1, 2014.

“Payload Recovery Device for Tethered Aerostat Systems”, Department of Aeronautical and Automobile Engineering, MIT Manipal, January 24, 2014.

“Emerging areas of Research and Development in Air Traffic Management”, Civil Aviation Training College, Allahabad, January 13, 2014.

“Design and Development of Lighter-Than-Air Systems”, IIT Patna, December 9, 2013.

“Design and Development of Tethered Aerostat Systems”, Department of Mechanical Engineering, Babasaheb Ambedkar Technological University, Lonere, Raigad, Maharashtra, October 19, 2013.

“Design and development of outdoor remotely controlled airships”, Rajarambapu Institute of Technology, Islampur, Sangli, October 14, 2013.

“R&D activities of LTA Systems Lab”, Indian Institute of Aerospace Engineering and Information Technology, Pune, October 5, 2013.

Sinha, K.

“Computational simulation of shock-boundary layer interactions in hypersonic intakes,” *Symposium on Applied Aerodynamics and Design of Aerospace Vehicles (SAROD)* Hyderabad, November 21, 2013.

International

Pant, R. S.

“Principles of Flight through Chuck Gliders”, Lecture-cum-Demonstration, Lenape Middle School, Doyelstown, PA, USA, April 1, 2013.

Significant Awards and Distinctions

Mitra M

“SERB Women Excellence Award” DST, July 2013.

Pant, R. S.

Distinguished Visiting Researcher at Department of Aerospace and Mechanical Engineering, Instituto Tecnológico de Aeronáutica – ITA, Sao Jose dos Campos, Brazil, from June 25 - July 31, 2013.

Sinha, K.

Membership of the National Academy of Sciences India, Allahabad May 2013.

Honorary Work

Chatterjee, A.

Review papers for: Aircraft Engineering and Aerospace Technology, December 2013.

Hablani, H.B.

Reviewer for: DRDO Defense Science Journal; Elsevier Journal Publications: Measurements; Elsevier Journal Publications: Acta Astronautica.

Joshi, A.

Reviewed papers for Journal of Aerospace Sciences and Technologies.

Reviewed papers AIAA Aviation 2014 Symposium.

Mandal, J.C.

Member of Aerodynamics panel of Aeronautical Research and Development Board.

Expert Member of Homi Bhabha National Institute (HBNI), Bhabha Atomic Research Centre, Mumbai.

Member of IRCC Award Committee, IIT Bombay.

Member of the International Scientific Committee for the 3rd African Conference on Computational Mechanics, Livingston, Zambia, 30 July - 2 August 2013.

Expert member of NBA, AICTE.

Expert member of Nuclear Reactor & Fuel Cycle (NRFC), Process Engg. and CFD subcommittee, Board of Research in Nuclear Sciences (BRNS).

Reviewed manuscripts for Computers and Fluids, International Journal for Numerical Methods in Fluids, International Journal of Computational Fluid Dynamics.

Mitra, M.

Reviewed papers for Wave Motion, Structural Control and Health Monitoring, Sadhana, Smart Materials and Structures, Journal of Sound and Vibration.

Pant, R. S.

Member of Lighter-Than-Air Technical Committee of AIAA, Chairman Elect for 2014-2016.

Reviewed papers for The Aeronautical Journal, AIAA Journal, AIAA Journal of Aircraft, Journal of Aerospace Engineering, International Journal of Aerospace Engineering.

Member of Executive Committee of Mumbai Branch of Aeronautical Society of India, and Honorary Chairman for 2013-2014.

Member of Standing Committee for syllabus formation and review for P. G. in Aerospace Engineering, MVJ College of Engineering, Bengaluru.

Pre-Peer review of Mechanical Engineering Department, IIT Patna and review of M.Tech. Syllabus.

Member of MHRD Selection Committee of for Commonwealth Scholarship and Fellowship Plan 2014 in the field of Aerospace Engineering/Aeronautics.

Ramachandran P.

Reviewed papers submitted to SciPy India Conference 2013.

Sinha, K.

Reviewer: Computers and Fluids, March 2014.

Faculty Members and their Specializations

1. Pradeep A.M.

Design and performance enhancement strategies in turbomachinery, Active and passive flow control, Flow characteristics of internal flows and turbomachinery

2. Hemendra Arya

Mini/Micro Aerial Vehicle system Design, Autonomous Aerial Vehicles, Hardware-In-Loop-simulation, Systems Engineering, Co-operative missions

3. Kowsik V R Bodi

Propulsion, High Enthalpy Flows, Heat Transfer, Plasma physics, Turbulence, transport and structure formation

4. Avijit Chatterjee.

Computational Fluid Dynamics, Aerodynamics, Computational Electromagnetics

5. Guruprasad P. J

Mechanics of Materials

6. Hari Hablani

Guidance, Navigation and Control of Flight Vehicles

7. Ashok Joshi (Head)

Dynamics and Control of Flexible Flight Vehicles

8. Subhash Chandra Lakkad

Composite Materials, Structural Design, Biomechanics

9. Shripad Mahulikar

Aerothermodynamics, Heat Transfer in Hypersonics, Jet Propulsion, Micro-channel Cooling, Stealth Technology

10. Jadav Chandra Mandal

Computational Fluid Dynamics

11. Viren Menezes

Hypersonics, Shock waves.

12. Mira Mitra

Structural Health Monitoring, Wave Propagation, Composite Structures, Wavelets, Computational Mechanics

13. Prasanna Mujumdar

Structural Dynamics & Stability, Aero-elasticity, Aero-servo-elasticity, Multi-disciplinary Design Optimization, Smart Structures

14. Niranjanaik

Polymer Matrix Composites, Textile Composites,

15. Rajkumar Pant

Lighter-Than-Air systems, Aircraft Design, Air Transportation, Optimization, Air Traffic Management

16. Prabhu Ramchandran

Vortex methods, Particle methods, Scientific computing, Computational fluid dynamics

17. Bhaskar Roy

Aircraft Propulsion, Axial Flow Compressor, Gas Turbine Aerodynamics

18. Shailendra Sharma

Experimental Techniques in Fluid Mechanics & Aerodynamics, Control of Coherent Structures in Free Shear Flow, Turbulent Mixing of coaxial ducted jets, Vortex Flow, Pulsatile Flow

19. Gopal Shevare

Grid Generation, Computational Fluid Dynamics

20. Rameshchandra Shimpi

Theory of Plates, Finite Element Method, Optimization Techniques (Genetic Algorithms, Simulated Annealing, Particle Swarm Optimization), Material Testing, Experimental Stress Analysis.

21. Krishnendu Sinha

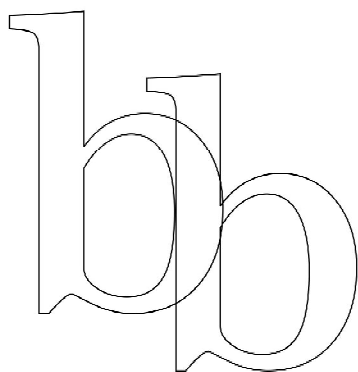
Computational fluid dynamics, High-speed flow analysis, Turbulence modeling, High-performance computing.

22. Sudarshan Kumar

Combustion and Propulsion, Flameless and mild combustion, Micro combustion, Pattern formation of flames and propulsion

23. Krishnarao Sudhakar

Systems Design, Complex Systems, Systems Engineering



Biosciences & Bioengineering

Introduction

The Department of Biosciences and Bioengineering comprises of two broad areas representing Biotechnology and Biomedical Engineering. The Department aims to create an ambience for the smooth pursuit of scholarly activity in research and education, and endeavors to produce the leaders of tomorrow in this field. With the formation of the Department of Biosciences and Bioengineering, there has been a great impetus to research in Biosciences at IIT Bombay. The Department has 25 Core Faculty, two Adjunct Faculty, 21 Associate Faculty, two Distinguished Guest Professor and one Alumni Visiting Professor.

Infrastructural development

Facilities procured by the Department include: Real Time PCR; Refrigerated centrifuge; Low pressure protein purification system; Real time PCR; Bench Top Flow cytometer System; UV flood exposure source; Multipurpose Refrigerated Table top Centrifuge; Inverted Research Microscope with Advanced Fluorescence Imaging System; Research grade inverted fluorescence microscope; Research grade inverted fluorescence microscope; Spectrofluorometer; GPU Based HPC system for Biomolecular Simulations; Deep Freezer (-80 Deg); High Speed Refrigerated Table Top Centrifuge; and High Performance Computing (HPC) Clusters and Accessories

Products Commercialized

uChek : Dr. Srivastava' lab in collaboration with Biosense Technologies Pvt Ltd have commercialized, uChek (<http://uchek.in>) - a low cost smartphone based urine dipstick reader which was designed, tested and deployed. uChek can interpret upto 10 analytes in urine including glucose, bilirubin, ketones, proteins, urobilinogen, pH, SG, occult blood, leukocytes and nitrites. The accuracy of uChek was found to be comparable with commercially available semi-automated urinalysis instruments in laboratories with 100% of readings within +/- 1 color block. uChek was launched

on April 28, 2013 in India and the United States. Already, there are around 1000 uChek systems operational across the world. They are in the process of developing custom strips for quantification of creatinine and albumin in urine and a reader for reading the values. This will also be transferred to the industry for commercialization for a DST project.

SuChek : Dr Srivastava's lab in collaboration with Biosense Technologies Pvt Ltd have also manufactured and commercialized "SuChek". SuChek is an indigenous, accurate, low-cost glucometer supported by the Indian Council of Medical Research. SuChek reagent strips are as accurate as conventional glucometers, at a fraction of the price. Along with the glucometer, the companion SuChek mobile application helps you save, trend and analyze blood glucose levels at an individual level or track response to treatment at a community level. The device was released to the Indian media and public at a function in New Delhi by the then Hon' Minister of Health and Family Welfare, Shri Ghulam Nabi Azad on January 13, 2014.

Academic Programmes

The academic programs currently on offer include the DBT supported M.Sc. Biotechnology program, the M.Sc.-Ph.D. Dual degree program in Biotechnology, M.Tech. in Biomedical Engineering program, and the Ph.D. program. The M.Tech. program is unique in a way as it provides an entry point for a medical doctor (MBBS) to work together with engineering students and get an engineering (M.Tech.) degree. This program is extremely popular with doctors and draws large number of applicants.

The Institute has boosted the academic activity of the Department by funding four new scholarships and few more are being added.

Extensive interactions with various groups in Electrical Engineering, Chemical Engineering, Aerospace Engineering, Computer Science, Chemistry and Mathematics make the departmental research activities truly interdisciplinary.

Degrees Awarded		
M.Sc.	:	25
M.Tech.	:	21
Ph.D.	:	11

New courses :

Several new courses have been introduced by the department, which can be taken by students from various other departments. These include Programming for Bioinformatics, Physics and applications of microfluidics, and Theoretical and computational modeling in biology.

Another major step taken by the department is the introduction of a new Introductory Biology course for all first year UG students.

R&D Activities

Research in the department encompasses both basic biology and applied bioengineering topics. As part of

the Wadhwani Research Center of Biosciences and Bioengineering (WRCBB), cancer and cell motility has been identified as a thematic focus area of research. Several of our faculties have participated in organizing international conferences in India and abroad.

Main thrust areas of R&D activity: Biotechnology, Biochemistry and Molecular enzymology, Bioelectricity; Bioinformatics, Biointerfaces, Biomaterials, Biomechanics, Biomedical Optics (Tissue Spectroscopy and Imaging), Bionanotechnology, Biosensors, Biostatistics, Computational Biology, Drug delivery, Glycobiology, Instrumentation, Medical Signal Processing, Natural Products, Nerve-muscle Transmission, Non-invasive diagnostic tools, Prokaryotic biology, Rehabilitation, Synthesis of Bioactive molecules, Synthetic Polymer Chemistry, Tissue engineering, and Yeast molecular biology

Sponsored Research Projects:

New	:	17
Ongoing	:	69
Completed	:	07
Faculty Involved	:	27

List of sponsored research projects is as given:

Sr. No.	Title of Project	Sponsoring Agency	Status of Project
1	“Plasmodium falciparum glutathione peroxidase: Sub-cellular localization in multiple compartments”	Board of Research in Nuclear Science (BRNS)	New
2	“Proteomic analysis of falciparum malaria: A search for diagnostic and prognostic markers”	BRNS	New
3	“Kinetics of nucleosome positioning”	Council of Scientific & Industrial Research (CSIR)	New
4	“Understanding the catalytic mechanism of histo-aspartic protease (HAP) from Plasmodium falciparum”	CSIR	New
5	“Spatio-temporal regulation of physical and biochemical cues for creation of controlled 3D vasculature”	CSIR	New
6	“Computational Study of Cargo Switching at Cytoskeletal Filament Intersections During Molecular Motor based Intra-Cellular Transport”	Department of Biotechnology (DBT)	New
7	“A paper-based microfluidic technology platform for DNA analysis”	DBT	New
8	“Systems Analysis of Glioblastoma, Medulloblastoma and Neuroblastoma Pathways and Protein Interaction Networks”	DBT	New

Sr. No.	Title of Project	Sponsoring Agency	Status of Project
9	“Developing fungal strains for enzyme production through mutagenesis, protoplast fusion and over-expression using A. niger citrate synthase promoter”	DBT	New
10	“P. falciparum TGS1: Functional analysis in splicing and telomere biology, role of insertions and C-terminal domain”	DBT	New
11	“Remote Sensing Network for Water Quality Management”	DBT	New
12	“Mechanism of DNA unwinding in large eukaryotic DNA viruses”	DBT	New
13	“Development of novel Targeted Nanotherapeutics against HIV-1”	DBT	New
14	“Gold nanoparticle conjugation of sea fish peptides/lipids and its antiarthritic activity in synoviocyte culture and in vivo experimental animal model”	DBT	New
15	“A novel point of care detection device using nanotechnology for diagnosing periprosthetic infection following orthopedic surgery”	DBT	New
16	“Nano Fabrication Prototyping facility for SMEs and Start-ups in the area of MEMS & NEMS”	Department of Information Technology (DIT)	New
17	“Indian Nanoelectronics Users Programme (INUP) Phase – II”	DIT	New
18	“Development of Polymer Composite Micro-Cantilever Based Explosive Detection Systems”	Department of Science and Technology (DST)	New
19	“Studies on the component of mimivirus DNA replication machinery”	DST	New
20	“Evolution of regulation of carbon and Nitrogen metabolism: A comparative study between S.cerevisiae and K. Lactis”	DST	New
21	“Portable multi-analyte sensor for detection of renal disease”	DST	New
22	“TB NANODOTS (Transdermal Controlled Release of TB drugs)”	Bill and Melinda Gates Foundation (GATES)	New
23	“Finding new malaria treatments using existing drugs”	Grand Challenges Canada (GCC)	New
24	“Design and validation of in-vivo non-invasive Near Infra Red and Photoacoustic spectrophotometer to estimate blood glucose”	Indian Council of Medical Research (ICMR)	New

Sr. No.	Title of Project	Sponsoring Agency	Status of Project
25	“Transcriptome Analysis of Streptococcus pneumoniae in Various Body Fluids of Patients Suffering from Invasive Pneumococcal Disease”	Infectious Disease Training and Research Centre (IDTR)	New
26	“Novel Multifunctional Ultrasound Triggered and targets Nanoparticles for Cancer Therapy.”	Samsung Electronics Ltd (SAM)	New
27	“p53 Amyloid: A possible cause of p53 loss of function - Young researcher award – 2013”	Tata Memorial Trust (TMT)	New
28	“Transdermal drug delivery using microneedles”	Aeronautical Development Agency (ADA)	Ongoing
29	“Mechanism of DNA packaging in Nucleo-cytoplasmic large DNA viruses”	BRNS	Ongoing
30	“Studies on type II Phosphatidylinositol 4-kinase beta role in T cell activation signaling mechanisms”	BRNS	Ongoing
31	“Stiffness Modulated Gellan Hydrogels for Tissue Engineering Applications”	CSIR	Ongoing
32	“Novel Microalgal isolates as cell factory for biodiesel production: Identification of multiple targets and designing of optimal process via system biology and biochemical engineering approach”	DBT	Ongoing
33	“Embedded Polymer Optical Biosensors”	DBT	Ongoing
34	“Development of antimalarial inhibitors targeting Plasmodium parasite plasmepsins”	DBT	Ongoing
35	“Prolonged stimuli responsive delivery of macromolecules for subcutaneously implanted matrices”	Department of Biotechnology – Innovative Young Biotechnologist Award (DBT-IYBA)	Ongoing
36	“Understanding protein - protein interactions of JAK-STAT pathway proteins on protein arrays”	DST	Ongoing
37	“Preferential utilisation of aromatic compounds over glucose by Pseudomonas putida CSV86: Studies on inner membrane component involved in glucose transport”	DST	Ongoing
38	“Probing the recognition dynamics of proteins involved in cell cycle regulation by NMR”	DST	Ongoing
39	“Biosensor systems based on nanosized materials for the detection of food or waterborne toxins”	DST	Ongoing
40	“Examining the role of actin cross linking protein alpha-actinin in breast cancer metastasis”	DST	Ongoing

Sr. No.	Title of Project	Sponsoring Agency	Status of Project
41	“Designing peptide inhibitors against synuclein aggregation : Therapeutic approach for Parkinson’s disease (PD)”	ICMR	Ongoing
42	“Validation of a computational model of urinary bladder electrical activity in health and during overactivity”	U K India Education and Research Initiative (UKERI)	Ongoing
43	“Probing the relationship between extracellular matrix (ECM) ligand and invadopodia formation in breast cancer”	BRNS	Ongoing
44	“Comparative genomics analyses of glycosylation pathways in completely sequenced bacterial genome”	BRNS	Ongoing
45	“Studying Mechanism of Copy Number Control of Naturally Harboring Plasmid of budding yeast, a widely used Multicopy Eukaryotic Vector”	CSIR	Ongoing
46	“The assembly dynamics of Mycobacterium smegmatis FtsZ and its role in cytokinesis”	CSIR	Ongoing
47	“Dissection of structure function correlation of an allosteric signal transducer of the gal genetic switch of saccharomyces cerevisiae using experiment and computational approach”	CSIR	Ongoing
48	“Studies on DNA and protein translocation machinery of bacteriophage ϕ 4”	CSIR	Ongoing
49	“Understanding the membrane interactions of oligomeric states of amyloidogenic proteins by solid-state NMR”	CSIR	Ongoing
50	“Effects of tau glycation and phosphorylation on stability and dynamics of microtubules and on differentiation of neuronal cells: Therapeutic implications for neuropathies”	DBT	Ongoing
51	“Mechanobiological regulation of embryonic stem cell self-renewal and differentiation”	DBT	Ongoing
52	“Computational studies on bladder biophysics with special reference to possible mechanisms in over activity”	DBT	Ongoing
53	“Assessment of thrombolytic potential and anticancer activity of fibrinolytic enzymes purified from Russell”	DBT	Ongoing
54	“Understanding the formation of neurotoxic α -synuclein oligomers associated with Parkinson’s disease”	DBT	Ongoing

Sr. No.	Title of Project	Sponsoring Agency	Status of Project
55	“Studying the heterogeneity of gliomas for the tumor antigen identification using proteomics and histology & generation of metabolic map using radiology”	DBT	Ongoing
56	“Elucidating the factors responsible for spatio-temporal regulation of association between cohesin and chromatin in executing faithful chromosome segregation during meiotic cell cycle using budding yeast as a model system”	DBT	Ongoing
57	“A dynamic insight into bio-molecular assemblies using solution and solid - state NMR”	DBT	Ongoing
58	“Mycobacterial genes that are orthologs of prokaryotic N-linked glycosylation pathway enzymes: Cloning and expression, and characterization of the protein products”	DBT	Ongoing
59	“Role of Polo-like kinases in regulating microtubule dynamics, cell cycle and cell migration”	DBT	Ongoing
60	“Understanding Genome Organization and Gene Expression In Hexachlorocyclohexane (HCH) Degrading Bacteria and the HCH Dumpsite”	DBT	Ongoing
61	“Role of FtsZ assembly dynamics in Z-ring formation and bacterial cell division”	DST	Ongoing
62	“Nanoparticulate cosmetics for nutrient delivery in pregnancy.(global innovation award scheme).”	GATES	Ongoing
63	“Clinical Proteomics RT Virtual Lab”	Ministry of Human Resource Development (MHRD)	Ongoing
64	“Localized Surface Plasmon Resonance (LSPR) Based Optoelectronic Biosensors”	Naval Materials Research Laboratory (NMRL)	Ongoing
65	“Systematic studies on Localized Surface Plasmon Resonance (LSPR) based biosensor using ATR technique and its potential for DNA/antibody detection”	NMRL	Ongoing
66	“Novel Multifunctional Ultrasound Triggered and Targeted Nanoparticles for Cancer Therapy”	SAM	Ongoing
67	“Role of microtubules dynamics in cell cycle and cell motility: Implication in cancer chemotherapy”	BRNS	Ongoing
68	“Oligomerization of a Synuclein in Parkinson’s Disease (PD)”	DBT	Ongoing
69	“Force generation by Actin and Microtubules”	DBT-IYBA	Ongoing

Sr. No.	Title of Project	Sponsoring Agency	Status of Project
70	“Development of Multifunctional Magnetic Nanoparticles for Cancer”	DIT	Ongoing
71	“Nanoparticles for delivery of anticancer drugs in resistant tumors”	Indo-US Science and Technology Forum (IUSSITF)	Ongoing
72	“Proteomics Laboratory”	MHRD	Ongoing
73	“Wadhvani Center of Excellence”	Wadhwa Foundation	Ongoing
74	“Oscar for Proteomics and Cell & Molecular Biology”	MHRD	Ongoing
75	“A lab on chip of Cardiac Diagnostics”	ADA	Ongoing
76	“Development of nanoparticles and nanovesicles for delivery of anticancer drugs through inhalation route”	Sponsored by Private Organisations (SP)	Ongoing
77	“Centre for Nano Technology (Nanoelectronics.....nanobiotechnology”)	DST	Ongoing
78	“M.Sc./M. Tech. (Biotech.) Programme”	DBT	Ongoing
79	“Studying Mechanism of Copy Number Control of Naturally Harboring Plasmid of budding yeast, a widely used Multicopy Eukaryotic Vector”	CSIR	Completed
80	“Effects of tau glycation and phosphorylation on stability and dynamics of microtubules and on differentiation of neuronal cells: Therapeutic implications for neuropathies”	DBT	Completed
81	“Nanoengineered Alginate Carrier Glucose Sensors Using Competitive Binding Resonance Energy Transfer Assays Based on Apoenzymes”	BRNS	Completed
82	“Functional promiscuity of arginase in Aspergillus niger metabolism”	BRNS	Completed
83	“Sequence Dependent Oligomerization of a-synuclein: Relevance to Parkinson’s Disease”	CSIR	Completed
84	“Drug loaded surfactant nanoparticles for therapy in acute respiratory distress syndrome”	DBT	Completed
85	“Proteomic analysis of human gliomas for biomarker discovery”	DBT	Completed
86	“Nanoengineered Calcium-Sensing Tattoo Materials for Early Diagnosis of Milk Fever”	DBT	Completed
87	“Oligomerization of a Synuclein in Parkinson’s Disease (PD)”	DBT	Completed
88	“Nanoengineered Lab-on-a-Particle System”	DBT-IYBA	Completed

Sr. No.	Title of Project	Sponsoring Agency	Status of Project
89	“Understanding and modulating the alpha-synuclein aggregation in Parkinson’s disease”	DST	Completed
90	“Study of regulatory factors involved in chromosome dynamics during meiotic cell division using budding yeast, <i>Saccharomyces cerevisiae</i> as a model system”	DST	Completed
91	“OSCAR Proteomics Lab Course-I”	MHRD	Completed
92	“Characterization of the fermentative pathway in <i>Pichia pastoris</i> and study of its role in central carbon metabolism”	BRNS	Completed
93	“Controlled Drug Delivery using Layer-by-Layer Self-Assembly with Antibody Conjugated Magnetic PLGA Nanoparticles using Dual Drug Regimen for Breast Cancer Therapy”	DST	Completed
94	“Genomic analysis of microbial resistance mechanisms using ‘ <i>Streptomyces coelicolor</i> as a model system”	DBT	Completed

Consultancy Projects

No of Jobs	:	01
Faculty involved	:	01

Patents

Patents application filed	:	10
Patents granted	:	01

Extension Activities

Kumar, A.

Organised NMR meets Biology, jointly with Prof. P. K. Madhu, TIFR, 2014, in Goa, during February 21-27, 2014. Organised a Mini-symposium NMR and related topics at IIT Bombay, on February 11, 2014

Srivastava, S.

Recent advances in Proteomics, Fostering Linkages in Academic Innovation and Research (FLAIR) Programme, Three-day CEP In-house programme, Government of Kerala, January 31 – February 2, 2014. Proteomics: Principle and techniques, Workshop on Proteomics, Reliance Industries, July 4, 2013.

Visitors to the Department

Mr. Vivek Jayaraman, Group Leader, Janelia Farm Research Campus, Howard Hughes Medical Institute, Ashburn, USA, delivered a lecture on “Linking vision and action in the brain of behaving flies”.

Nishigandha Naik, Sr. Group Leader, Head – Imaging and Cancer Biology, Pharmacology Department, Piramal Healthcare, Mumbai, delivered a lecture on “Walk the talks”.

Prof. Martin Lenz, Universite Paris-Sud, Paris, France, delivered a lecture on “Disordered actomyosin contracts in unexpected ways”.

Dr. Neeraja Balachander, Alumnus, Medical Affairs Consultant for UMT, New York, delivered a lecture on “Neuroaesthetics: Preference and Perception of 3D Shapes”.

Dr. Sunil Martin, Ph.D, Research Fellow in Medicine, Dana Farber-Harvard Cancer Centre, Harvard University, Boston, delivered a lecture on “Role of regulatory T cells in antitumor immune response and immunotherapy”.

Dr. Pawan Malhotra, Staff Research Scientist, International Centre for Genetic Engineering and Biotechnology, New Delhi, delivered a lecture on “*Plasmodium falciparum* cysteine/serine proteases at asexual blood stages and their role(s) in Hemozoin formation”.

Dr. Uttara Marathe, National Institute of Immunology, New Delhi, delivered a lecture on “Studies on Polyketide Synthase and Sortases from pathogenic bacteria”.

Dr. Murli V., National Institute of Immunology, New Delhi, delivered a lecture on “A transgenic approach to make cells photoresponsive-Paradigm shifts in Molecular Biology-Optogenetics and Epigenetics”.

Dr. Vural Özdemir, Co-Founder and Member, Board of Directors, Data-Enabled Life Sciences Alliance International (DELSA Global), Seattle, WA 98101, USA; Vice Dean, Faculty of Communications, Gaziantep University, Gaziantep, Turkey; Editor-in-Chief, OMICS: A Journal of Integrative Biology, NY, USA, delivered a lecture on “A Science of Hows: Cultivating 21st Century Innovation & Crowd-Funded DELSA Micro-Grants for Citizen Science”.

Assoc. Prof. Mikael Rørdam Andersen, Department of Systems Biology, Technical University of Denmark, delivered a lecture on “Fungal biotechnology – from discovery to process engineering”.

Assoc. Prof. Ramneek Gupta, Department of Systems Biology, delivered a lecture on “Systems biology to augment genotype-phenotype associations for disease areas”.

Prof. Thomas Sicheritz-Ponten, Department of Systems Biology, Technical University of Denmark, delivered a lecture on “Our ‘other’ genome”.

Dr. Dipesh Kumar Trivedi, ICGEB, New Delhi, delivered a lecture on “Structural characterization of cyclophilin A-like protein from *Piriformospora indica* & its Functional validation in salt stress tolerance”.

Dr. Divijendra Natha Reddy, Sirigiri, Ph. D, Post doctoral fellow, Department of Biochemistry and Mol biology, George Washington University, delivered a lecture on “Understanding the mechanisms of metastasis: Role of PAK1 and MicroRNAs”.

Dr. Shinjinee Sengupta delivered a lecture on “Regulation of trehalose-6-phosphate synthase by methylation in yeast”.

Dr. Bhushan J. Toley, PhD, Senior Fellow, Bioengineering Department, University of Washington, delivered a lecture on “Microfluidic Technologies for Point-of-Care Diagnosis of Infectious Diseases and Cancer Drug Development”.

Ms. Kasturi Haldar, PLOS Pathogens Editor-in-Chief, delivered a lecture on “Host remodeling by malaria parasites as a target for antimalarial chemotherapy”.

Dr. Nitish R. Mahapatra, Associate Professor, Department of Biotechnology, Indian Institute of

Technology Madras, delivered a lecture on “Common functional genetic polymorphisms in chromogranin: A cause profound alterations in the risk for metabolic diseases in Indian population”.

Dr. Pradipsinh K. Rathod, PhD, Program Director, US NIH South Asia International Center of Excellence for Malaria Research, Professor of Chemistry and Global Health, University of Washington, Seattle, WA, USA, delivered a lecture on “Malaria Evolution in South Asia: Basic Science Amongst Hospital Patients”.

Prof. Ash M. Parameswaran, Professor, School of Engineering Science, Simon Fraser University (SFU), delivered a lecture on “Fabrication techniques developed at SFU to produce plastic micro devices”.

Dr Gauri Awasthi, National Institute of Malaria Research, Evolutionary genomics and Bioinformatics, New Delhi, delivered a lecture on “Evolutionary genetic studies of the 7th chromosomal genes in *Plasmodium falciparum*”.

Prof. Prashant Purohit, Associate Professor, University of Pennsylvania, delivered a lecture on “Electrostatics in the mechanics of DNA and lipid membranes”.

Dr. Arjun Vadapalli, Genomics Solutions Group at Agilent Technologies, Santa Clara, California, delivered a lecture on “Adopting Molecular Biology Tools in Clinical Genomics”.

Dr. Shimul Salot, Genomics Solutions Group at Agilent Technologies, Santa Clara, California, delivered a lecture on “Studies on the Gene Metastasis Associated 1 (Mta1) in Human Breast Cancer”.

Prof. Roop Mallik, Tata Institute of Fundamental Research (TIFR), Mumbai, delivered a lecture on “Tiny Machines, Big Tasks”.

Dr. Manas Kumar Santra, Ph.D., Scientist D, National Centre for Cell Science, Pune, delivered a lecture on “APC/C ubiquitin ligase controls the tumor suppressor activity of FBXO313”.

Dr. Pushkar Malakar, Department of Biochemistry & Molecular Biology, IMRIC, Hebrew University Medical School, delivered a lecture on “The role of long non-coding RNA (MALAT1) in Tumor initiation and Metastasis”.

Dr. Kaushik Sengupta, Associate Professor, Saha Institute of Nuclear Physics, Kolkata, delivered a lecture on “Lamin A and A Broken Heart”.

Dr. Richa Jaiswal, PhD (Alumnus), Department of Biology, Brandeis University, Waltham, MA, USA, delivered a lecture on “New collaborations of formins in actin assembly and organization”.

Dr. Shubhada Joshi, Schenectady, NY, delivered a lecture on “New Developments towards Parkinson’s Disease Therapy”.

Mr. Satyananda Patel, University Paris-Dederot, UMRS-940, Siant-Lois Hospital, Paris, France, delivered a lecture on “Targeted therapies in Acute myeloid leukemia (AML)”.

Dr. Arindam Basu, Ph.D., Research Associate, School of Veterinary Medicine, University of Pennsylvania, USA, delivered a lecture on “Bringing Polycombs to DNA”.

Dr. Keith Brain, Senior Lecturer at the University of Birmingham, Lecturer in Pharmacology at Christ Church College, Oxford; International Secretary of the International Society for Autonomic Neuroscience, delivered a lecture on “Part 1: Detecting purines, catecholamines and glutamate with a mutant \pm -haemolysin pore one molecule at a time” and “Part 2: Lanthanide conjugates of transporter substrates as a method for fluorescence imaging of dopaminergic neurons: Implications for Parkinson’s disease prognostic MRI”.

Dr. Manoj Jadhav, PhD, FCP, Division of Cardiovascular Medicine, College of Medicine, University of Florida, USA, delivered a lecture on “The road we must follow: Translational research”.

Dr. Vinayak Shenoy, Asst Research Scientist, Department of Pharmacodynamics College of Pharmacy, University of Florida, Gainesville, delivered a lecture on “ACE2 for Pulmonary Therapeutics- Bench to Bedside”.

Dr. Madhavan Nair, Professor and Founding Chair, Department of Immunology, Director, Institute of Neuro-Immune Pharmacology, FIU College of Medicine Associate Dean, Bio. Med. Res., Florida International University, delivered a lecture on “Nano-Cure for Neuro-AIDS and drug addiction”.

Conferences/Symposia/Workshops/ Seminars (Participated/Papers Presented)

Agnihotri S. and Mukherji S.

Poster presentation on “Comparison of amine and thiol functionalized glass wool fibres for silver nanoparticle immobilization: Characterization, bactericidal efficacy and potential risk”, presented at *ICONSAT-2014*, Chandigarh, India, March 3-5, 2014.

Arunkumar, P., Indulekha, S., Srivastava, R., Sharma, P. and Vijayalakshmi, S.

Oral presentation on “In situ PCL microparticles loaded chitosan composite gels as an Intra-articular drug

delivery system for the treatment of Osteoarthritis”, *4th International Symposium on Surfaces & Interfaces for Biomaterials*, Rome, Italy, September 24- 28, 2013.

Banerjee A.

Oral presentation on “Dual role of covR mediated gene regulation during Group B Streptococcus infection,” *International conference on Bacterial Expressions*, at NCBS, Bangalore, October 22-25, 2013.

Banerjee R.

Presented a paper on “Nanomaterials for therapeutic applications”, *4th Trilateral Conference on Advances in Nanoscience: Energy, Water and Healthcare*, MRS, Singapore 2013.

Presented a paper on “Nanotechnology Platforms for Trigger Responsive Drug Delivery”, *Indo-Taiwan Conference on Medical Devices and Innovations*, Tainan, Taiwan 2013.

Presented a paper on “Trigger responsive nanomaterials for therapeutic applications”, *ICONSAT 2014*, Chandigarh, March 2014.

Presented a paper on “Stimuli responsive nanoparticles for drug delivery”, *Indian Science Congress 2014*, Jammu, March 2014.

Co-ordinated Indian delegation for *Indo-Taiwan Conference on Medical Devices and Innovations*, Tainan, Taiwan 2013.

Presented a paper Post 2015 “Millenium development goals, role of technology Global Colloquim of University presidents”, New York, January 2013.

Carvalho, E., Verma, P., Harrigan, K. and Banerjee, R.
“Development of dual hybrid in situ gellingscaffolds for tissue engineering”, *Polymer International*, 2014.

Chaudhari R.; Joshi, A. and Srivastava, R.

Oral presentation “Uric acid quantification by polymeric PtOEP nanoparticles co-immobilized in alginate microspheres”, *NanoFormulations 2013*, University of Manchester, Manchester, United Kingdom, June 18-21, 2013.

Dave, K.; Kaur, B. and Puneekar, N.S.

Poster EGFP in *Aspergillus niger*: Expression, proteolysis and secretion p.132, *82nd Annual meeting of Society of Biological Chemists*, School of Life Sciences, University of Hyderabad, December 2-5, 2013.

Guha, Sarkar, S. and Banerjee, R.

Presented a paper “Enhancement of retention in the urinary bladder using a Liposome-in-Hydrogel system and potential use in intravesical drug delivery”, *Gordon*

Research Conference on Cancer Nanotechnology at Mount Snow Resort, Vermont, USA, from July 14-19, 2013.

Gupta, A. and Kondabagil, K.

Oral presentation “A novel helicase-primase fusion protein of Mimivirus: An evolutionary perspective”, *DBT-JRF meet, at IICT Mumbai*, November 21-22, 2013.

Poster presentation “A novel helicase-primase fusion protein of Mimivirus: An evolutionary perspective”. Presented at *82nd Annual Meeting of the Society of Biological Chemists and International Conference on Genomes: Mechanism and Function*, held at School of Life Sciences, University of Hyderabad, Hyderabad, December 2-5, 2013.

Halkare, P., Chelikani, V., Kondabagil, K. and Mukherji, S.

Poster presentation “Evanescent wave absorbance based biosensor for detection of bacteria using bacteriophages as biorecognition elements immobilized on optical fiber”, in *3rd International Conference on Advanced Nanomaterials and Nanotechnology (ICANN-2013)*, IIT Guwahati, December 1-3, 2013.

Indulekha, S., Arunkumar, P., Bahadur, D. and Srivastava, R.

Oral presentation, “Novel Thermoresponsive Poly (N-vinyl caprolactam) Sponges as an On-demand drug delivery system for pain management”, *4th International Symposium on Surfaces & Interfaces for Biomaterials*, Rome, Italy, September 24- 28, 2013.

Jitendra Satija, Joseph Tharion and Soumyo Mukherji

Poster presentation “Development of Optically Tunable Hollow Gold-Silver Nanocomposites for Label-free Fiber-Optic Biosensor Applications”, presented at *ICONSAT-2014*, Chandigarh, India, March 3-5, 2014.

Kini, S., Jayashri, T.N. and Puneekar, N.S.

Poster presentation “Involvement of residue K31 in *Aspergillus niger* arginase catalysis”, p.158, *82nd Annual meeting of Society of Biological Chemists*, School of Life Sciences, University of Hyderabad, December 2-5, 2013.

Kini, S., Bahadur D. and Panda, D.

Oral presentation “Benomyl loaded chitosan-PLGA nanoparticles induced cell death in multi-drug resistant EMT6/AR1 cell line by depolymerizing microtubules” *International Conference on Nanotechnology in Medicine (NANOMED)*, at London, United Kingdom, during February 26-28, 2014.

Kondabagil, K.

Delivered an invited talk on “Genome segregation and packaging in large eukaryotic viruses” in the *First International Symposium on Giant Virus Biology*, at

Ringberg Castle, Max Planck Institute, Germany, held during November 17-20, 2013.

Kumar A.

Participated in a project development workshop “NFBSFARA” organized by NAARM, ICAR in Hyderabad, during March 24-25, 2014.

Presented a paper “Understanding the link between structure, dynamics and toxicity of alpha-Synuclein and its mutants in PD”, *3rd Ramalingswamy conclave* held in Pune, September 12-14, 2013

Presented a paper “Native structure governs the amyloid formation and fibril reversibility of a short cyclic peptide hormone”, ‘NMRS 2014’ held in Tezpur University, Tezpur, India, during February 2-5, 2014

Presented a paper “Understanding the link between structure, dynamics and toxicity of alpha-Synuclein and its mutants in PD”, *NMR meets Biology meeting* held in Goa, India, during February 21-27, 2014

Presented a paper “NMR of insoluble biomolecules”, at *National Symposium on Applied Spectroscopy in Science and Technology*, organized in SRTM University, Nanded, India, during March 21-22, 2014.

Manchanda, R.

Presented paper on “Computational Approaches To Insights On Urinary Bladder Biophysics”, *International Conference on New Trends in Biotechnology*, Amrita University, August 2013.

Presented paper “Windows From The Virtual World Into The Real: Use of ‘Physiologically Realistic’ Cellular Bioelectric Models in Medical Engineering”, *International Conference on Mechanical Engineering*, IIT Madras, July 2013.

Workshop Conducted “Computational Modelling In Neurophysiology Using Open Source Softwares: Scilab and NEURON” at Government Engineering College, Chandrapur, under *TEQUIP-II scheme*, February 10-14, 2014.

Punjabi Nirmal, Satija Jitendra and Mukherji Soumyo

Poster presentation “Augmenting Labeled Bioassay Sensitivity- Exploiting Nanogold Optical Properties on an Optical Fiber based Biosensor”, presented at *ICONSAT-2014*, Chandigarh, India, March 3-5, 2014.

Ozdemir, V., Srivastava, S. and Kolker, E.

Oral presentation [Invited talk] “Crowd-funded microgrants for big data: An actionable idea to connect small (artisan) science, infrastructure science and citizen philanthropy in India”, *Amrita Bioquest 2013 - International Conference on Biotechnology for Innovative Applications*, Kerala, India, August 10-14, 2013.

Padinhateeri, R.

Participated “Kinetics of nucleosome positioning” at the *Soft Matter – Young Investigator meeting*, Pondyichery, January 6, 2014.

Participated “Statistical positioning of nucleosomes” at the *Indian Statistical Physics community meeting*, IISc Bangalore, on February 1-3, 2014.

Pradhan, L., Srivastava, R. and Bahadur, D.

“pH and thermo-sensitive thin lipid layer coated mesoporous magnetic nanoassemblies as a dual drug delivery system towards thermo-chemotherapy of cancer” accepted for publication in *Acta Biomaterialia*, AB-13-1427 (IF – 5.093).

Punjabi N., Satija J. and Mukherji S.

Oral presentation “Novel Bent-Tapered Mode Converting Multimode Optical Fiber Sensor based on Evanescent Wave Absorption”, in the *7th International Conference on Sensing Technologies*, New Zealand, December 2013.

Rai, A., Kapoor, S. and Panda, D.

Poster presentation “Nuclear import of NF- κ B and pERK coordinately induced apoptosis in MCF-7 cells in response to microtubule damage”, *53rd Annual Meeting of American Society for Cell Biology*, at New Orleans, LA, USA, during December 14-18, 2013.

Ranjan, T. and Kondabagil, K.

Poster presentation “The Genome Packaging Motor of Nucleo Cytoplasmic Large DNA Viruses (NCLDV)s”, at *82nd Annual Meeting of the Society of Biological Chemists and International Conference on Genomes: Mechanism and Function* held at School of Life Sciences, University of Hyderabad, Hyderabad, December 2-5, 2013.

Rashid, A. and Panda, D.

Poster presentation “5-HPP-33 binds to tubulin, suppresses microtubule dynamics and induced apoptosis in MC F-7 cells”, *53rd Annual Meeting of American Society for Cell Biology*, at New Orleans, LA, USA, during December 14-18, 2013.

Ray, S. and Srivastava, S.

Poster presentation “Comparative proteomic analysis of extremely low and moderate parasitemic vivax malaria for identification of potential early diagnostic and prognostic serum biomarkers”, *12th Human Proteome Organization World Congress (HUPO 2013)*, Yokohama, Japan, September 14 - 18, 2013.

Ray, S., Kumar, A. and Panda, D.

Poster presentation “Guanocine-5'-triphosphate regulates interaction between MciZ and FtsZ”, *Experimental Biology meeting 2013*, at Boston, MA, USA, during April 20-24, 2013.

Ray, S., Patel, S.K., Patankar, S. and Srivastava S.

Oral presentation “Investigation of serum proteome alterations in Falciparum and Vivax malaria”, *Amrita Bioquest 2013 - International Conference on Biotechnology for Innovative Applications*, August 10-14, 2013, Kerala, India.

Ray S., Patankar, S. and Srivastava, S.

Poster presentation “Analysis of serum proteome alterations in dengue virus-infected patients: search for surrogate protein markers” *Amrita Bioquest 2013 - International Conference on Biotechnology for Innovative Applications*, Kerala, India, August 10-14, 2013.

Reddy, P.J., Panda, D. and Srivastava, S.

Oral presentation “A proteomic approach to decipher the mechanism of action and molecular targets of curcumin in *Bacillus subtilis*”, *Amrita Bioquest 2013- International Conference on Biotechnology for Innovative Applications*, Kerala, India, August 10-14, 2013.

Satija, J., Punjabi, N., Sai, V.V.R. and Mukherji, S.

“Optimal Design for U-bent Fiber-Optic LSPR Sensor Probes” accepted for publication in *Plasmonics* (DOI: 10.1007/s11468-013-9618-7) October 2013.

Sanjeeva, S.

Oral presentation “Challenges for disease biomarker discovery: A perspective from developing countries”. *12th Human Proteome Organization World Congress (HUPO 2013)*, Yokohama, Japan, September 14 - 18, 2013.

Oral presentation [Data Enabled Life Sciences Alliance (DELSA) workshop] “Linking biotechnology and big data to disruptive innovation by collective intelligence and actionable foresight”, *Amrita Bioquest 2013- International Conference on Biotechnology for Innovative Applications*, Kerala, India, August 10-14, 2013.

Organized workshop on *DELSA India: Citizen Science and Collective Innovation* along with Dr. Vural Ozdemir.

Oral presentation “Identification of potential early diagnostic biomarkers for gliomas and various infectious diseases using proteomic technologies”, *Amrita Bioquest 2013 - International Conference on Biotechnology for Innovative Applications*, Kerala, India, August 10-14, 2013.

Oral presentation “Discovery and functional proteomic analysis of human glioma and meningioma for identification of biomarkers”, *Indo-French seminar on Recent trends in Proteomics*, Bangalore, India, April 6-8, 2013,

Sanjeeva, S., Ray, S., Jain, R., Dasgupta, K., Yeola, A., Kulkarni, P., Sharma, S., Malhotra, D., Reddy, J.P., Yadav, S. and Syed, P.

Poster presentation “E-Learning platform for proteomics as a part of national program on technology enhanced learning in India; proteomics education as a community effort” *12th Human Proteome Organization World Congress (HUPO 2013)*, Yokohama, Japan, September 14 - 18, 2013.

Sanjeeva, S. and Jain, R.

Poster presentation “An integrative systems analysis of glioma and medulloblastoma for the identification of diagnostic and therapeutic targets”, *12th Human Proteome Organization World Congress (HUPO 2013)*, Yokohama, Japan, September 14 - 18, 2013.

Srivastava, S., Ray, S., Malhotra, D., Sharma, S. and Kharbikar, B.

Poster presentation “Development of versatile e-learning resources in proteomics: Initiatives from India”. *Amrita Bioquest 2013 - International Conference on Biotechnology for Innovative Applications*, Kerala, India, August 10-14, 2013.

Chauhan Shraddha K., Sharma Dinesh K. and Mukherji Soumyo

Poster presentation “Sensitivity enhancement of localised surface Plasmon resonance-based fibre-optic sensor using silicon nitride dielectric over-layer”, at *ICONSAT-2014*, Chandigarh, India, March 3-5, 2014.

Shukla, A. and Kondabagil, K.

Poster presentation “Serine Recombinase; a crucial component of the *Acanthamoeba Polyphaga* Mimivirus segro-packasome machinery” at *82nd Annual Meeting of the Society of Biological Chemists and International Conference on Genomes: Mechanism and Function* held at School of Life Sciences, University of Hyderabad, Hyderabad, December 2-5, 2013.

Suryavanshi, A., Srivastava, R., Salunkhe, P. and Pol, H.

Oral presentation “Novel Magnesium-Polycaprolactone nanocomposite biomaterial for bone fixation applications”, *8th Combined Meeting of Orthopedic Research Societies (CORS 2013)*, European Orthopedic Research Society (EORS), San Servolo, Venice, Italy, October 13-16, 2013.

Vishal Anvekar, Tapanendu Kundu, Soumyo Mukherji

Poster presentation “Gold capped SU-8 nanoridges as plasmonic sensor”, at *International Conference on Optics and Photonics*, Zhongli, Taiwan (Optic 2013), December 2013.

Poster presentation “Gold nanohumps as plasmonic sensor”, at *ICONSAT-2014*, Chandigarh, India, March 3-5, 2014.

Wangchuk, J. and Kondabagil, K.

Poster presentation “Purification and Characterization of Putative Large and Small Terminase of Bacteriophage N4” at *DBT-JRF meet*, held at *IICT Mumbai* between November 21-22, 2013.

Poster presentation “Functional Analysis of Packaging Enzymes: Large And Small Terminase Associated With Bacteriophage N4”, at *82nd Annual Meeting of the Society of Biological Chemists and International Conference on Genomes: Mechanism and Function* held at School of Life Sciences, University of Hyderabad, Hyderabad, December 2-5, 2013.

Invited Lectures

Bhaumik, P.

“Structural studies on vacuolar plasmepsins”, Mumbai chapter of Society of Biological Sciences (India), ACTREC-TMC, Kharghar, Navi-Mumbai, November 8, 2013.

Ghosh S.K.

8th International Conference on Yeast Biology, Chandigarh, India, 2013.

“RNA interference” for PGT-Biology course, KV Bhandup, December 2013.

Manchanda, R.

“Recent Trends in Neuroscience Research: Experimental and Computational”, D.Y. Patil University, Mumbai, November 2013.

“Biomedical Engineering in India: Status, Prospects” in Workshop on ‘Next generation healthcare: Vision, challenges and Initiatives’, IIT Hyderabad, December 2013.

Mukherji, S.

Delivered an invited talk on “Porting Optical Fiber (Bio)Sensors onto High Aspect Ratio Polymer Waveguides” at the *Sixth ISSS National Conference on MEMS, Smart Materials, Structures and Systems* held at DRDE Pune, September 6, 2013.

“Optical Sensors” invited talk in IEEE Workshop on MEMS and Sensors in NIT Silchar, Assam on September 11, 2013.

Delivered an invited talk on “Nano on Micro – nanostructured Microdevices for Bio and Environmental sensing” at the *International Conference on Microfluidics and Lab on a Chip* held in Bangalore on September 27, 2013.

“Detection of Explosives using portable devices- Developments in the Indian Context” in the seminar on *Creating Top-Notch CNS (Communication,*

Navigation, Surveillance) Infrastructure Indigenously to Meet Out Challenges In Improving Indian ANS (Air Navigation Service), Sponsored by Airports Authority of India, New Delhi, on November 25-26, 2013.

“Biosensors in Healthcare” as part of the *International Seminar on Technology Advances in Healthcare- 2013* in Bengal Engineering and Science University (BESU), Shibpur, West Bengal, on December 5-6, 2013.

“Microfabricated Optical Waveguide Sensors for Chemical and Biological Analytes”, at *International Workshop on the Physics of Semiconductor Devices (IWPSD-2013)* in Amity University, December 12, 2013.

“Optical fiber and waveguide based biosensors”, in the *India-Japan Workshop on Biomolecular electronics and organic nanotechnology for environment preservation -IJWBME2013*, Delhi Technological University, December 12-14, 2013.

“Biosensors in Healthcare”, at the *International Workshop on Advances in Healthcare Engineering*, organized by College of Engg. & Management, Kolaghat, West Bengal (sponsored by DBT and TEQIP), January 3, 2014.

Padinhateeri, R.

“Force generation by cytoskeletal filaments” at IIT Madras on September 10, 2013.

Panda, D.

“Inhibitors of bacterial cell partitioning as antibacterial drugs” *Global Tech Conference*, at Caltech, California, USA, held during May 30-31, 2013.

“Dynamic microtubules are attractive anti cancer targets” at *4th International Conference on Stem Cells and Cancer (ICSCC-2013) on Proliferation, Differentiation and Apoptosis*, Mumbai, October 19-22, 2013.

“Advances in Anticancer Drug Discovery and Development” at *MedChem 2013 Conference*, IIT Madras, Chennai, October 25-26, 2013.

“Regulation of microtubule dynamics by MAPs and small molecule inhibitors: Implication in cancer chemotherapy” at *TRendys in Biochemistry*, University of Hyderabad, November 22-23, 2013.

“Microtubule Dynamics and Biomolecular Spectroscopy” at National Conference on Frontiers in Biotechnology and Bioinformatics, Department of Biotechnology & Bioinformatics, Padmashree Dr. D.Y. Patil University, Navi Mumbai, January 30-31, 2014.

“Blunting microtubule dynamics: An attractive strategy to inhibit cell migration” at *2nd International*

Conference on Angiogenesis: Theragnostics in Cancer and Cardiovascular Diseases, KIIT University, Bhubaneswar, February 2-4, 2014.

“FtsZ Assembly Dynamics: An Attractive Antibacterial Drug Target” at *NMR Meets Biology*, Goa, February 22-26, 2014.

Punekar, N.S.

“Biotechnology: Beyond Borders” Panel Discussion – Academia, Industry and NGOs
Indo-Mexico workshop on Biotechnology, CSIR-NCL, Pune, October 7-9, 2013.

“Functional genomics of Aspergilli: Forays into guanidinium compound metabolism and ureohydrolases” at Department of Biochemistry, IISc Bangalore, March 10, 2014.

Purwar R.

“Tissue resident T cells: Roles in autoimmunity and cancer”. Host: Rajesh Gokhale, Director IGIB, New Delhi.

Shamik S.

All India Cell Biology Conference, Bangalore, India, December 2013.

Srivastava, S.

World Human Proteome Organization, Yokohama, Japan, September 15, 2013.

US-Human Proteome Organization, Baltimore, USA, March 8, 2013.

Tayalia P.

“Engineering 3D microenvironment for cellular programming” for *Stem Cell and Regenerative Medicine Symposium-2* held at National Burns Centre, Airoli, Navi Mumbai on January 25, 2014.

NCCS pre-National Science Day on February 26, 2014.

Conferences/Symposia/Workshops/ Seminars (Coordinated/Chaired by Faculty)

Bhaumik, P.

Chaired one of four sessions in the meeting on “Proteins: Structure, Function and Dynamics”, IISER Pune, Pune, January 30, 2014.

Award and Distinctions

Banerjee, R.

Selected as one of India’s most inspiring women engineers and scientists, by Engineering Watch, 2014.

Tayalia, P.

Awarded DBT-IYBA-2013 award.

Padinhateeri, R.

Senior Innovative Young Biotechnologists Award (Senior IYBA), DBT, India.

Srivastava, S.

Editorial Board Member - OMICS A journal of Integrative Biology.
Founder Data-Enabled Life Sciences Alliance (DELSA) India.

Srivastava, R.

DBT IYBA 2013
DBT Tata Innovation Fellowship Award 2014
Recognition of innovative research
Wellcome Trust Award 2014 Affordable Healthcare in India Scheme
HIT Lab Healthcare Innovation Worldcup 2013
IIM Ahmedabad, Shristi and Techpedia Gandhian Young Technological Innovation Award 2013
Samsung India- Samsung Innovation Award 2012 for innovation 'Drishti: The universal eye glasses'.

Honorary Work**Manchanda, R.**

Member, NBRC Scientific Assessment Committee
Member, NBRC Board of Studies
Selection Committee, IIT Hyderabad

Banerjee, R.

Reviewer for Chemical Reviews, Nanomedicine, Nanotechnology Biology and Medicine, PLOS one, Biomacromolecules

Associate Editor, Journal of Biomaterials and Tissue Engineering, Am Sc. Publishers
Editorial Board Member, Engineering and Technology, Inventi Journals
Editorial Board Member, Drug Delivery and Translational Research, Springer Verlag

Editorial Board Member and Chair of Nanobiotechnology, Computational and Structural Biotechnology Journal

Editorial Board Member, NanoTrends, India

Editorial Board Member, International Journal of Life Sciences & Pharmaceutical Research

Editorial Board, Biomaterials and Biodevices
Editorial Board Member, World Journal of Respiratory Senior Editor (International), Chinese Journal of Clinicians

Member Editorial Board, Trends in Biomaterials & Artificial Organs
Grand Challenges Exploration Grantee

Shamik, S.

Reviewed papers for the following international peer reviewed journals:
J Biomechanical Engineering
Physical Chemistry Chemical Physics
European Journal of Cell Biology
Cellular and Molecular Bioengineering
Interface Focus

Ghosh, S.K.

Reviewed papers for international peer reviewed journals, BBA, FEBS Letters
Reviewed research proposals from DST

Tayalia, P.

Member of Research Advisory Board of National Burns Center.
Signed MOU and collaborative research work with National Burns Center.
Editor-in-chief of Souvenir released by Research Scholars and Alumni Symposium 2014 held on March 7-8, 2014.
Spear-headed the M.Tech. curriculum revision.

Kumar A.

Worked as an NMR expert in the purchase committee of NCBS for purchasing 800 MHz NMR spectrometer.

Padinhateeri, R.

Peer-reviewed articles for journals – Nucleic Acids Research, Physical Review Letters
Member of Biophysical Society, USA, 2014.

Srivastav S.

Reviewed papers for international journals:
BBA-proteins and proteomics (July 2013); OMICS A Journal of Integrative Biology (June 2013); BMC Systems Biology (August 2013); OMICS A Journal of Integrative Biology (November 2013); Current Proteomics (December 2013); Journal of Proteomics (December 2013); Proteome Science (March 2014)

Reviewed grants for national and international funding agencies – Department of Biotechnology (DBT), Biotechnology Industry Research Assistance Council (BIRAC), Board of Research in Nuclear Sciences (BRNS)

Expert member, Board of Research in Nuclear Sciences (BRNS) – 46th BSC BRNS Meeting, Basic Science Committee of BRNS, March 2014.

Member, DBT task force Research Resources, Service Facilities and Platforms, January 2014.

Mukherji S.

Member of Selection Committee for promotion of scientists in BARC.

Member of Selection Committee for faculty selection in IIT Delhi.

Member of the National review committee of UGC for Nanoscience Centres in Universities of Mumbai, Kolkata and Chennai.

Associate Editor of Medical & Biological Eng & Computing (MBEC).

Ad-hoc reviewer for the following journals : (1) Sensors and Actuators – Chemical; (2) Biosensors and Bioelectronics; (3) Applied Surface Science; (4) PLOS-one; (5) Nanoscience Methods; (6) Applied Nanoscience; (7) Transactions on Biomedical Engineering; (8) IEEE Sensors Journal.

Punekar N.S.

DBT representative in IBSC for Embio Research Centre and Epygene Biotech Pvt Ltd

Member, DBT Expert Committee for Energy Bioscience Chair & Energy Bioscience Overseas Fellowship.

Member, Finance Committee of IIT Indore

Member of the Editorial Board of :

Indian Journal of Biochemistry and Biophysics and

Indian Journal of Biotechnology

Panda D.

Editorial board member of Biochemical Journal

Editorial Board Member of ISRN Biochemistry

Associate Editor of BMC Cell Biology

Bhaumik P.

Reviewed a research proposal from Advanced Centre for Treatment, Research and Education in Cancer (ACTREC), February 2014

Srivastava R.

Task Force and Site Visit Member on DBT-BIRAC, SBIRI, BIG and SPARSH schemes

Task Force Member on ICMR Glucometer Development and Diabetes Scheme

Task Force Member for DST TDB

Task Force Member for Indo-Australia Biotechnology Scheme

Purwar R.

Ad-hoc reviewer for the journals of Journal of Immunology, Pediatric dermatology, Journal of Investigative dermatology, International Archives of Allergy & Immunology, and Dermatology

Faculty Members and their Specializations

Core Faculty

1. N. S. Punekar

Microbial biochemistry; enzymology; metabolic regulation; secondary metabolism; metabolic engineering; nitrogen metabolism of fungi.

2. K. K. Rao

Cell biology; protein biochemistry; molecular biology; genetic engineering, prokaryotic gene regulation.

3. P. J. Bhat

Eucaryotic gene expression; yeast molecular genetics; eucaryotic transcriptional regulation.

4. R. Manchanda

Neuromuscular Physiology & Biophysics.

5. G. Subrahmanyam

Protein phosphorylation gene regulation, molecular mechanism of signal transduction.

6. P. V. Balaji

Protein-carbohydrate interactions, molecular biology of glycosyltransferases; molecular modeling; docking and MD simulations.

7. Dulal Panda

Cell biology, biophysics, protein structure-function, molecular medicine and mechanism(s) of action of antifungal, anticancer and antibacterial drugs

8. Soumyo Mukherji

Bioinstrumentation, Cardiovascular Physiology, Transducers and Biomedical Sensors, Biosensors

9. P. S. Phale

Aromatic hydrocarbon degradation, elucidation of metabolic pathways, molecular enzymology and kinetics, genetics engineering, bacterial physiology, Bio-surfactant production and its significance.

10. Rinti Banerjee

Biomaterials & Artificial Organs, Haemorheology & Biomedical Fluid Dynamics.

11. Swati Patankar

Molecular parasitology and genomics applied to the malarial parasite Plasmodium falciparum.

12. Rohit Srivastava

Fluorescent Biosensors, Nanoengineered Sensors, Controlled Release, Layer-by-Layer Assembly, BioMEMS.

13. Samir Maji

To study the amyloid formation by protein/peptides in the diseases and functional amyloid perspective.

14. Sanjeeva Srivastava

Proteomics, Systems Biology, Stress physiology and cellular responses.

15. Santanu K. Ghosh

Understanding mechanism of faithful chromosome segregation during meiotic cell division.

16. Padinhateeri Ranjith

Nucleosome dynamics and Chromatin assembly, Dynamics of Actin and Microtubules, Mechanics of DNA.

17. Shamik Sen

Cell Mechanics & Mechanobiology, Tissue Engineering, Computational Modeling.

18. Ashutosh Kumar

Structural Biology, Biomolecular NMR Spectroscopy.

19. Kiran Kondabagil

Mechanisms of assembly of large DNA viruses, Virus Engineering: Viral nano-containers for targeted delivery.

20. Prasenjit Bhaumik

Understanding the structure function relationship of enzymes and biological macromolecules. Protein crystallography, Structure based antimalarial drug development, Structural enzymology.

21. Prakriti Tayalia

Cellular programming, Tissue engineering, Immunotherapy, Biomaterials, Microfabrication.

22. Debjani Paul

Microfabrication technology, thin-film transistors, biosensors, microfluidic devices, biophysical aspects of bacterial invasion, interaction of cells with micro and nano-structured surfaces, integration of microfluidics and electronics.

23. Ambarish Kunwar

Biophysics, Non-equilibrium Statistical Physics, Computational Modeling

24. Anirban Banerjee

Bacterial Pathogenesis, Host-Pathogen Interactions, Cellular Immunity

25. Rahul Purwar

Tumor Immunology, Cancer biomarker

Associate Faculty

1. Jayesh Bellare

Nanotechnology and micro-engineering; biomedical devices surfactants; Cryo-electron and optical microscopy.

2. Santosh Noronha

Biochemical engineering, Recombinant biotechnology, Computational biology.

3. H. S. Shankar

Biochemical Engg., Vermiculture.

4. A. K. Suresh

Biochemical Engg., Multiphase reactions.

5. K. V. Venkatesh

Biochemical and Food engineering.

6. P. Wangikar

Biothermodynamics; Biophysical Chemistry.

7. S. Chaudhari

Medical Image & Signal Analysis.

8. U. B. Desai

Medical Image & Signal Analysis.

9. V.M. Gadre

Communication Engineering Control & Instrumentation.

10. P. C. Pandey

Bioinstrumentation, Medical Image & Signal Analysis.

11. A. Q. Contractor

Electrochemistry, Conducting polymers, Biosensors.

12. S. Durani

Drug design; de nova Protein design; Enzyme catalytic principles; Active site characterization.

13. Nand Kishore

Biothermodynamics; Biophysical Chemistry.

14. Sambasivarao Kotha

Organic Synthesis; non-coded amino acids.

15. Anil Kumar

Bio Polymers.

16. C. P. Rao

Electrochemistry, Conducting polymers, Biosensors.

17. Y. U. Sasidhar

Molecular Biophysics; Protein folding.

18. A. K. Singh

Bioorganic chemistry; Photoreceptor membrane proteins; Photochemistry and photobiology.

19. Sumathi Suresh

Remediation of pesticides using biological & chemical methods. Biological treatment for removal of textile dyes, biodegradation of hydroxybenzoate and phthalates.

20. Rajani R. Joshi

Computational Biology, Bioinformatics, Biostatistics.

21. G. G. Ray

Ergonomics.

Distinguished Guest Professor

1. G. Padmanaban

Malaria research.

2. Dr. Hartmut Michel, Noble Laureate

Photosynthesis research.

Adjunct Faculty

1. Dr. Vivek Soni

Biomaterials & Artificial Organs.

2. S. Arunkumar

Computers in Biology and Medicine, Telemedicine, Intelligent systems and pattern recognition approaches to the analysis of medical and biological data.

Alumni Visiting Professor

1. Nitish V Thakor

Medical Instrumentation, Neuroengineering, Neural Signal Processing, Devices, Microsystems and Prostheses.

Chemical Engineering

Introduction

The Department of Chemical Engineering is one of the largest departments in the Institute in terms of number of faculty members, students enrolled and research funding received. Currently the Department has on its roll 40 faculty members, seven Post-doctoral fellows, 787 students (494 B.Tech., 119 M.Tech. and 174 PhD students), 25 Staff and 152 Research Assistants.

The Department has a strong focus on excellence in education and research which is reflected in a large output in research as seen by publication record of the department (3.4 journals per faculty per year). The sponsored and consultancy projects funding is also increasing over the years with an average of about 75 Lakhs per faculty per year.

Academic Programmes

Degrees Awarded

B.Tech.	:	59
Dual Degree (B.Tech., M.Tech.)	:	36
M.Tech.	:	19
M.S. (by Research)	:	03
Ph.D.	:	10
PGDIIT (Exit)	:	01

R&D Activities

The diverse research areas of the department, including Biological Systems Engineering, Soft Matter Engineering, Process Systems Engineering, Catalysis and Reaction Engineering, Thermodynamics & Molecular Simulations and Energy, Environment & Sustainability, has a strong focus in the themes relating to Healthcare, Energy and Materials.

The department is involved in a variety of frontier and traditional areas in chemical engineering research, under the broad areas of:

Biological Systems Engineering
Energy & Environment
Materials Engineering
Process Systems Engineering
Reactor Engineering
Transport Phenomena and Complex Fluids

The Department received grants from various sources towards many new projects during the year apart from various ongoing projects. The summary of which is as follows:

Sponsored Research Projects

Ongoing	:	63
New	:	15
Projects Completed	:	24

The details of these projects is given in the following table:

Sponsored Projects initiated in 2013-14

Sr. No.	Title of the Project	Sponsored by	Status
1	Mathematical model development to understand the growth kinetics and thermodynamics for nanoparticle synthesis	Applied Materials Inc.	Ongoing
2	A Meeting of the Executive Editors of the APT Journal was held in Korea during August 18-19, 2013.	Advanced Power Technology	Ongoing

Sr. No.	Title of the Project	Sponsored by	Status
3	Online Fault Detection and Diagnosis of Self Powered Neutron Detectors (SPNDs) using Data Driven Techniques	Board of Research in Nuclear Sciences (BRNS)	Ongoing
4	Energy Bioscience Overseas Fellowship of DBT for Dr. Sujata Sohoni	Department of Biotechnology(DBT)	Ongoing
5	Stereoselective synthesis of chiral alcohols of pharmaceutical importance via microbial oxidoreductases: Process development and scale-up	DBT	Ongoing
6	INSPIRE Faculty award research grant	Department of Science & Technology (DST)	Ongoing
7	Stochastic Modeling and Optimization of Biochemical Processing of lignocellulosic Feedstock	DST	Ongoing
8	Multifunctional reactors in the synthesis of biofuels	DST	Ongoing
9	Electrochemical Oxidation of Polyols for Electrical power and Electro-synthesis of valuable chemicals.	DST	Ongoing
10	Enhancements in Explicit Model Predictive Control: A Multi-model Approach for Nonlinear Systems	DST	Ongoing
11	Rheology of Fat Crystal Networks and Modulation by Crystal Modifying Additives	DST	Ongoing
12	Microfluidics-Based Approach to Generation of Nanofibres	DST	Ongoing
13	Theory and simulations of polymer-anisotropic particle nanocomposites	DST	Ongoing
14	Understanding the Mechanism of Sensing and Motion During the Chemotactic Migration of Escherichia Coli	DST	Ongoing
15	Concurrent Science, Engineering, and Technology for the Prevention of Postharvest Loss: Optimization Model	Development and Analysis University of Illinois at Urbana Champaign, USA	Ongoing
16	Efficient Decentralized Constrained State Estimation	Indo-US Science & Technology Forum, New Delhi	Ongoing
Sponsored Projects initiated in 2012-13			
17	Development of non-hazardous process for the synthesis of Dimethyl carbonate (DMC) from methanol and urea	Council of Scientific and Industrial Research	Ongoing

Sr. No.	Title of the Project	Sponsored by	Status
18	Development of platform technology for Nitrilase catalyzed biotransformation processes	DBT	Ongoing
19	Nanocomposite hollow fiber membranes and biomaterials for hemodialysis and reconstructive medicine	DBT	Ongoing
20	Development of bacterial expression systems suited for large scale production of industrial enzymes.	DBT	Ongoing
21	Reprogramming cellular networks in Salmonella enterica to develop novel vaccines.	DBT Innovative Young Biotechnologist Award	Ongoing
22	Ramanujan Fellowship - Electrochemical oxygen reduction on platinum sub-monolayer electrocatalysts	DST	Ongoing
23	Self-assembly in Colloidal systems: From photonics crystals to mud-cracking	DST	Ongoing
24	Process and Product Improvements in Kolhapur type Jaggery Making Unit.	DST	Ongoing
25	IRHPA Projects Workshop 2013	DST	Ongoing
26	Engineering Escherichia coli strains optimized for large scale lignocelluloses fermentation for biofuel production	DST	Ongoing
27	Thermodynamically Stable Pickering Emulsions	DST	Ongoing
28	Design and Synthesis of Porous Materials for Carbon Capture and Sequestration: Molecular modeling study	DST	Ongoing
29	Genomic scale systemic modeling of gene regulatory networks, metabolic and signaling pathways to predict phenotypic response and experimental validation	DST	Ongoing
30	Development of electrocatalysts for electrochemical reduction of carbon dioxide to formic acid and syn-gas	DST	Ongoing
31	Development and setting up of propylene drying unit at Visakh Refinery	Hindustan Petroleum Corporation Ltd.	Ongoing
32	Coupled Geochemical and Transport processes in Geologic Carbon Sequestration: Evolution of Geochemical Gradients and Flow properties in Diffusion-Limited Zones	Mc Donell Academy, St. Louis, USA.	Ongoing
33	FOSS on Aakash	MHRD	Ongoing

Sr. No.	Title of the Project	Sponsored by	Status
34	Hardware and Software optimization, and testing of Low Cost Access Devices (LCAD)	MHRD	Ongoing
35	Teachers Empowerment, Students Empowerment, and Integration Tools for Empowerment (Synchronous Delivery), abbreviated as the Talk to a Teacher project (Phase 2)	MHRD	Ongoing
36	National Mission on Education through ICT	MHRD	Ongoing
37	Metabolic engineering of a model cyanobacterium <i>Synechococcus</i> sp. PCC 7002 for enhanced bio-fuel production.	Reliance Industries Ltd, Mumbai	Ongoing
Sponsored Projects initiated in 2011-12			
38	CFD modeling and simulation of chemical vapor deposition reactor for production of high purity silicon ingots	BRNS	Ongoing
39	Engineering a Novel Bioreactor and Cell Sorter for Pluripotent Stem Cell Culture	DBT	Ongoing
40	Bioprospecting for Alcohol dehydrogenases for Chiral Synthesis	DBT	Ongoing
41	Multivariable Control Scheme for Gas Turbines using the Model Predictive Control Strategy	Defence Research & Development Organisation (DRDO)	Ongoing
42	Bioactivity Studies of Bhasmas	DST	Ongoing
43	Nanoparticles in Traditional Medicine may lead to New Medical Chemistry: A Study of Bhasmas Using Modern Sciences	DST	Ongoing
44	Saltation and attrition of solid particles in pneumatic conveying systems	DST	Ongoing
45	WOS-A “Genomic scale modeling of gene regulatory networks cross-linking metabolic and signaling pathways for a specified phenotype”	DST	Ongoing
46	Study of Distribution of Counter-ions around ionic Micelles using SANS and SAXS	DST	Ongoing
47	Engineering Silver Nanoparticle Impregnated Activated Carbon for Water Purification	DST	Ongoing
48	IITB-Centre of Excellence in Climate Studies (IITB-CECS)	DST	Ongoing
49	Phase-II, Homeopathy: An Investigation Based on Concepts of Nanomedicine	DONATION	Ongoing

Sr. No.	Title of the Project	Sponsored by	Status
50	IFCPAR Industrial Research Project No.7114-Air Pollution	Indo-French Centre for the Promotion of Advanced Research	Ongoing
51	FOSSEE: Free/Open Source Software in Science and Engineering Education (Assimilation of Open source Software in Science and Engineering)	MHRD	Ongoing
52	Transport and Rxn Engg RT Labs	MHRD	Ongoing
53	GNUKhata - Open source software	MHRD	Ongoing
54	Award of Post Doctoral Fellowship for Women for 2009-10/2010-11 (category -Gen)	University Grants Commission	Ongoing
Sponsored Projects initiated in 2010-11			
55	CSIR Junior Research Fellowship in r/o Ms. Amrita Singh (Roll No. 08530020)	Council of Scientific and Industrial Research	Ongoing
56	Solar Bio-fuel and Carbon Sequestration with Cyanobacteria: Role of Genetic Networks.	DBT	Ongoing
57	Research and Development support SERC (FIST) Programme.... Chemical Engg.Dept.	DST	Ongoing
58	JC Bose Fellowship	DST	Ongoing
59	Chemical Engg. Lab I	MHRD	Ongoing
60	Electronics design using DSP, FPGA, CPLD and Micro controllers through simulation and direct access of the hardware	MHRD	Ongoing
61	Discipline wise co-ordination	MHRD	Ongoing
62	Design and Development of Vacuum Pyrolysis Plant to Process Various Agricultural and Agro-Industrial Biomass to Demonstrate Its Technical and Economical Feasibility	Ministry of New and Renewable Energy	Ongoing
63	Process Improvements and Technology Dissemination in Jaggery Making.	Rajiv Gandhi Science and Technology Commission	Ongoing

Consultancy projects

The department undertook 14 jobs generating Rs. Rs.4846502/- The total number of faculty involved were eight.

Extension activities

Following CEP courses were conducted during the year

Online Piping Engineering Course
Piping Engineering
Introduction to Systems and Synthetic Biology
Bio-informatics
Reaction Engineering

Chemical Process risk analysis and management
Underground Coal gasification.

The department has organised Research Scholars' Symposium 2013 and Azeotropy 2013.

International Conference DYCOPS 2013 – Dynamics and Control of Process Systems, Under International Federation of Automatic Control, December 18-20, 2013, and CAB 2013 – Computer Applications in Biotechnology, under International Federation of Automatic Control, December 16-18, 2013, were also organised.

Visitors to the Department

Dr. Ashish Lele, Polymer Science and Engineering Division National Chemical Laboratory, Pune, delivered a talk on “From Macromolecular Structure to Polymer Processing: Bridging length and time scales,” on April 1, 2013.

Dr. Srinivas Seethamraaj, Postdoctoral Associate, MIT, Cambridge, USA, delivered a talk on “Simulation & Analysis of XTL Processes,” May 23, 2013.

Md. Ali Haider, Department of Chemical Engineering, University of Virginia, delivered a talk on “*Reaction Mechanisms and the Design of Heterogeneous Catalysts for Sustainable Energy*,” May 30, 2013.

Dr. Lakshminarayana Rao, Technology Development Manager at Pyrogenesis Canada Inc., Montreal, delivered a talk on “Thermal Plasma Technology for Renewable Energy Production, Waste Destruction and Advanced Materials Production”, July 11, 2013.

Prof. Abhyudai Singh, Department of Electronics and Computer Engineering, University of Delaware, delivered a talk on “Stochastic Inference of Regulatory Networks Inside Living Cells,” on July 15, 2013.

Kausik Sarkar, Department of Mechanical and Aerospace Engineering, George Washington University, delivered a talk on “Encapsulated Microbubbles: From echocardiography to noninvasive blood pressure monitoring and targeted drug delivery”, July 18, 2013.

Prof. Bhavik Bakshi, Department of Chemical Engineering, Ohio State University, Columbus, delivered a talk on “Seeking Synergy Between Technological and Ecological Systems for Sustainable Engineering,” on August 1, 2013.

Dr. Dasgupta, Chemical Physics Weizmann Institute of Science Rehovot, Israel, delivered a talk on “Microscopic Mechanism of Strain Localisation in Amorphous Materials,” on August 8, 2013.

Dr. Niket Kaisare, Principal Scientist ABB Corporate Research Centre Bangalore, delivered a talk on “Model-Based Advanced Control: Perspectives from Academia and Oil & Gas Industry,” August 29, 2013.

Prof. Balaji Narasimhan, Vlasta Klima Balloun Professor, Department of Chemical and Biological Engineering, Iowa State University, delivered a talk on “Pathogen Mimicking Nanovaccine Platform Technology: A New Paradigm,” on September 3, 2013.

Prof. Surya Mallapragada, Professor of Chemical and Biological Engineering and Stanley Endowed Chair of Interdisciplinary Engineering, Iowa State University, delivered a talk on “Self—assembling block copolymers for gene delivery and biomineralization,” on September 5, 2013.

Dr. Rohini Gupta, Post-doctoral Fellow at University of Pennsylvania, delivered a talk on “Tuning fluid surface interactions via manipulation of interfacial functionality and topography,” on September 19, 2013.

Mr. Dhrubajyoti Kalita, Research Scientist at Godrej Consumer Products Ltd., Mumbai, delivered a talk on “Carboplatin loaded polymeric acrylate nanoparticles for passive and active targeting to ocular cancer,” on October 31, 2013.

Prof. Madhu Chetty, Associate Professor, Gippsland School of Information Technology, Monash University. “S-system modelling for reconstructing gene regulatory network,” on November 28, 2013.

Dr. Jonathan D. Picker, Assistant Professor of Pediatrics, Harvard Medical School, delivered a talk on “Applying the genome project practically to patient care,” on November 28, 2013.

Dr. Akshat Tanksale, Department of Chemical Engineering, Monash University, Clayton Campus Victoria 3800, Australia, delivered a talk on “Pathways for Conversion of Biomass into Platform Chemicals for Bio-refinery Application,” on December 2, 2013.

Prof. Sathish K Sukumaran, Ryohei Komuro, Masataka Sugimoto and Kiyohito Koyama, Graduate School of Science and Engineering, Yamagata University, Japan, delivered a talk on “Slip at the interface between immiscible polymer melts,” on December 12, 2013.

Prof. Zubin Jacob, Electrical and Computer Engineering, University of Alberta, Canada, delivered a talk on “Nanoengineering the Coherent, Thermal, and Quantum State of Light Using Metamaterials,” on December 18, 2013.

Prof. James Schwaber, Director and Professor, Daniel Baugh Institute for Functional Genomics and Computational Biology, Pennsylvania, “What is it to be Conscious?,” on December 20, 2013.

Dr. Harshit Patel, PhD - USA, MS (Chemical Engineering) - Rensselaer Polytechnic Institute, USA, B.E. (Chemical) - Mumbai University, delivered a talk on “Tail Ordering Due to Headgroup Hydrogen Bonding Interactions in Surfactant Monolayers at the Water-Oil Interface,” January 2, 2014.

Prof. John Beardall, Professor of Biology, School of Biological Sciences, Monash University, Australia, delivered a talk on “Limits to phototrophic growth in dense Algal cultures: CO₂ supply and light,” on January 23, 2014.

Prof. Viatcheslav (Slava) Freger, Wolfson Department of Chemical Engineering, Technion -Israel Institute of Technology, Haifa, Israel, delivered a talk on “Selected Problems in Reverse Osmosis and Nanofiltration,” on January 24, 2014.

Dr. Sandeep Pathak, Postdoctoral Fellow, University of Oxford, UK, delivered a talk on “Perovskite Solar Cell: performance, Stability and Future prospects,” on February 20, 2014.

Dr. Anand Srivastava, Department of Chemistry, Center for Multiscale Theory and Simulation, Institute for Biophysical Dynamics, James Franck Institute and Computation Institute, The University of Chicago, Chicago, delivered a talk on “Using transformative coarse-graining methods to unravel sub-cellular and cellular processes in biological systems at multiple length and time scales,” March 6, 2014.

Dr. Subir Kumar Nandy, Center for Microbial Biotechnology, DTU, Denmark, delivered a talk on “Industrial Cell Factories — Systems Biology and Metabolic Engineering of the production of primary and secondary metabolites by Cell Factory Engineering, Tools and Applications,” on March 14, 2014.

Devaki Bhaya, Carnegie Institution, Stanford, “Interacting Microbial Communities: From Metagenomics to Mechanism”, on March 20, 2014.

Conferences/Symposia/Workshops and Seminars (participated/papers presented)

Bhushan Mani

Presented a talk titled “Microfluidic route to generation of celloidosomes” at the APS March meeting 2013 held at Baltimore, USA, from March 18-22, 2013.

Gudi Ravindra

Chair, National Organizing Committee for *International Conference on Dynamics and Control of Process Systems*, DYCOPS 2013, held at IIT Bombay, December 18-20, 2013.

Member, National Organizing Committee for *International Conference on Computer Applications to Biotechnology*, CAB 2013, held at IIT Bombay, December 16-18, 2013.

Gundabala Venkat

Delivered a talk on “Surface non-uniformities of waterborne latex coatings”, at *Mumbai-Pune Soft matter Meet* held in IISER Pune, on August 17, 2013.

Kottaki Krishna Kumar (presented the work), Bhushan Mani and Bhartiya Sharad

“Nonlinear Update Based Unscented Gaussian Sum Filter”, *10th IFAC International Symposium on Dynamics and Control of Process Systems (DYCOPS)*, pp. 172-177, Mumbai, December 2013

“Gaussian Sum Unscented Gaussian Sum Filter: An Improvement in GS-UKF”, *Third International Conference on Advances in Control and Optimization of Dynamical Systems*, IIT Kanpur, March 2014.

Sengupta Tirthankar, Jain Shivi and Bhushan Mani

“A Compressed Sensing Based Basis-Pursuit Formulation of the ROOM Algorithm”, *12th IFAC International Symposium on Computer Applications in Biotechnology*, IFAC, Mumbai, December 2013, pp. 249-254.

Malani Ateeque

Attended and presented paper “Soft Matter - Young Investigator Meet”, Pondicherry, India, on “Molecular level modeling of wetting behaviour and self assembly processes”, in January 2014.

Attended and presented paper at *Asian Conference on Colloid and Interface Science*, North Bengal University, India, on “Float method: Measuring equilibrium and dynamic contact angles using molecular simulations”, December 2013.

Attended and presented paper, AIChE Annual Meeting, San Francisco, USA, on “Can dynamic contact angle be measured using molecular modeling?,” November 2013.

Narayanan Janaky

Presented a paper on “Methodology for Selection of Optimal Process Parameters for Gas Anti-Solvent Crystallization Process” at the *66th Annual Chemical Engineering Congress (CHEMCON 2013)*, December 27-29, 2013.

Roy Sandip

Presented a paper on “Methodology for Selection of Optimal Process Parameters for Gas Anti-Solvent Crystallization Process” at the *66th Annual Chemical Engineering Congress* (CHEMCON 2013), December 27-29, 2013.

Seth Jyoti

Presented a seminar “Dynamics simulations of Soft Colloidal Glasses” at the Soft Matter - Young Investigator’s Meet (2014) at Pondicherry, India.

Attended a meeting on “Prospects and Challenges in Algal Biotechnology” in IIT Guwahati (2014) and gave a talk on “Challenges for Bio-Energy from micro-algae”

Saini Supreet

A Systems Biology Approach to Analyze Metabolism in *Clostridium acetobutylicum*. *Asian Congress on Biotechnology*, IIT Delhi, December 2013.

Characterization of Performance and Dynamics of Genetic Networks, *Computer Applications in Biotechnology* (IFAC), IIT Bombay, December 2013.

Modeling Gene Regulatory Networks (GRNs). MGAN QIP Short term course on Bioinformatics, IIT Bombay, January 2014.

Shastri Yogendra

Participated and presented a paper at the *10th International Symposium on Dynamics and Control of Process Systems* (DYCOPS), Mumbai, India.

Mukhtyar V., Shastri Y. and Gudi, R.

Improved stable, optimal production in gas lift wells: Exploiting additional degrees of freedom in *10th International Symposium on Dynamics and Control of Process Systems* (DYCOPS), Mumbai, India, 2013.

Soman A. and Shastri Y.

Participated and presented a paper on Optimization of novel photobioreactor design using computational fluid dynamics, in *4th International Conference on Advances in Energy Research* (ICAER), Mumbai, India, 2013.

Gupta S. Sen, Bhartiya, S. and Shastri. Y.

Presented a paper on Model-based Optimisation of Integrated Algae Biorefinery in *3rd International Conference on Advances in Control and Optimization of Dynamical Systems* (ACODS), IIT Kanpur, India, 2014.

Thaokar Rochish

Presented a poster on “Soft Condensed Matter” at *Gordon Conference 2013*, New Hampshire, US.

Bhaskar R.V.S. Uday, Tirumkudulu, M. S. and Venkatesh, K. V.

“Mathematical modelling for collective chemotaxis and aerotaxis response of *Escherichia coli*”, *12th IFAC Symposium on Computer Applications in Biotechnology*, Mumbai, December 16-18, 2013.

Karmakar R., Gulvady R., Tirumkudulu M.S. and Venkatesh, K.V.

“Rheological Behavior of a Suspension of *Escherichia Coli* with Varying Motor Characteristics” *Biophysical Society 58th Annual Meeting*, San Francisco, February 2014.

Tirumkudulu, M.S., Karmakar, R., Gulvady, R. and Venkatesh, K.V.

“Rheological behavior of a suspension of microswimmers varying in motor characteristics”, *APS-DFD*, Pittsburg, November 2013.

Baraskar A.A, Deb, A. and Viswanathan G.A.

Presented a paper “Noise propagation in series enzymatic cascade” in the *12th IFAC Conference on Computer Applications in Biology* held between December 16-18, 2013, at IIT Bombay, Powai, Mumbai – 400076.

Narendiran K. and Viswanathan G.A.

Presented a paper “Spatiotemporal Pattern Formation in Non-Adiabatic, Catalytic Packed Bed Reactors (poster)”. *Chemcon 2013, ICT, Mumbai*, December 2013.

Invited Lectures

Gudi Ravindra D.

Delivered the 16th Dr. PS Murti Memorial Lecture on “Advanced in Batch Manufacturing” at the Indian Institute of Chemical Technology (IIC), Hyderabad, January 10, 2014.

Juvekar Vinay A

“Conducting Polymers for Energy Storage,” Indo-US Session on Water, Energy and Environment, December 28-30, 2014.

“Development of Efficient Liquid Emulsion Membranes for metal recovery from dilute solutions,” in the *International Conference on Membrane Separations for Fuel Cycle Applications (MEMSEP-2013)*, BARC, India, September 16-18, 2013.

“Liquid Emulsion Membrane for Extraction of Metal ions from dilute solutions,” in the *Second International Conference on Membranes (ICM 2013)*, Kottayam, India, October 3-6, 2013.

“Interfacial Rheology,” in *Symposium on Rheology of Complex Fluids-2013*, Sponsored by Science and Engineering Research Board (SERB), December 19- 20, 2013.

Malik Ranjan K.

Delivered Lectures for BARC Training School for the course on Modeling, Simulation, and Optimization.

Saini Supreet

“Counting and control in bacteria via Secretion”, Bacterial Expressions, National Center for Biological Sciences (NCBS), Bangalore, 2013.

“Systems Biology of Salmonella infection process”, BioWorld: Computational Biology in Disease and Disorder, IIT Delhi, India, December 2013.

“Computational methods in linear and stochastic systems” Workshop on Advanced Methods in Numerical Computing, National Institute of Technology, Agartala, Tripura, 2013.

Shastri Yogendra

“Heuristics optimization techniques”, at a Refresher course in Applied Mathematics and Statistic, UGC Academic Staff College, University of Mumbai. Conducted at the Department of Mathematics, ICT Mumbai, December 2013.

Robust design of lignocellulosic biomass based energy systems”, at the IITB-Monash Energy Symposium, IIT Bombay, Mumbai, India, 2013.

Tirumkudulu Mahesh S.

Prof. C. V. Seshadri Memorial Distinguished Lecture - 2013 in IIT Kanpur.

Tripathy Mukta

“Phase behavior of anisotropic colloidal rods”, Department of Chemical Engineering, Indian Institute of Science, Bangalore, May 2013.

“Introduction to Integral Equation Theory of Spherical Particle Fluids”, Department of Chemical Engineering, Indian Institute of Science, Bangalore, June 2013.

“Penetrable particle systems”, Soft Matter Young Investigators Meet, Puducherry, January 2014.

“Structure and phase behaviour of soft particle systems”, Department of Chemical Engineering, IIT Kanpur, January 2014.

Venkatesh, K. V.

“Multiscale modeling of whole body human,” at Bioworld-2013, IIT Delhi, December 9, 2013.

Viswanathan Ganesh, A.

“Systems biology of TNFa signaling,” at Bioworld 2013, IIT Delhi, December 2013.

“Network Construction” at India-UK Scientific Seminar on ‘Prospects and Challenges in Algal Biotechnology’, IIT Guwahati, February 2014.

Significant Awards and Distinctions

Bandyopadhyaya Rajdip

Member of Editorial Board of Journal: Advanced Powder Technology.

Bellare Jayesh

Member of Editorial Board of Journal: Proceedings of National Academy of Sciences, India.

Member of Editorial Board of Journal: Journal of Colloid Interface Science.

Bhushan Mani

Recipient of IUSSTF (Indo US Science and Technology Forum) Fellowship 2013.

Gudi R. D.

Member of Editorial Board of Journal: Journal of Process Control.

Juvekar Vinay A.

IICHe Chemcon Distinguished Speaker Award, 2014.

Khakhar D. V.

Member of Editorial Board of Journal: Advanced Particle Technology.

Member of Editorial Board of Journal: Advanced Powder Technology.

Mayya Y. S.

Member of Editorial Board of Journal: Journal of Aerosol Science.

Mehra Sarika

Member of Editorial Board of Journal: Journal of Chemical Technology and Biotechnology.

Patwardhan Sachin

Member of Editorial Board of Journal: Journal of Process Control.

Suresh A. K.

Member of Editorial Board of Journal: Journal of Nanofluids.

Member of Editorial Board of Journal: Recent Patents on Chemical Engineering.

Tirumkudulu Mahesh S.

Swaranajayanti Fellowship for years 2012-2017.

Venkatesh K. V.

Associate Editor, BMC Systems Biology.

Venkataraman Chandra

Member of Editorial Board of Journal: Aerosol Science and Technology.

Member of Editorial Board of Journal: Tellus B-Atmospheres.

Member of Editorial Board of Journal: Journal of Atmospheric Chemistry.

Wangikar Pramod

Member of Editorial Board of Journal: Biotechnology & Bioengineering.

Honorary Work**Bhushan Mani**

Reviewed papers for Industrial & Engineering Chemistry, Computers & Chemical Engineering, Journal of Process Control.

Chatterjee Abhijit

Reviewer for JCP, PRB, JOSS

Goswami Partha Sarathi

Reviewed a paper in Computers and Fluids (Elsevier)

Jadhav Sameer

Reviewer for Chemistry and Physics of Lipids, Colloids and Surfaces B

Juvekar Vinay A.

Paper Reviewed: ACS Applied Materials & Interfaces (1 No), Industrial & Engineering Chemistry Research (3 No), The Journal of Physical Chemistry (1 No), Applied Surface Science (2 No), Chemical Engineering Journal (1No), American Institute of Chemical Engineering (AIChE) Journal (1No), Colloids and Surfaces A (1No), Fluid Phase Equilibria (1No), The Canadian Journal of Chemical Engineering (1No), Separation and Purification Technology (1No), Bulletin of Materials Science (1No), Ultrasonics Sonochemistry (1No)

Reviewed papers: Chemical Engineering Journal (1No), American Chemical Society applied materials and Interfaces (1 No), Journal of Physical Chemistry (1No), AIChE Journal (1No), IECR (4 No), Bulletin of Materials Science (1No), Separation and Purification Technology (1No), Ultrasonic Sonochemistry (1No), Canadian Journal of Chemical Engineering (1No), Applied Surface Science (2No) . Colloids and Surfaces A (1No), Fluid Phase Equilibria (1No).

Malik Ranjan K

Reviewed a total of seven manuscripts for AIChE J. (1); Asia-Pacific Journal of Chemical Engineering (1); Computers and Chemical Engineering (2); I&EC Research (2); Indian Journal of Chemical Technology (1)

Ph.D. Thesis Adjudication for Andhra University (1)

Reviewed a Book Proposal from Wiley Publisher on Optimization of Energy Systems.

Patwardhan Sachin, C.

Associate Editor, IFAC Journal of Process Control.

Shastri Yogendra

Reviewed journal manuscripts for Bioresource Technology, Biofuels Bioproducts and Biorefining, Journal of Theoretical Biology, Computers and Electronics in Agriculture, Energy Conservation and Management, Chemical Engineering Research and Design.

Reviewed conference manuscripts for ACODS 2104, ADCONIP 2014, INDICON 2013.

Thaokar Rochish

Reviewer for JFM, Physics of Fluids, Langmuir, Colloids and Surfaces, I and E C, Sadhana, Resonance

Tirumkudulu Mahesh S.

Reviewed manuscripts for Langmuir, Physics of Fluids, AIChE.

Reviewed PhD thesis from IIT Kanpur and Jadavpur
Reviewed NPTEL course on Fluid Mechanics

Tripathy Mukta

Reviewer of Book Chapter - Springer (Under Springer Tracts in Mechanical Engineering).

Faculty Members and their specializations**1. Jhumpa Adhikari**

Statistical Thermodynamics, Molecular Simulations

2. Rajdip Bandyopadhyaya

Porous Media, Colloids, Aerosols, Thin films, Surface Science, Nanoparticles, Nano-composites, Molecular Simulations

3. Jayesh Bellare

Separations, Surface Science, Nanoparticles, Microscopy, Drug Delivery

4. Sharad Bhartiya

Process Control, Modelling, Identification

5. Mani Bhushan

Process Safety Analysis, Process Control, Optimisation, Identification

6. Abhijit Chatterjee

Computational Material Science, Multiscale modeling, Energy application

- 7. Ratul Dasgupta**
Amorphous solids & Fluid Mechanics
- 8. Partha Sarthi Goswami**
Turbulent suspensions, Multiphas flow
- 9. S Ganeshan**
Heat and Mass Transfer
- 10. Ravindra D. Gudi**
Process Safety Analysis, Process Control, Optimisation, Identification, Biochemical Engineering
- 11. Venkat Gundabala**
Microfluidics, Colloids and nano-composite materials
- 12. Sameer Jadhav**
Surface Science, Computational Flow Modelling (CFD), Drug Delivery, Biomolecular Engineering
- 13. Vinay A. Juvekar**
Surfactants, Separations, Rheology, Electrohydrodynamics, Multiphase Reaction, Surface Science, Polymer Physics
- 14. Devang V. Khakhar**
Surfactants, Rheology, Granular Flow, Reactor Modelling, Polymer Processing, Nano-composites, Drug Delivery
- 15. Abhijit Majumder**
Material Science, Cell Biology, Soft Mechanics & Microfluidics
- 16. Sanjay. M. Mahajani**
Separations, Computational Flow Modelling (CFD), Multiphase Reaction, Catalysis, Renewable Resources, Coal Gasification
- 17. Ateeque Malani**
Computational Material science, Modeling and Interfacial science, Simulations.
- 18. Ranjan Kumar Malik**
Separations, Modelling, Energy Integration
- 19. Anurag Mehra**
Surfactants, Multiphase Reaction, Nanoparticles, Molecular Simulations, Food Engineering
- 20. Sarika Mehra**
Systems Biology, Computational Biology, Biomolecular Engineering
- 21. Arun Sadashio Moharir**
Separations, Reactor Modelling, Optimisation, Modelling, Pollution
- 22. Kannan M. Moudgalya**
Process Control, Modelling
- 23. Mamata Mukhopadhyay**
Separations, Food Engineering
- 24. V. M. Naik**
Surfactants, Separations, Electrohydrodynamics, Colloids, Surface Science, Polymer Processing, Nanoparticles, Food Engineering
- 25. Hemant Nanavati**
Statistical Thermodynamics, Polymer Processing, Polymer Physics, Nano-composites, Molecular Simulations, Renewable Resources
- 26. Janaky Narayanan**
Surfactants, Rheology, Surface Science, Microscopy
- 27. Santosh Noronha**
Renewable Resources, Green Engineering, Systems Biology, Computational Biology, Biomolecular Engineering, Biochemical Engineering
- 28. Sachin C. Patwardhan**
Process Control, Modelling, Identification
- 29. V Govardhana Rao**
Separations, Rheology, Heat and Mass Transfer
- 30. Sandip Roy**
Surfactants, Separations, Process Safety Analysis, Surface Science, Statistical Thermodynamics, Renewable Resources
- 31. Supreet Saini**
Systems Biology, Synthetic Biology, Theoretical Biology
- 32. Arindam Sarkar**
Electrochemistry, Material Science
- 33. Jyoti Seth**
Complex Fluids, Renewable Energy
- 34. Yogendra Shastri**
Process systems engineering, Optimization, Biofuels sustainability
- 35. P. Sunthar**
Surfactants, Granular Flow, Fluid Mechanics and Stability, Computational Flow Modelling (CFD), Polymer Physics, Drug Delivery
- 36. A. K. Suresh**
Heat and Mass Transfer, Multiphase Reaction, Catalysis, Nanoparticles, Biochemical Engineering

37. Rochish M Thaokar

Surfactants, Electrohydrodynamics, Computational Flow Modelling (CFD), Colloids, Statistical Thermodynamics, Nanoparticles, Drug Delivery

38. Mahesh S. Tirumkudulu

Surfactants, Rheology, Computational Flow Modelling (CFD), Colloids, Coatings, Thin films, Surface Science, Drug Delivery

39. Mukta Tripathy

Colloid Science, Statistical Mechanics, Self-assembly, Polymer Science

40. Chandra Venkataraman

Aerosols, Surface Science, Nanoparticles, Nanocomposites, Drug Delivery, Renewable Resources, Pollution, Climate Change

41. K. V. Venkatesh

Food Engineering, Systems Biology, Biomolecular Engineering, Biochemical Engineering

42. Madhu Vinjamur

Porous Media, Heat and Mass Transfer, Coatings, Food Engineering, Renewable Resources

43. Ganesh A Viswanathan

Reactor Modelling, Multiphase Reaction, Systems Biology, Computational Biology, Biomolecular Engineering

44. Pramod Wangikar

Process Control, Modelling, Computational Biology, Biomolecular Engineering, Biochemical Engineering

Gh Chemistry

Introduction

The Department of Chemistry has 35 faculty members on its roll, with expertise in various areas of chemistry and allied subjects and a large number of motivated young students assisting the faculty in their research. There is an ongoing effort to maintain quality teaching and research standards and to generate adequate financial support. The Department has emerged as one of the leading centers for education and research in India.

Many of the faculty members of the Department serve as members of the Project Advisory Committees of the DST, CSIR and DAE, as well as serve on the Editorial Boards of several reputed journals. Every year around 100 papers are being published in reputed journals.

The faculty members also participate in a variety of activities relevant to academic life, such as imparting CEP courses and refresher courses of other Universities, helping other institutions in critical review of their academic and research programmes, evaluating student's dissertations, serving as experts in different committees, peer review of research project proposals submitted to funding agencies, and contributing to various journals at home and abroad as referees and as members of editorial boards.

Academic Programme

The General Chemistry program of the Department consists of two theory and two laboratory courses in the core curriculum of the first year B.Tech./Dual Degree M.Tech. programmes and has received much praise for the molecular level understanding it provides to all areas of technology. The Department also offers an additional course to third year B.Tech./Dual Degree M.Tech. (Chemical Engineering) students. Furthermore, the department has three well established academic programmes leading to M.Sc. and Ph.D. degrees: 2-year M.Sc. for post B.Sc. students, with entrance through JAM, 5-year integrated M.Sc. Chemistry with entrance through JEE, and Ph.D. in

Chemistry. The syllabi of all these are reviewed and updated periodically in order to meet the changing scenario in the field.

Degrees Awarded

5-year Int. Programme	:	14
2-year M.Sc. Programme	:	37
Ph.D.	:	23

R &D Activities

The Department is involved in attracting research funding through various national and international sponsoring agencies in addition to industrial support. Large number of students registered for department's Ph.D. programme have been financed through sponsored projects and individual CSIR and UGC fellowships.

Main areas of research and development activities of the Department include: Biophysical Chemistry; Coordination Chemistry; Bio-inorganic Chemistry; Organometallic Chemistry; Bio-organic Chemistry; Chemistry of Natural Products; Synthetic Organic Chemistry; Photochemistry and Spectroscopy; Polymer Chemistry; Thermodynamics; Electrochemistry; Solid state Chemistry and Physics; Catalysis; Theoretical Chemistry

Sponsored Research Projects

Sponsored Projects	:	108
New Projects	:	18
Ongoing Projects	:	72
Completed	:	18

List of the projects is as given below:

Sr. No.	Name of the Project	Sponsored by	Status
1	Maintenance and Support of Exploration Centre	Applied Materials, Inc. (AMAT)	New
2	Stereo- and Regioselective Synthesis of Aminophosphonates, Aminosulfones and Aminocarboxylates	Board of Research in Nuclear Sciences (BRNS)	New
3	Synthesis of Trehalose Glycolipids & Lipooligosaccharides	BRNS	New
4	Stereoselective strategies for the synthesis of N-fused indoles: Application to the total synthesis of yuremamine	BRNS	New
5	Strategic Total Synthesis of Strained Medium-Ring-Sized Bioactive Molecules	BRNS	New
6	Research Associateship in r/o Mr.Nazia Tarannum in the CSIR Scheme	Council of Scientific & Industrial Research (CSIR)	New
7	New Methods for the Stereoselective Synthesis of 6- and 7-Membered 1,4-Heterocyclic Compounds	CSIR	New
8	Development of Chiral pi-Allylpalladium Catalysis: Synthesis of N-Heterocycles and New Molecular Scaffolds	CSIR	New
9	Tuning the MCE (DeltaS and DeltaT) properties of molecular nanomagnets	CSIR	New
10	Studies on Continuous Flow Syntheses of Conjugated Polymers	Department of Science and Technology (DST)	New
11	Indo-EU Water Project Meeting	DST	New
12	DST Fast Track Young Scientist (Dr. Upendra Sharma)	DST	New
13	Probing the Excited State and Photodissociation Dynamic on Intermolecular and Intramolecular Potentials	DST	New
14	Palladium Catalysed first direct Dehydroxymethylation of Alcohols and Decarbonylation of Aldehyde (DST Fast Track Dr. Rajesh Kancherla C/o Prof. D Maiti)	DST	New
15	Photo-absorbers the Important Next-Generation Sensitizers for Dye-Sensitized Solar Cells: Synthesis and Studies in Search of New Photo-absorbers (Dr. Tamanna Khan C/o Prof. M. Ravikant)	DST	New
16	JSPS-DST Exploratory Exchange Visit of Programme	DST	New

Sr. No.	Name of the Project	Sponsored by	Status
17	Development of Cyclopentannulation and Dötz Benzannulation in the Synthesis of New Molecular Scaffolds and Natural Products	DST	New
18	Golden Jubilee Chemistry	Golden Jubilee Chemistry (GJC)	New
19	Performance Evaluation of Caged Polycyclic High Energy Density Fuels	Aeronautics Research and Development Board (ARDB)	Ongoing
20	Laser spectroscopic investigation of Å-staking interactions in molecular clusters	BRNS	Ongoing
21	G-Quadruplex DNA Stabilizing Agents Based on Novel Bisbenzimidazole Derivatives of 1, 8-Naphthyridine: Synthesis, Biophysical, Biochemical and Computational Studies	BRNS	Ongoing
22	Synthesis of uranium co-ordination complexes and probing its electronic and magnetic properties	BRNS	Ongoing
23	CSIR Fellowship in R/O Fatima Clement John	CSIR	Ongoing
24	Computational Studies on Transition States Models for Stereoselective Bond Formation in Asymmetric Organocatalytic Reactions	CSIR	Ongoing
25	CSIR -UGC Junior Research Fellowship in r/o Nishikant Suryakant Satam	CSIR	Ongoing
26	CSIR -UGC Junior Research Fellowship in r/o Mukesh Kumar Singh	CSIR	Ongoing
27	Raja Ramanna Fellowship (Track-1) to Prof. S.P.Bhattacharyya	Department of Atomic Energy-Raja Ramanna Fellowship (DAE-RRF)	Ongoing
28	Development of Hand held Devices for the Detection of Explosive Vapours at Room Temperature	Defence Research and Development Organisation (DRDO)	Ongoing
29	Theoretical and computational investigation of molecular magnets and extended systems as candidates of exotic nanomaterials with useful properties	DST	Ongoing
30	Lanthanide based single molecule magnets for improved data storage application	DST	Ongoing
31	Exploring the catalytic reaction mechanism of iron containing metalloenzymes using Density functional and hybrid QM/MM methods (Dr. Prabha Jayapal C/o Prof.Gopalan Rajaraman).	DST	Ongoing
32	Computational exploration on the reaction mechanism of Fe-mediated catalytic reactions: Emphasis to Methane Monooxygenase and extradiol catecholic dioxygenase enzymes (Dr. Nidhi Vyas C/o Prof.Gopalan Rajaraman).	DST	Ongoing

Sr. No.	Name of the Project	Sponsored by	Status
33	X-ray Crystallographic and Protein-Protein Interaction Studies of MST Kinase.	DST	Ongoing
34	Organic-Inorganic hybrid materials of the conjugates of carbohydrates and calixarenes and proteins of alpha-helical albumins and Beta-sheet lectins	DST	Ongoing
35	Synthesis and Properties of Axially bonded Multichromophore Assemblies	DST	Ongoing
36	Ultrafast Dynamics in Silica Nanostructures and Nanocomposites	DST	Ongoing
37	New Generation of Molecular Nanomagnet	DST	Ongoing
38	Synthesis and Combustion of Methylcubane	Indian Space Research Organisation (ISRO)	Ongoing
39	Studies on Mechanism and Stereoselectivity in Transition Metal Catalyzed C-N Bond Formation Reactions	BRNS	Ongoing
40	Metal-Catalyzed Synthesis of Heterocyclic Compounds	BRNS	Ongoing
41	Investigation of the Physical Chemistry of Growth in Green Plants: A Theoretical Approach	CSIR	Ongoing
42	Ferrocenyl-Phosponites-Phosphonites and Aminophosphines Synthesis, Reactivity and Catalytic Investigations	CSIR	Ongoing
43	CSIR Junior Research Fellowship in r/o Mr. Arghya Deb	CSIR	Ongoing
44	CSIR UGC Junior Research Fellowship in r/o Tuhin Patra	CSIR	Ongoing
45	Metal Mediated C-H Functionalization and Synthesis of Novel Compounds	CSIR	Ongoing
46	Functional Boron-Dipyrrromethenes: Building Blocks for the Synthesis of Novel Photo-and Redox-Active Systems	CSIR	Ongoing
47	Senior Research Associateship under CSIR the Scientists Pool Scheme of CSIR for Dr. Vaishali Vinayak Samant	CSIR	Ongoing
48	Centre of Excellence in nanoelectronics - Phase -II a joint project between IISc, Bangalore & IIT Bombay	Department of Information Technology (DIT)	Ongoing
49	Development and Characterization of Tin-Chalcogenide Thin Films and Nanostructures	DST	Ongoing

Sr. No.	Name of the Project	Sponsored by	Status
50	New Generation Molecular Magnetic Materials: Experiment and Theory	DST	Ongoing
51	Support to top Chemistry Department in the International of Chemistry	DST	Ongoing
52	Designing chiral N/O-functionalized N-heterocyclic carbenes for metal mediated catalytic applications	DST	Ongoing
53	Bioinspired Catalysis: C-H Functionalization by Active Metal Species	DST	Ongoing
54	Studies of Iron complexes of N/O-functionalized N-Heterocyclic carbenes in Homogeneous catalysis	Indo-French Centre for the Promotion of Advanced Research (IFCPAR)	Ongoing
55	Development of carbon nanotube-metal hybrid catalysts	IFCPAR	Ongoing
56	To Fabricate and Test ALD Precursors	AMAT	Ongoing
57	Design and Synthesis of New Molecular Scaffolds using Diversity Oriented Synthesis	AZREFI	Ongoing
58	Design, Synthesis, spectral, electrochemicals and photophysical properties of cyclophosphazenes appended with fluorophores	BRNS	Ongoing
59	MOF's and COF's through rational synthesis under ambient conditions.	BRNS	Ongoing
60	CSIR -UGC Junior Research Fellowship in r/o Ms. Jothi Lakshmi Madhavan	CSIR	Ongoing
61	CSIR -UGC Junior Research Fellowship in r/o Mr.Bhukya Hussain	CSIR	Ongoing
62	CSIR -UGC Junior Research Fellowship in r/o Ms.Shehanaz Bano	CSIR	Ongoing
63	CSIR -UGC Junior Research Fellowship in r/o Mr. Subodh Chandra Tiwari	CSIR	Ongoing
64	CSIR-UGC Junior Research Fellowship in r/o Mr. Rabindranath Manna	CSIR	Ongoing
65	Structural and Biochemicals Investigations of Fork Barrier Aging Protein	Department of Biotechnology (DBT)	Ongoing
66	Stereoselective and atom efficient synthesis of multi-functional and bioactive molecules via Morita-Baylis-Hillman and Rauhut Currier reactions of conjugated nitroalkenes	DST	Ongoing
67	JC Bose Fellowship	DST	Ongoing

Sr. No.	Name of the Project	Sponsored by	Status
68	Design, synthesis of novel sugeroxasteroid-quinones a non-stroidal dissociated glucocorticoid receptor (GR) agonists for rheumatoid arthritis.	DST	Ongoing
69	JC Bose Fellowship	DST	Ongoing
70	Ramanna Fellowship	DST	Ongoing
71	Development of New Strategies for Posttranslation Peptide Modifications	DST	Ongoing
72	Ramanna Fellowship	DST	Ongoing
73	Cyclodiphosphazanes as Building Blocks to Design Early Late Transition Martal Heterometallic Complexes	DST	Ongoing
74	Inorganic-Protein Hybrids(PH): Metallation of Protein to Generate Metalloenzymes and Novel Materials Using Salbumins and Lectins	DST	Ongoing
75	Rongalite as a useful green reagent in organic synthesis	DST	Ongoing
76	A Q Contractor/ Support & Maintenance of WET-Lab.	AMAT	Ongoing
77	Development of new strategies for post-trasnlational peptide modificatins	DST	Ongoing
78	OSCAR for Chemistry higher education	Mizuho Information and Research institute (MHIR)	Ongoing
79	A lab on chip of Cardiac Diagnostics	Aeronautical Development Agency (ADA)	Ongoing
80	Financial Assistance 2nd Term (Level-II) support to the Department of Chemistry, IIT Bombay on FIST Program.	DST	Ongoing
81	Swarnajayanti Fellowship- “New Strategies for synthesis of natural products and natural product like molecules”.	DST	Ongoing
82	J.C. Bose Fellowship.	DST	Ongoing
83	Electrochemical synthesis and characterization of components for energy generation or storage device	IU	Ongoing
84	Polymer supported catalysis under Prof.G.K.Lahiri (Reliance Industries Ltd.)	SP	Ongoing
85	Theoretical investigation of single particle dynamics in condensed phase: Effects of crowding and fluctuation	IRCC	Ongoing

Sr. No.	Name of the Project	Sponsored by	Status
86	Investigating Restriction Point control in Mammalian cell by Signal Transduction Pathways	IRCC	Ongoing
87	Ferrocenyl phosphonites, phosphinites and aminophosphines: Synthesis, Reactivity and, Catalytic and biological investigations	CSIR	Ongoing
88	Cyclodiophosphazanes as building blocks to design early-late metal heterobimetallics	DST	Ongoing
89	Indian Nanoelectronics Users Programmes (INUP)	DIT	Ongoing
90	Senior Research Associateship	CX	Ongoing
91	Synthesis of C-Gucoside of B-Galactosyl Ceramide, A Potential HIV-1 Inhibitor	CSIR	Completed
92	Studies on the Interactions of Amino Carboxylic Acids and Phosphonic Acids towards Alkaline Earth Metal Cations	CSIR	Completed
93	Design of new strategies based on metathesis	DST	Completed
94	Organo and metal-organo supramolecular assemblies based on 1,3,5-Triarylbenzenes.	DST	Completed
95	Stereoselective and Atom Efficient Synthesis of Multi-Functional and Bioactive Molecules via Morita-Baylis-Hillman and Rauhut Currier Reactions of Conjugated Nitroalkenes, Department of Science and Technology, New Delhi	DST	Completed
96	Synthesis of Highly Antigenic Glycolipids and oligosaccharides of Mycobacteria	DST	Completed
97	Theoretical investigation of magnetism in molecules, molecular magnets, and magnetic materials.	DST	Completed
98	Asymmetric Synthesis of Pyranonaphthoquinones through Dötz Annulation and Asymmetric Methods	BRNS	Completed
99	Development of Dimeric Fischer Carbenes: A Bidirectional Dötz Benzannulation Approach to Dimeric Pyranonaphthoquinones,	DST	Completed
100	Asymmetric Allylation of Carbonyl Derivatives through α -Allylpalladium: Synthesis of N-Heterocycles	CSIR	Completed
101	Theoretical Investigation of Magnetism in Molecules, Molecular Magnets, and Magnetic Materials	DST	Completed

Sr. No.	Name of the Project	Sponsored by	Status
102	Computational Approach to (3D-4F) Molecular-Nano-Magnets	DST	Completed
103	OSCAR for Chemistry higher education	MHIR	Completed
104	Development of Monomers and Polymers based on 3,4-alkylenedioxythiophene	Veterinary Council of India (VCI)	Completed
105	Studies on Synthesis of Diterpenoids: Atisanes and Aquariolide	CSIR	Completed
106	InVitroSelection, Biochemical Characterization and Medicinal Chemistry of Novel RNA Cleaving Reduced Metal Ion Dependent DNA Enzymes	DST	Completed
107	“SG/ Exploring Novel Complexity Generating Pathways to Access Small Molecules for DOS Applications”	Seed Grant	Completed
108	Time resolved Spectroscopic Investigation of Excited State Dynamics in neat Solution and microheterogeneous media.	DS	Completed

Patents

Sr. No.	Title of the patent	Inventor	National/ International	Status: filed/granted	Date of patent filed/granted
1	“A Novel Process to get Highly Conducting and Highly Transparent Thin Films and its Applications as Transparent Conductor”	Kumar, Anil and Mukherjee Smita	Indian	Filed	March 7, 2014
2	“New Process to Convert Heterogeneous Kumada Type Couplings based on Nickel (II) Catalysts to Homogeneous Reactions”	Kumar Anil	Indian	Filed	February 14, 2014
3	“Novel Homogeneous Nickel (II) Catalyst”	Kumar Anil	Indian	Filed	February 14, 2014
4	“A Novel Architecture for Improving Slew Rate in FinFET-based Op-Amps and OTAs,”	Thakkar Rajesh, Shrivastava, M., Shojaei, M., Sharma, D.K., Ramgopal Rao, V., Patil, M.B.,	United States	Filed	May 2013
5	“Antiinflammatory Curcumin derivatives”	Namboothri, I.N.N., Ayyagari, N, Jose, D.	United States	Granted	Feb. 2013

Conferences/Symposia/Workshops/ Seminars (Participated/Papers presented)

Datta, S.N.

Participated in *CRSI* conference held in IIT Bombay

Halle Mahesh B. and Fernandes Rodney A.

Delivered an oral presentation on “Total Synthesis of both SpiroketalDiastereomers of the Reported Structure of Cephalosporolide H,” at *IXth Jr. National Organic Symposium Trust*, which was held during December 4-6, 2013, organized by the Department of Chemistry, IISER, Bhopal (MP), India.

Presented a poster titled “Total Synthesis of both SpiroketalDiastereomers of the Reported Structure of Cephalosporolide H,” at *16th CRSI-NSC Symposium*, held on February 6-9, 2014, organized by Department of Chemistry, IIT-Bombay, Mumbai, India.

Mulay Sandip, V. and Fernandes Rodney, A.

Delivered an oral presentation on “Bidirectional approach to the synthesis of dimericpyranonaphthoquinones,” at *National Conference on Chirality (NCC-2013)*, held during December 6-7, 2013, organized by the Department of Chemistry, The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat, India.

Delivered an oral presentation on “Dimeric Fischer Carbenes: Application to the Synthesis of Dimeric Pyranonaphthoquinones,” at *International Conference on Global Opportunities for Latest Developments in Chemistry and Technology-2014 (GOLD-CT-2014)*, held on February 6-8, 2014, in the School of Chemical Science, North Maharashtra University, Jalgaon, Maharashtra, India.

Bethi Venkati and Fernandes Rodney, A.

Delivered an oral presentation on “Domino Recombinant ³-Isomerization of ³-Vinyl-³-butyrolactone and Reverse Wacker Oxidation: Efficient Synthesis of (+)-trans-Disparlure, (–)- and (+)-Disparlure,” at *26th Research Scholars Meet 2014 (RSM)*, held on February 21-22, 2014, jointly organized by Indian Chemical Society (Mumbai Branch) and Department of Chemistry, Changu Kana Thakur Arts Commerce and Science College, New Panvel, Mumbai.

Presented a poster titled “Chiral Pool Based Synthesis of (+)- and (–)-Disparlures and (+)-trans-Disparlure” at *National Conference on Chirality (NCC-2013)*, held on December 6-7, 2013, organized by the Department of Chemistry, The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat, India.

Pullaiah Katanguru and Fernandes Rodney, A.

Delivered an oral presentation on “A reliable conversion of D-glucono- δ -lactone to γ -vinyl- γ -

butyrolactone: Application to the syntheses of cardiobutanolide, Hagen’s gland lactones, exo- and endo-brevicomins,” at *National Conference on Advances in Synthetic and Materials Chemistry (NCASMC-2014)*, held on March 10-11, 2014, organized by the Department of Chemistry, University of Mumbai, Mumbai, India.

Presented a poster titled “Protecting-Group-Free Syntheses of (+)-Cardiobutanolide and Hagen’s Gland Lactones” at *International Conference on Emerging Trends in Chemical Sciences (IETC-2013)*, held on December 5-7, 2013, organized by Chemistry Division, School of Advanced Sciences, VIT University, Vellore, Tamil Nadu, India.

Patil Pradnya, H., Chowdhury Asim, K. and Fernandes Rodney, A.

Presented a poster titled “A Late Stage β -Epimerization: A Stereodivergent to Stereoconvergent Relay to the First Total Synthesis of (+)-Murolic Acid,” at *International Conference on Emerging Trends in Chemical Sciences (IETC-2013)*, held on December 5-7, 2013, organized by Chemistry Division, School of Advanced Sciences, VIT University, Vellore, Tamil Nadu, India.

Presented a poster titled “Ring-Closing Metathesis Enabled Efficient Synthesis of γ -Butenolide Antifungal Agent (–)-Incrustoporin and its Analogues,” at *16th CRSI-NSC Symposium*, held on February 6-9, 2014, organized by Department of Chemistry, IIT-Bombay, Mumbai, India.

Jainand Anuj, K. and Fernandes Rodney, A.

Presented a poster titled “Protecting group free approach towards the Marine Epoxy Lipids,” at *International Conference on Emerging Trends in Chemical Sciences (IETC-2013)*, held on December 5-7, 2013, organized by Chemistry Division, School of Advanced Sciences, VIT University, Vellore, Tamil Nadu, India.

Pullaiah Katanguru, Mulay Sandip, V., Bethi Venkati and Fernandes Rodney, A.

Presented a poster titled “D-Glucono- δ -lactone derived chiral building blocks: Application to the syntheses of bioactive natural products” at *Advances in Glycochemistry*, held on January 20, 2014, organized by Department of Chemistry, Indian Institute of Technology Bombay, Mumbai, India.

Kumar, Anil

Delivered an invited talk entitled “Printable Organic Electronic Materials based on Polythiophenes,” at *National School On Sustainable Polymers and First Symposium on Advances in Sustainable Polymers* at IIT Guwahati from January 6-11, 2014.

Delivered an invited talk on “Application of Flow Chemistry for the Syntheses of Conjugated Polymers with well-defined Molecular Structures,” at *Flow Chemistry India 2014 Conference* held on January 23-24, 2014 at CSIR-IICT Hyderabad.

Kumaravel Maruthai and Balkrishna, M.S.

“Chalcogenide and Transition Metal derivatives of Triphenylphosphole- Synthesis, Structure and Photophysical properties,” *Modern Trends in inorganic Chemistry (MTIC-XV)*, December 13-16, 2013, Department of Chemistry, Indian Institute of Technology Roorkee, India.

Bhat Sajad Ahmad and Balkrishna, M.S.

“Bisphosphines with hetero-donor atoms: Synthesis, transition metal chemistry and catalytic applications in Suzuki cross-coupling reactions,” at a *Symposium on Modern Trends in Inorganic Chemistry (MTIC-XV)*, December 13-16, 2013, Indian Institute of Technology Roorkee, India.

Rajaraman, G.

Participated in a Symposium on *Theoretical and Computational Chemistry – Frontiers and Challenges (STCC-FC)*, at the School of Chemistry, Bharathidasan University, Tiruchirappalli, India, during June 14-15, 2013.

Participated in the *8th RSC-CRSI, 16th CRSI Symposium in Chemistry*, at the Department of Chemistry, IIT Bombay, Mumbai, India, held during February 6-9, 2014.

Sunoj, R B

Participated in *Computational Chemistry Workshop*, at IIITM-K, Trivandrum, in June 2013.

Distinguished Lecture Series jointly organized by FCBS (Foundation for Capacity Building In Science), IISER, and NIIST Trivandrum, June 2013.

Participated in a Symposium on *Theoretical and Computational Chemistry: Frontiers and Challenges (STCC-FC)*, Trichy (India), in June 2013.

Current Trends in Theoretical Chemistry (CTTC-2013), BARC Mumbai, September 2013.

Participated in a *National Conference on Computational and Supramolecular Chemistry*, at Sacred Heart College, Thevara, Cochin, in December 2013.

Attended *DST-SERB Winter School on Computational Chemistry*, Sardar Patel University, Gujarat, in December 2013.

Attended *DST-SERC Sponsored Winter School on Modeling Chemical and Biological (Re)Activity*, Hyderabad, in January 2014.

Attended *Frontier Lectures in Chemistry 2014*, at IIT Indore, in January 2014.

Participated in a *National Conference on Advances in Synthetic and Materials Chemistry*, at University of Mumbai, held in March 2014.

Gharpure, S. J.

“Diversity Oriented Synthesis using Vinylogous Functional Groups” – *8th Indo-French Conference in Organic Synthesis (IFCOS)* at Goa, April 1-3, 2013.

Delivered an invited lecture on “Pericyclic Reactions,” at RSC West India Section in associations with Chemical Research Society of India (Mumbai Local Chapter) and K.E.T’s V. G Vaze College of Arts, Science and Commerce, July 26-27, 2013.

Delivered a lecture on “Stereochemistry of organic compounds”, at KET’s V. G Vaze College, Mulund, Mumbai, October 23, 2013.

Delivered a talk on “Tandem reactions for the synthesis of oxa and aza-cycles”, at *Green Chemistry: A Route to Sustainable Development*, Maharshi Dayanand College of Arts, Science and Commerce, December 3, 2013.

Delivered an invited lecture on “Synthesis of oxa and aza-cycles using tandem reactions” at Madurai Kamraj University, January 28, 2014.

Delivered an invited lecture on “New Strategies for the stereoselective synthesis of bio-active oxa and aza-cycles,” at *National Conference on Evolutionary Trends in Biological and Pharmaceutical Chemistry (NCETBP – 2014)*, Department of Chemistry, Holy Cross College, Tiruchirappalli, January 30-31, 2014, India.

Delivered an invited lecture on “Aromaticity and Aromatic Substitution” at a *Workshop on Problem solving in Organic Chemistry* at KET’s V. G. Vaze College of Arts, Science and Commerce, Mulund, March 27, 2014.

Delivered an invited lecture on “Organometallics in Organic Synthesis” at VES College of Pharmacy, Chembur, Mumbai, March 20, 2014.

Singh, V.K.

Participated in Junior National Organic Synthesis Trust (JNOST) symposium, held in IISER Bhopal, during December 4-6, 2013.

Participated in a *National symposium on organic Synthesis and advanced material* held at Department of Chemistry, Benaras Hindu University, Varanasi, during March 1-2, 2014, India.

Kar, S.

Participated in the 16th CRSI National Symposium in Chemistry, held during February 7-9, 2014, at IIT Bombay, Mumbai.

Delivered an invited lecture in the *National Conference on Non-equilibrium Statistical Physics and Nonlinear Dynamics*, held on January 2, 2014, at Indian Association for the Cultivation of Science, Kolkata.

Namboothiri, I.N.N.

“Chirality and Symmetry in Chemistry and in Everyday Life”, *National Seminar on New Vistas in Sustainable Development*, February 17, 2014, Sri Bhuvanendra College, Karkala, Udupi, Karnataka, India.

“Catalytic Asymmetric Synthesis of Novel Multi-functional and Bioactive Molecules,” *16th Chemical Research Society of India (CRSI) National Symposium in Chemistry (NSC-16)*, February 7-9, 2014, IIT Bombay, Mumbai, India.

“Metal Mediated Coupling Reactions: Methodology and Applications,” *National Seminar on Challenges in Organic Synthesis and Its Pharmaceutical Applications*, January 23, 2014, at Sir P. T. Sarvajani College of Science, M.T.B College Campus, Surat, Gujarat, India.

“Chirality and Optical Activity,” *National Seminar on Modern Methods in Chemistry*, January 16-17, 2014, St. Aloysius College, Mangalore, Karnataka, India.

“Multi-component and Cascade Reactions,” *National Seminar on Modern Methods in Chemistry*, January 16-17, 2014, St. Aloysius College, Mangalore, Karnataka, India.

“Substrate Oriented Reaction Profiles in the Magnesium Mediated Addition of Bromoform to Electron Deficient Double Bonds,” *National Symposium on Frontiers in Organic Chemistry*, October 11-12, 2013, School of Chemistry, University of Hyderabad, Hyderabad, India.

“Regioselective Synthesis of Functionalized and Fused Pyrazoles from Diazo Compounds and Electron Deficient Alkenes,” *Symposium on Diversity Oriented Heterocyclic Synthesis*, August 27, 2013, Syngenta Biosciences Pvt Ltd, Goa, India.

Pradeepkumar, P.I.

Delivered an invited talk on “Chemically-Modified Small Interfering RNAs as Potential Anticancer Agents” in *MedChem2013: Advances in Anticancer Drug Discovery and Development*, October 25-26, 2013, at IIT Madras

Delivered an invited talk on “Gene Silencing by Chemically-Modified Small Interfering RNAs” in *Chemical Frontiers Meeting 2013*, August 28-30, 2013, Goa (Jointly Organized by IIT Bombay and JNCASR, Bangalore)

Chakraborty, R.

Attended a discussion meeting on *Spectroscopy and Dynamics of Molecules and Clusters 2014 (SDMC)*, during February 20-23, 2014, Puri, India.

Participated in a Symposium on *Theoretical and Computational Chemistry: Frontiers and Challenges 2013 (STCC-FC)*, during June 14-15, 2013, Tiruchirapalli, India.

Kotha, S. and Ali, R.

Presented a poster “Diversity oriented approach to spirocyclics via metathesis, [2+2+2] cycloaddition and Diels–Alder reaction as key steps,” in *9th J-NOST Conference for Research Scholars* held during December 4-6, 2013 at IISER Bhopal.

Kotha, S. and Waghule, G.

Delivered a talk on “Design and synthesis of various cyclophane derivatives by using metathesis and Claisen rearrangement approach,” in *14th Research Scholars Meet (RSM)* held during February 21-22, 2014 at Changu Kana Thakur Arts, Commerce and Science College, New Panvel.

Kotha, S. and Shirbhate, M.

Presented a talk “Diversity oriented approach to macrocyclic cyclophane derivatives via ring-closing metathesis,” in *14th Research Scholars Meet (RSM)* held during February 21-22, 2014 at Changu Kana Thakur Arts, Commerce and Science College, New Panvel.

Kotha, S., Goyal, D. and Chavan A.

Presented a poster “Diversity-oriented approaches to unusual \pm -amino acids and peptides: Step economy, atom economy, redox economy, and beyond,” in *8th RSC-CRSI joint symposium* held on February 6, 2014 at IIT Bombay.

Kotha, S. and Bandi, V.

Presented a poster on “Diversity oriented approach to phenylalanine derivatives via the Diels–Alder reaction involving sulfolene intermediates,” in *16th CRSI Conference* held during February 7-9, 2014 at IIT Bombay.

Bitra, A., Goyal, D., Anand, R. and Kotha, S.

Presented a poster on “Diversity oriented approach to triazole based peptidomimetics as mammalian sterile 20 Kinase inhibitors,” in *16th CRSI Conference* held during February 7-9, 2014 at IIT Bombay.

Kulkarni, Suvarn

Delivered an invited talk on “Desymmetrization of Trehalose to Access Unsymmetrically Substituted Trehalose Glycolipids and Oligosaccharides”, at *Frontiers in Chemistry and Biology of Oligosaccharides (FCBO-2014)* IISER Pune, a satellite symposium of ICS-27, January 19, 2014.

Delivered an invited talk on “Expeditious Synthesis of Bacterial Glycoconjugates,” at *27th International Carbohydrate Symposium (ICS-27)*, IISC Bangalore, January 15, 2014.

Delivered a talk on “Expeditious Synthesis of Bacterial, Rare Sugar Building Blocks to Access Prokaryotic Glycome,” at *Emerging Trends in Glycosciences and Glycotechnology (ETGG-2014)*, a satellite symposium of *International Carbohydrate symposium ICS-27*, IIT Delhi, January 9, 2014.

Delivered an invited lecture on “Regio and Stereoselective Approaches for Glycoconjugate Synthesis,” at *Chirality - A National Symposium* at MSU Baroda, in October 8, 2013.

Delivered an invited talk on “Regio and stereoselective approaches for glycoconjugate synthesis,” at Department of Chemistry, Central Michigan University, Mount Pleasant, USA, June 24, 2013.

Delivered an invited lecture on “Expeditious synthesis of bacterial glycoconjugates,” at the *Gordon Research Conference on Carbohydrates*, Vermont, USA, June 21, 2013.

Delivered an invited talk on “Synthesis of carbohydrate antigens,” at Department of Chemistry, Northeastern University, Boston, USA, June 6, 2013.

Ghosh, Prasenjit

Delivered a lecture on “Understanding the N-heterocyclic Carbene Influence: From Drawing Board to Practical Utility” at *Chemical Frontiers 2013*, Goa, on August 28, 2013; *Modern Trends in Inorganic Chemistry – XV (MTIC)*, IIT Roorkee, December 14, 2013; *16th CRSI National Symposium in Chemistry (NSC-16)*, IIT Bombay, on February 7, 2014; *Indo-French Symposium on Functional Metal Organics: Application in Materials and Catalysis*, NISER Bhubaneswar, on February 24, 2014; *Latino American Symposium on Coordination and Organometallic Chemistry, SILQCOM 2013*, Huatulco, Mexico, in October 2013, and at the *4th Asian Conference on Coordination Chemistry (ACCC4)*, Jeju, South Korea, on November 6, 2013.

Kumar, Anil

Delivered an invited talk entitled “Application of flow chemistry for the syntheses of conjugated polymers

with well defined molecular structures” at *Organic Process Research and Development* at CSIR-NCL Pune, from April 15-16, 2013.

Delivered an invited talk entitled “Control of Critical Molecular Design Parameter for Conjugated Polymers via Flow Syntheses,” at *FAPS Macro 2013* at Indian Institute of Science Bangalore, during May 15-17, 2013.

Delivered an invited talk on “Application of Flow Chemistry for the Syntheses of Conjugated Polymers with well-defined Molecular Structures,” at *DAE-BRNS Conference on Organic Device: The Future Ahead BARC Mumbai*, from March 3-6, 2014.

Delivered an invited talk entitled “Syntheses of Conjugated Polymers with Precise Control Over Critical Molecular Design Parameters (CMDPs) and Transparent Conducting Coatings (TCC) Based on PEDOT,” at *IUSSTF Workshop on Organic Solar Cells* at IIT Kanpur from March 20-21, 2014.

Delivered an invited talk entitled “Printable Optoelectronic Devices: Opportunities and Challenges for Material Scientists,” at *International Conference on Energy Efficient LED Lighting and Solar Photovoltaic Systems* at IIT Kanpur from March 27-29, 2014.

Rajaraman, G.

Participated in *Indo-French Symposium on Functional Metal-Organics: Applications in Materials and Catalysis*, National Institute of Science Education and Research, Bhubaneswar, India, held during February 24-26, 2014.

Sunoj, R. B.

Participated in *Asia Pacific Conference on Theoretical and Computational Chemistry (APCTCC-6)*, Gyeongju, South Korea, held in July 2013.

Kar, S.

Participated in the *International Conference on Computational Cell Biology*, held during August 14-16, 2013, at Virginia Tech, USA.

Namboothiri, I.N.N.

“Regioselective Synthesis of Functionalized and Fused Pyrazoles from Diazo Compounds and Electron Deficient Alkenes,” *International Conference on Emerging Trends in Chemical Sciences (IETC 2013)*, December 5-7, 2013, VIT University, Vellore, Tamil Nadu, India.

Sethi, Priyanka V., and Contractor, A.Q.

“Atomic and Electrostatic Force Microscopy studies of PANI,” *11th ISEAC International Discussion Meet on Electrochemistry and its Applications*, February 20-25, 2014 held at Amritsar.

Shaikh, A., Mujawar, L.H., Walawalkar, M.G. and Contractor, A.Q.

“GlucoseOxidase-PANI Based Electrochemical Sensor for Escherichia Coli,” *CRSI annual meeting* held at IIT-Bombay, during February 7-9, 2014.

“GlucoseOxidase-PANI Based Electrochemical Sensor for Escherichia Coli,” *11th ISEAC International Discussion Meet on Electrochemistry and its Applications*, February 20-25, 2014 held at Amritsar.

Songara, K., Walawalkar, M.G. and Contractor, A.Q.

“Acetylcholine esterase based Conductometric Biosensor for inhibitive determination of Arsenic (III),” *CRSI annual meeting* held at IIT-Bombay, during February 7-9, 2014.

“Acetylcholine esterase based Conductometric Biosensor for inhibitive determination of Arsenic (III),” *11th ISEAC International Discussion Meet on Electrochemistry and its Applications*, February 20-25, 2014 held at Amritsar.

Contractor, A.Q., Priyadarshani, D., Das Debasree, and Singhal Priyanka, A.

Participated in *CRSI annual meeting* held at IIT-Bombay, during February 7-9, 2014.

Murugaval, R.

Chemical Frontiers 2013, during August 14-16, 2013, in Goa

Attended *CRSI-National Symposium in Chemistry*”, during February 7-9, 2014.

Modern Trends in Inorganic Chemistry, December 2013, IIT Roorkee

Participated in *INDO-US Bilateral Symposium on Molecular Materials*, IISc, Bangalore, July 15-17, 2013.

Participated in *JNCASR Silver-Jubilee Mini Symposium and NCU Unit Day*, February 11, 2014.

Attended *Frontier Lecture Series in Chemistry*, IIT Indore, January 30-31, 2014.

Participated in the *7th International Conference on Materials for Advanced Technologies (ICMAT 2013)* Singapore, during July 1-5, 2013.

Participated in the *4th Asian Coordination Chemistry Conference*, ACCC4, Jeju, South Korea, November 4-7, 2013.

Participated in *12th meeting of Asian Crystallographic Association (AsCA'13)*, Hong Kong University of Science and Technology (HKUST), Hong Kong, during December 7-10, 2013.

Chowdhury Arindam

Participated in *National Conference on Energy and Environment (NC2E)*, Pune University, Pune, India, held in February 2014.

Participated in *16th National Symposium in Chemistry (NSC-16)*, Chemical Research Society of India (CRSI), IIT Bombay, Mumbai, India, held in February 2014.

Participated in *Trombay Symposium of Radiation and Photochemistry (TSRP)*, Bhaba Atomic Research Center (BARC), Mumbai, India, held in January 2014.

Participated in *National Conference on Photosciences: Contemporary Challenges and Future Perspectives*, Jadavpur University, Kolkata, India, held in December 2013.

Participated in *Indo-French Physics Conference*, Indian Institute of Science (IISc), Bangalore, India, in March 2014.

Participated in *Polymer Processing Society (PPS) Asia/Australia Conference*, Mumbai, India, in December 2013.

Shanmugam Maheshwaran

Participated in *MTIC-XIV* IIT Roorkee, India, December 2013.

Participated in *Chemical Research Society India (CRSI) Conference* held in IIT Bombay, in February 2014

Vaidya Shefali and Shanmugam Maheshwaran

Presented a paper on “Single ion magnetic properties of Cobalt (II) mesoionic complexes” in *CRSI meeting*, IIT Bombay, in February 2014.

Das Chinmoy and Shanmugam Maheshwaran

Presented a paper on “Lanthanide square based complexes as single molecule magnet and molecular coolants,” in *CRSI meeting*, IIT Bombay, in February 2014.

Rajpurohit Jitendrasingh, Das Chinmoy, Upadhyay Apoorva, Vaidya Shefali, Ahmed Naushad, Shukla Pragma and Shanmugam Maheshwaran

Presented a paper on “Overview of research activity in molecular magnetism research and catalysis,” in *CRSI meeting*, IIT Bombay, in February 2014.

Singh, H.B.

Delivered a department colloquium lecture on “Tales of the Unexpected,” IIT Bombay, April 5, 2013.

Anand, Ruchi

“Structure and mechanism based protein engineering to confer selectivity of a guanine deaminase,” Biophysics Pashim, Pune, February 2014, India

Presented a paper on “Structural Insights into mechanism of transcription by quorum sensing protein CprB from *Streptomyces coelicolor*,” 42nd National Seminar on Crystallography and International workshop for application of X-ray diffraction for Drug Discovery, Delhi, November 2013, India.

Presented a paper on “Structural Insights into Mechanism of Transcription and Antibiotic Regulation by CprB: A-butylalactone TetR-family protein from *Streptomyces coelicolor*,” Asian Crystallography Society Meeting, Hong Kong, held in December 2013, China.

Invited Lectures

Fernandes Rodney, A.

“The Art of Designing Synthetic Strategies to Bioactive Molecules,” at the UGC Sponsored Training School on Challenges and Opportunities in Drug Discovery, organized by the University Institute of Pharmaceutical Sciences, Punjab University, during November 18-23, 2013, Chandigarh.

“Opportunity Driven Synthesis of Bioactive Molecules,” at the International Conference on Emerging Trends in Chemical Sciences, organized by the Department of Chemistry, VIT, during December 5-7, 2013, Vellore.

“The Fascinating Arena of Organic Synthesis: Dead Ends and Detours in Total Synthesis,” at the National Conference in Recent Advances in Chemical Sciences and Technology, organized by the Department of Basic Sciences, University Institute of Chemical Technology, North Maharashtra University, September 21, 2013, Jalgaon.

Kumar, Anil

“Science and Magic: Art of ‘Active’ Learning and Research,” on September 19, 2013, at IGIB Delhi

“Organic Semiconducting Polymers based on Polythiophenes: A Step Towards Printable Electronics,” on October 25, 2013, at PSG Coimbatore.

“Science and Magic: Art of “Active” Learning and Research,” on November 8, 2013, at IISER Mohali.

“Science and Magic: Art of “Active” Learning and Research,” at a National School On Sustainable Polymers and First Symposium on Advances in Sustainable Polymers, at IIT Guwahati, during January 6-11, 2014 IIT Guwahati

Rajaraman, G.

“Symposium on Theoretical and Computational Chemistry – Frontiers and Challenges (STCC-FC)”, at the School of Chemistry, Bharathidasan University, Tiruchirappalli, June 14-15, 2013.

“8th RSC-CRSI, 16th CRSI Symposium in Chemistry,” at the Department of Chemistry, IIT Bombay, Mumbai, during February 6-9, 2014, India.

Theoretical chemistry symposium, IIT-Guwahati, December 2013.

“Magnetic Exchange Coupling Mediated by Weak π - π Interactions: Theoretical Approach to Novel Single Chain Magnets,” Indian National Science Academy, April 25, 2013

“Indo-French Symposium on Functional Metal-Organics: Applications in Materials and Catalysis”, National Institute of Science Education and Research, Bhubaneswar, February 25, 2014, India.

Singh, V.K.

“Molecular Diversity from aromatics: Ploquinanes, Platencin and Beyond,” at a National symposium on organic Synthesis and advanced material, held at Department of Chemistry, Benaras Hindu University, Varanasi, during March 1-2, 2014.

“Molecular Complexity from Aromatics,” at the Centre for Biomedical Research (SGPGI campus), Lucknow, November 6, 2013.

Kar, S.

“Modeling Epo induced cell type-specific proliferation responses”, at Indian Association for the Cultivation of Science, Kolkata, on January 4, 2014.

“Information flow defines code converting PI3K and MAPK signaling to proliferation”, at Virginia Tech, USA, on August 16, 2013.

Namboothiri, I. N. N.

“Synthesis and Applications of Morita-Baylis-Hillman and Rauhut-Currier Adducts of Conjugated Nitroalkenes,” on July 24, 2013, at CEA Saclay, France.

“Synthesis and Applications of Morita-Baylis-Hillman and Rauhut-Currier Adducts of Conjugated Nitroalkenes,” on July 18, 2013, at Université Pierre et Marie Curie (UPMC), Paris, France.

“Synthesis of Bioactive Heterocycles via Reactions of Diazophosphonates and Diazosulfones with Electron Deficient Alkenes,” at Biocon BMS R&D Center (BBRC) Syngene International Ltd, Bangalore, on September 6, 2013.

“Advances in NMR Techniques and Applications,” NMR in Organic Chemistry, Postgraduate Lecture Series at the RSC West India Section, SIES College of Arts, Science & Commerce, Sion (W), Mumbai, held during August 2-3, 2013, India.

“Catalytic Asymmetric Synthesis of Amino-phosphonates: The Transition State Analogs of Amino Acids,” at the CSIR-Central Salt and Marine Chemicals Research Institute (CSMCRI), Bhavnagar, Gujarat, on July 12, 2013, India.

Kotha, S.

“Diversity oriented approach to unusual amino acids and peptides,” at *Chemical Research Society of India, Mid-year meeting*, NIT-Surathkal Mangalore, July 12, 2013.

“Diversity oriented approach to unusual amino acids and peptides,” at *Coastal Chemical Research Society Award lecture*, Visakapatnam, July 13, 2013.

“Design of new strategies based on metathesis,” Department of Science & Technology-SERB PAC meeting in Organic Chemistry, *Group monitoring workshop*, Central College, Bangalore, August 23, 2013.

“Strategies, tactics and methods: Synthetic economy and beyond,” National Chemical Laboratory, Pune, October 4, 2013.

“Motivation” *Department of Science & Technology-Inspire Workshop*, KBN College Vijayawada, October 10, 2013.

“New strategies to cyclophanes via olefin metathesis,” *National symposium on frontiers in organic chemistry*, School of Chemistry, University of Hyderabad, October 11, 2013.

“Motivation,” Synchronicity, Chandivali, Mumbai, October 14, 2013.

“Strategies, tactics and methods: Synthetic economy and beyond,” *National Symposium*, NIT-Warangal, November 10, 2013.

“Development of new strategies for post-translational peptide modification,” *Department of Science & Technology-Group monitoring workshop*, BITS Pilani, Goa, November 22, 2013.

“Strategies, tactics and methods: Synthetic economy and beyond,” Department of Chemistry, Nagarjuna University, Guntur, December 20, 2013.

“Motivation,” Chaitanya College, Vijaywada, December 20, 2013.

“Motivation,” *Department of Science & Technology-Inspire program*, SVRM College Nagaram, December 21, 2013.

“Rongalite: A Useful Green Reagent in Organic Synthesis,” *FloHet-15 Conference*, Florida, USA, March 3, 2014.

Kulkarni Suvarn

“Interpretative spectroscopy UV, IR and NMR,” *PG Lecture Series* at Vaze college, March 2014

“Problems solving in NMR spectroscopy,” *PG Lecture Series* at Vaze college, January 2014

Delivered an invited lecture on “Serendipitous discoveries that changed our world,” at *INSPIRE camp*, Khalasa College, Matunga, September 27, 2013.

“NMR Spectroscopy (^1H , ^{13}C and 2D)” (5 lecture series), PI Industries Udaipur, September 20 - 21, 2013.

“Advances In NMR Technique and applications: ^{13}C NMR”, *RSC Post graduate lecture series* at SIES college, Matunga, Mumbai, August 2, 2013.

“Introduction to Carbohydrates” for KV teachers at Kendriya Vidyalaya Teaching Center, Kanjurmarg, Mumbai, July 2013.

Ghosh, Prasenjit

“Understanding the N-heterocyclic Carbene Influence: From Drawing Board to Practical Utility,” *Latino American Symposium on Coordination and Organometallic Chemistry*, Huatulco, Mexico, (October 2013, SILQCOM 2013).

“Understanding the N-heterocyclic Carbene Influence: From Drawing Board to Practical Utility,” *4th Asian Conference on Coordination Chemistry (ACCC4)*, Jeju, South Korea, November 6, 2013.

Contractor A. Q.

Water for India Project DST Group monitoring workshop, from June 7-9, 2013.

“An Electrochemical Atomicforce microscopy study of polyaniline,” *11th ISEAC International Discussion Meet on Electrochemistry and its Applications*, February 20-25, 2014 held at Amritsar.

Murugavel, R.

“Design and Synthesis of Porous Solids”, at *CECRI*, Karaikudi, on June 12, 2013.

“Double-Four-Ring (D4R) Platforms for Sensing, Scavenging and Catalysis Applications”, at *INDO-US (CRSI-ACS) Bilateral Symposium on Molecular Materials*, held at IISc, Bangalore, July 15-17, 2013.

Delivered a special lecture on “Science - Get Inspired,” to School Students at Noorul Islam Centre for Higher Education, Kumarakoil, November 22, 2013.

“Evolution of Zeolite Science: Our Recent Results”, Frontier Lecture Series in Chemistry, IIT Indore, January 30-31, 2014.

“Hybridizing Inorganic Solids with Molecular Clusters: Facile Dissolution of s-Block Fluorides in Molecular Lattices,” at *JNCASR Silver-Jubilee Mini Symposium and NCU Unit Day*, on February 11, 2014.

“Ab Initio Synthesis of Metallophosphate Porous Solids”, at *7th International Conference on Materials for Advanced Technologies (ICMAT 2013)* Singapore, July 1-5, 2013.

Delivered a keynote address on “Diisopropylphenyl Phosphate: A Versatile Synthon in Metal Phosphate Chemistry,” at *4th Asian Coordination Chemistry Conference, ACCC4*, Jeju, South Korea, November 4-7, 2013.

“C3 symmetric organic systems for materials chemistry applications and phosphate nanomaterials,” at the *12th meeting of Asian Crystallographic Association (AsCA'13)*, Hong Kong University of Science and Technology (HKUST), Hong Kong, December 7-10, 2013.

Chowdhury Arindam

Delivered R.A. Mashelkar Endowment Lecture on “Advanced Materials, National Chemical Laboratory (NCL),” Pune, February 2014, India.

Anand, Ruchi

“The Story of the Amazing Ribosome,” Sophia college, Mumbai University, under International year of Chemistry, July 2013

“Crystallography, Photography at the atomic level,” Wilson College 125 years, Mumbai University, September 2013.

“Molecular Tunnels in biology,” Ritsumeikan University, Japan, March 2014

Significant Awards/Distinctions

Rajaraman, G.

INSA medal for Young scientist, Indian National Science Academy, 2013.

Young Associate, Indian Academy of Science, Bangalore, 2013

Sunoj, R.

Convener for IIT Bombay’s supercomputing facility, have been instrumental in setting up the ‘Space Time’ high performance computing cluster and currently maintains the same.

Namboothri, I.N.N.

Chemical Research Society of India (CRSI) Bronze Medal

Elected Fellow, National Academy of Sciences, India
Member, Editorial Board, Journal of Chemical Sciences
Governing Body Member and Honorary Faculty, Institute for Intensive Research in Basic Sciences, Mahatma Gandhi University, Kottayam, Kerala

Kotha, S.

Costal Chemical Research Society Award 2013.
Member, Editorial Advisory Board of : European Journal of Organic Chemistry; Indian Journal of Chemistry; Journal of Amino Acids; and Journal of Catalysis.

Ghosh Prasenjit

Editorial Board Member, Polyhedron, Elsevier Publishers (2011-2013).
The CRSI (Chemical Research Society of India) Bronze Medal, 2014.

Singh, H. B.

Prof. S.C. Bhattacharya Award for Excellence in Pure Sciences 2012, IIT Bombay
Member, Chemical Sciences Committee for Swarna-Jayanti Fellowship Award (DST) 2012
Member, IRCC Advisory Committee, IIT Bombay, 2013-2014

Maiti, D.

INSA Young Scientist Medal, Indian National Science Academy, Delhi, 2014
NASI- Young Scientist Platinum Jubilee Award, The National Academy of Sciences, India, 2013
IAS Young Associate, Indian Academy of Science, 2013
IIT Bombay-IRCC Young Scientist Award, IRCC, IIT-Bombay, 2013
Thieme Chemistry Journal Award, Thieme group, 2013
CRSI Young Scientist Award, Council of Scientific and Industrial Research, India, 2014
AVRA Young Scientist Award, AVRA laboratories, 2014
ISCB Young Scientist Award, Indian Society of Chemists and Biology, 2014

Honorary Work

Datta, S. N.

Confidential work for NCERT
Reviewed articles for The Journal of Physical Chemistry, Chemical Physics Letters
Coordinator, PhD Admissions, Department of Chemistry (2013-14)

Fernandes Rodney, A.

Referee for Ph.D. theses from NIPER Chandigarh and Nanyang Technological University, Singapore.

Refereed papers from International Journals: Tetrahedron, Tetrahedron Letters, Eur. J. Org. Chem., Asian J. Org. Chem., Synlett, Journal of Chemical Sciences, RSC Advances.

Current Medicinal Chemistry, Synthetic Communications.
Question paper setting for M.Sc. and Competitive exams at various universities.

Rajaraman, G.

Reviewer and adjudicative reviewer for a number of journals including J. Am. Chem. Soc., Chem. Comm., Dalton. Trans., J. Mater. Chem., Phys. Chem. Chem. Phys., Eur. J. Inorg. Chem., J. Phys. Chem., Polyhedron etc.

Reviewer for research proposal from DST and BRNS, India.

Sunoj R.

Reviewer for DST, CSIR, DAE-BRNS projects

Reviewer and adjudicative reviewer for Royal Society of Chemistry Journals such as Chemical Communications, Physical Chemistry Chemical Physics, Dalton Transactions, and Organic and Biomolecular Chemistry

Reviewer for American Chemical Society Journals: Journal of American Chemical Society, Organic Letters, and Journal of Organic Chemistry.

Reviewer for Wiley-VCH journals: European Journal of Organic Chemistry and European Journal of Inorganic Chemistry

Reviewer for Nature communications

Reviewer for Elsevier journals: Tetrahedron and Tetrahedron Letters

Reviewer for Journal of Chemical Sciences (An Indian Academy of Sciences publication)

Ph.D. Thesis examiner for IIT Kanpur, University of Kerala, and Kolkata University.

Singh, V. K.

Evaluated various Ph.D. theses from various universities and IIT's.

Several manuscripts reviewed for the journals such as Journal of Organic Chemistry, Tetrahedron, Tetrahedron letters, Synthetic communications etc.

Kar, S.

Reviewed papers for Systems and Synthetic Biology, August 2013 and October 2013.

Namboothri, I.N.N.

Member, Editorial Board of Referees, ARKIVOC (2007-)

Reviewer of ACS, RSC, Wiley, Elsevier, Thieme and other international and Indian journals as well as project proposals of DST, CSIR, DAE

Pradeepkumar P.I.

Reviewer for "FEBS Letters" and research proposals for DAE-BRNS and CSIR; Research Evaluation Committee Member, Indian Institute Space Science and Technology (IIST), Trivandrum

Kotha S.

Reviewer to national and international journal articles (Applied Organometallics, J. Org. Chem, Eur. J. Org. Chem, Synlett, Synthesis, RSC Advances, OBC, Arkivoc, Tetrahedro Letters, Organometallics)

Reviewed research proposals from DST, BRNS & CSIR & ACS (PRF)

Served as a Member-Board of studies- M. S. University, Baroda.

Faculty Selection Committee Member (IIT Kharagpur, IMT- Chandigarh, IICB-Kolkata)

Ghosh Prasenjit

Currently the X-ray single-crystal diffraction facility incharge and the immediate-past incharge of the NMR and GCMS facilities at the Chemistry Department, Indian Institute of Technology, Bombay.

JAM Examination (2014) Served as a Paper Setter.

JEE Answer Freezing Committee (2013): Served as a member of the answer freezing committee for the JEE.

MNIT, Jaipur (2013): Served as an expert for NMR and Mass spectrometer in the national equipment purchase committee

NCL, Pune (2013): Served as an expert for field of organometallic chemistry in the Faculty Recruitment Committee.

Co-authored a NPTEL Chemistry Course entitled "Introduction to Organometallic Chemistry, a government of India initiative (2013).

Contractor A. Q.

Expert Member, Water Technology, Indo-EU, DST

Selection Committees, CSIR

Member of selection of faculty at various universities and IITs

Murugavel, R.

Treasurer, CRSI Council-2014-2017

Member, Research Council, CSIR-CECRI, Karaikudi, 2013

Convener, "CRSI-National Symposium in Chemistry", February 7-9, 2014

Program Chair, Theme: Magnetic and Conductive Materials, ASCA 2013, Hong Kong

Shanmugam Maheshwaran

Reviewed papers for International Journal such as Chemical communication.

Faculty members and their Specializations

1. A. K. Singh

General: Organic Chemistry,

Specific: Chemistry of vision and photocontrol of structure and function of biomolecules - Retinal-bound photoreceptor proteins - synthesis and characterization of bacteriorhodopsin analogs. Development of photoswitchable systems, photo-switchable enzymes as reagents.

2. S. Durani

General: Organic Chemistry

Specific: Bio-Organic Chemistry, Structural and Computational Biology Medicinal Chemistry

3. M. K. Mishra

General: Physical Chemistry

Specific: Quantum Chemistry

4. Pradeep Mathur

General: Inorganic Chemistry

Specific: Organometallic Chemistry

5. H. B. Singh

General: Inorganic Chemistry

Specific: Organometallic Chemistry

6. Sambhu N. Datta

Relativistic Quantum Theory

Theoretical Aspects of Photosynthesis

Molecular Magnets and Materials

7. A. Q. Contractor

General: Physical Chemistry

Specific: Electrochemistry

Chemical and Bio Sensors

Reaction Kinetics

8. B. L. Tembe

General: Physical Chemistry

Specific: Theoretical Chemistry, Statistical Mechanics, Molecular Dynamics

9. C. P. Rao

Inorganic Chemistry; Coordination

Chem.; and Bioinorganic, Biomimetic and Bio-interaction Chemistry of model Molecules and Protein/enzyme; Sensors for cations and anions; Binding of glycoconjugates with Lectins and glycosidase

inhibitors; Computational modeling; artificial metalloenzymes; molecular mechanics and molecular dynamics simulations of protein-small molecular interactions

10. V. K. Singh

General: Organic Chemistry

Specific: Organic Synthesis and Photochemistry

11. Sambasivarao Kotha

General: Organic Chemistry

Specific: Unusual amino acids, peptide modifications, metathesis reaction, Suzuki-Miyaura cross-coupling reaction, and new synthetic methodology.

12. G. K. Lahiri

General: Inorganic Chemistry

Specific: Transition metal ions mediated intramolecular and intermolecular organic transformations via the activation of C-H and C-X (F, Cl, Br) bonds. Development of mononuclear and multinuclear ruthenium and osmium complexes as efficient photo-redox assemblies. Development of heterogenized homogeneous metal cluster based catalysts for enantioselective organic transformations. Development of new class of metal complexes as possible models for the active site of metalloenzymes

13. Y. U. Sasidhar

General: Physical Chemistry

Specific: Protein folding

14. Nand Kishore

General: Physical Chemistry

Specific: Biothermodynamics and Biophysical Chemistry

15. M. S. Balakrishna

General: Inorganic Chemistry

Specific: Main group chemistry; Transition metal organometallic chemistry, Homogeneous Catalysis & Biological Studies

16. R. Murugavel

Inorganic Chemistry

Materials Chemistry

17. Anil Kumar

General: Organic Chemistry

Specific: Synthetic Polymer Chemistry

18. M. Ravikanth

General: Inorganic Chemistry

Specific: Porphyrin and its analogs : Synthesis and Photodynamics

19. I. N. N. Namboothiri

General: Organic Chemistry

Specific: Organic Synthesis, Physical Organic Chemistry/Reaction Mechanism

20. K.P. Kaliappan

General: Organic Chemistry

Specific: Organic Synthesis and Chemical Biology

21. Anindya Datta

Ultrafast dynamics of molecules and materials

22. R. B. Sunoj

General : Organic Chemistry

Specific: Computational and applied theoretical chemistry

23. Prasenjit Ghosh

General : Inorganic

Specific: Organometallic Synthesis; Homogeneous Catalysis.

24. G. Naresh Patwari

General : Physical Chemistry

Specific: Experimental Spectroscopy and Chemical Dynamics.

25. Arindam Chowdhury

Experimental Physical Chemistry: Imaging, spectroscopy and dynamics of single fluorescent molecules/luminescent nanocrystals

26. Rodney A. Fernandes

General : Organic Chemistry

Specific : a) Synthetic Organic Chemistry: Asymmetric Synthesis of Natural Products, Asymmetric Catalysis. b) Organometallic Chemistry: Chiral Palladium Catalysis and Asymmetric Reactions. c) Enzymatic Chemistry: Chemo-Enzymatic Synthesis

27. P.I. Pradeepkumar

General : Organic Chemistry

Specific : Chemical Biology of Nucleic Acids

28. Ruchi Anand

General : Physical Chemistry

Specific : Protein Crystallography

29. Suvarn S. Kulkarni

Organic Synthesis, Glycochemistry, Chemical glycobiology

30. Gopalan Rajaraman

General : Inorganic Chemistry

Specific : Applied computational Chemistry

31. Maiti Debabrata

General : Inorganic Chemistry

Specific : Synthetic Methodology and Organometallic Chemistry

32. Maheshwaran Shanmugam

Coordination chemistry, molecular magnetism, small molecule activation, Organometallic chemistry.

33. Santosh J. Gharpure

General : Organic Chemistry

Specific : Organic synthesis, new synthetic methods, asymmetric synthesis, natural product synthesis, catalysis, organometallic chemistry

34. Rajarshi Chakrabarti

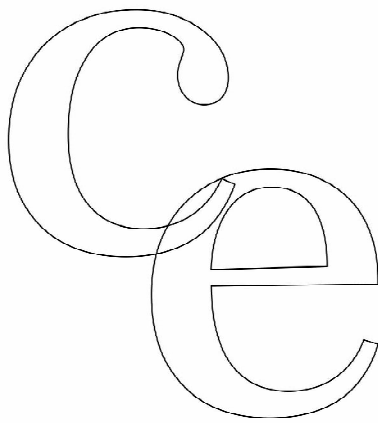
General : Physical Chemistry

Specific : statistical mechanics and its application to chemical, soft matter & biology inspired physics. polymer physics and biology inspired physics.

35. Sandip Kar

General: Physical Chemistry

Specific: Systems biology, Chemical kinetics, Nonlinear dynamics, Bifurcation theory, Stochastic modeling, Cell cycle modeling, dynamics of Signaling pathways, Oscillatory chemical and biological systems, Pattern formation, computational Biology.



Civil Engineering

Introduction

The Department of Civil Engineering with its multifaceted faculty continues to maintain and cultivate its strong links with the building and construction industry and academic and research institutions both within and outside the country. Besides high quality teaching and instruction at both undergraduate and postgraduate levels, the Department is actively involved in basic and applied research and consultancy and provides high quality technical advisory support through various R & D projects and consultancy to various organizations. The Department has attracted significant amount of sponsored research funding from government and private agencies.

Water Resources Engineering
Structural Engineering
Geodesy and Remote Sensing
Ocean Engineering

This year, 217 (117 B.Tech, 60 M.Tech and 40 Ph.D) students were admitted in the above specializations. This leads to a overall of 716 students on roll in the Civil Engineering Department (B.Tech-454, M.Tech-104, Ph.D-158). This year overall 135 students graduated from the Department, as given below:

Degrees awarded	135
B.Tech.	: 82
M.Tech	: 40
Ph.D.	: 13

Academic Programmes

The Department offers broad-based undergraduate B.Tech degree programme. A dual degree (B.Tech-M.Tech) programme is also run in structural engineering. Postgraduate M.Tech. (admissions through GATE/sponsorships) and PhD (through selections/sponsorships) programmes are offered in following areas of specializations:

Transportation Systems Engineering
Geotechnical Engineering

R&D Activities

Sponsored Research Projects	: 74
New	: 20
Ongoing	: 42
Completed	: 12

Department received 20 new sponsored projects with a sanctioned outlay of Rs. 3,20,84,020. The list of new sponsored projects is as below:

Sr. No.	Project Title	Sponsored by	Status
1	Use of Micro-nano Materials for improving Properties of Marine Clay	ALCOLAB (India) LLP	New
2	Experimental Investigations on the influence of particle packing of powders on the properties of cementitious paste	Ambuja Cements Limited	New
3	Field Measurement of Hydrodynamics along Thane Creek, Mumbai	Board of Research in Nuclear Sciences	New
4	Theoretical investigation of traction distribution and velocity pattern formations in collective cell motility	Department of Biotechnology (DBT)	New

Sr. No.	Project Title	Sponsored by	Status
5	DST/Inspire- Development of Flood Modelling and Flood Forecasting for Krishna River Basin	Department of Science & Technology (DST)	New
6	Remote sensing and GIS based distributed hydrological modelling of the upper Bhima river basin	DST	New
7	Development of efficient trip planner algorithms for schedule based trip planning in transit networks	DST	New
8	Simulation based proactive safety assessment using surrogate safety measures.	DST	New
9	Hydrodynamic characteristics of porous barriers under nonlinear shallow water waves	DST	New
10	Discussion Meeting on environmental geotechnics	DST	New
11	Automatic multi-parameter soil testing device with online data display	DST	New
12	Knowledge transfer seminar on the impact of climate change on offshore wind, marine energy and coastal defence systems	DST	New
13	C V Raman International Fellowship Award for African Researchers (Dr. Bloodless Dzwauro)	Federation of Indian Chambers of Commerce and Industry	New
14	Modeling for Pedestrian Friendly Transit Oriented Development	Housing and Urban Development Corporation	New
15	Improved predictions of sea surface temperature using neural networks (Indian National Centre for Ocean Information Services)	Ministry of Earth Sciences	New
16	Analysis of Soil Samples from CLUSTER 7, Mumbai High Field, ONGC	Oceanking Survey Services India Pvt. Ltd.	New
17	Characterization and Evaluation of Gas and Water Permeability in Hydrate Bearing Sediments of KG Basin	Oil & Natural Gas Commission (ONGC)	New
18	Investigations to model sea floor stability during production of gas from gas hydrate bearing sediments in kg area	ONGC	New
19	Characterization of Flyash Zeolites for Various Industrial Applications and Environmental Cleanup Projects	Powerdeal Energy Systems (I) Pvt. Ltd.	New
20	Investigations on Scouring Effects of Raft Foundation of Bridges by Hydraulic Model Studies	Public Works Department	New

Consultancy Work

342 consultancy projects worth about Rs. 17,88,68,664 were undertaken during the year by the Civil Engineering Department. 26 faculty members were involved in the above consultancy work.

Patents

Sr. No.	Title of Patent	Inventor	National/ International	Status: filed/granted	Date of patent filed/granted
1	A Methodology to Simulate Flow through Fractured Rockmass	Singh D.N	Indian	Filed	2013
2	A Methodology to Determine Influence of Initial Water Content and Specimen Thickness on the SWCC of Fine-grained Soils	Singh D.N	Indian	Filed	2013
3	An Aparatus (Lysimeter) for Modelling Radioactive Contaminant Transport in Soil Mass	Singh D.N	Indian	Filed	2013
4	An Apparatus and Method to Determine the Cracking Characteristics of Fine-grained Soils Under Varied Environmental Conditions	Singh D.N	Indian	Filed	2013
5	A Methodology to Determine Zeolitization Potential of Fly Ash from Wet and Dry Disposal Systems	Singh D.N	Indian	Filed	2013
6	Conductive geotextile and method of manufacturing the same	Viswanadham, B.V.S.	Indian	Filed	November 2013

Extension Activities

In order to encourage and facilitate interaction amongst practitioners and researchers, following Conferences, Workshops, Video Courses and CEP courses were organized at IIT Bombay by the department during the year:

International DAAD Alumni Seminar on “Science Meets Economy - Water & Waste Water Management”, during October 21-23, 2013, in Association with Siegen University, Germany & DAAD.

SERB Sponsored Brain Storming Session on “Emerging Trends in Geotechnical Engineering” on March 26, 2013.

A two-day Indo-US “IITB-CUREE Joint Workshop on Research Collaboration”, during September 11-12, 2013.

Two-day Workshop on “Structural rehabilitation and retrofitting using construction chemicals,” held during September 24-25, 2013.

One-day National Workshop on “Achieving Durable Concrete Construction through Performance Testing,” held on February 1, 2014.

5th National Civil Engineering Students Symposium (AAKKAR), March 8, 2014, Civil Engineering Association.

Video Course

NPTEL phase II video course on “Geosynthetics Engineering: In Theory and Practice”

Quality Enhancement in Engineering Education (QEEE) LIVE video classes on “Geotechnical Analysis” for Tier 2 and 3 engineering college students through NKN sponsored by Ministry of Human Resource Development (MHRD), Government of India.

Short-Term Courses / CEP Courses

“*Soft Computing Techniques in Hydrologic Time Series Modeling*”, November 11-15, 2013.

3-day CEP course on “Rainwater Harvesting and Sustainable Water Management” for ONGC Engineers at IIT Bombay during April 4-6, 2013.

“Finite Element Method and Applications in Engineering”, held during July 1-5, 2013

“Water Resources Management Using Geospatial Techniques and Numerical methods”, held during July 8-12, 2013

“Sediment transport and river engineering”, December 9-13, 2013.

Co-ordinator’s workshop for approximately 250 college teachers on Engineering Mechanics under the NMEICT scheme, September 2013.

Main work shop for approximately 7000 college teachers at remote centres under the NMEICT scheme, December 2013.

Organised India-UK seminar on “Impact of Climate change on offshore wind, Marine energy and Coastal defence systems”, jointly funded by Department of Science & Technology, India and Royal Society, UK at University of Edinburgh, UK, during March 26-28, 2014.

Visitors to the Department

Prof. Jeff Walker, Head of Civil Engineering, Monash University, Australia, delivered a lecture on “Space-age Hydrology” on May 29, 2013.

Prof. Ryosuke Kitamura, Kagoshima University, Japan, delivered a lecture on “Unsaturated soil mechanics aided by probability theory and statistics,” on August 16, 2013.

Dr. Khaled Hadi, Operations Division Director, WaterResources Centre, Kuwait Institute for Scientific Research. Kuwait, delivered a lecture on “Water Research Center strategy and road map,” August 27, 2013.

Prof. Amit Kanvinde, Associate Professor and Vice Chair of the Department of Civil and Environmental Engineering, University of California, Davis, delivered

a lecture on “Earthquake induced fracture in steel structures trends in research,” on September 12, 2013.

Dr. Chris Hale, Urbanist and mass transit infrastructure planner, Melbourne, Australia, delivered a lecture on “Transit -Oriented Development,” on September 24, 2013.

Mr. Gopal S. Madabushi, Professor in Geotechnical Engineering at the University of Cambridge, UK, delivered a lecture on “Offshore wind farm foundations,” September 25, 2013.

Dr. Bharat Lohani, Associate Professor, Department of Civil Engineering; Indian Institute of Technology Kanpur, delivered a lecture on “A technique for motion correction for laser scanning of a moving object,” October 11, 2013.

Prof. Juergen Stamm, Technical University Dresden, Germany, delivered a lecture on “Hydraulic engineering research at Technical University Dresden,” on October 21, 2013.

Prof. N. Raghavan, INAE Distinguished Visiting Professor, IIT Madras, delivered a lecture on “Construction of underground cavern for LPG storage 200m below GL,” on November 28, 2013.

Mr. John E. Durrant, Senior Managing Director, ASCE, USA, delivered a lecture on “Professional and technical training needs in India,” on January 16, 2014.

Prof. Merchatti, L’Aquila University, Italy, delivered a lecture on “Flat dilatometer DMT and SDMT-description, applications, settlements and liquefaction,” March 4, 2014.

Dr.-Ing. A. Anwikar, Founder and Managing, Director of Anwikar Consultants, Germany, delivered a lecture on “Planning and design of Special structures,” March 8, 2014.

Dr. Himanshu M. Raje, Director, H.M. Raje Structural Consultants Pvt. Ltd., delivered a lecture on “Rehabilitation of Mumbai Mantralaya,” on March 8, 2014.

Mr. C.M. Dordi, Corporate Head, Ambuja Cement Ltd. Mumbai, delivered a lecture on “Ten golden rules of quality control of concrete works,” on March 9, 2014.

Conferences/Symposia/Workshops Seminars (Participated/papers presented)

Maji Avijit

Presented a peer reviewed paper titled “Strategies to Improve the Efficiency of a Multimodal Interdependent Transportation System in Disasters”, at 2nd

Conference of Transportation Research Group of India (CTRG). Also, invited to chair a session. The conference was organized by Transportation Research Group of India at Agra from December 12-15, 2013.

Presented two peer reviewed research work titled “Disaster Management for Urban Commute in a Multimodal Transportation Context” and “Intersection Design to Improve Transit Mobility at Intersection under Flyover” at *Transportation Research Board’s 93rd Annual Meeting 2014*. The conference was organized by Transportation Research Board at Washington D.C. held from January 12-16, 2014.

Balaji R

Participated in *India-UK seminar on Impact of Climate change on Offshore wind*, Marine energy and Coastal defence systems, University of Edinburgh, UK during March 26-28, 2014.

IITB-Monash Academy Symposium, University of Monash, Melbourne, Australia, March 3-7, 2014.

Attended, presented and chaired a session in *Indian National Conference on Harbour and Ocean Engineering (INCHOE2014)*, February 5-7, 2014, at NIO, Goa.

Attended, presented and chaired a session in *Conference on Hydraulics, Water resources, coastal and Environmental Engineering (HYDRO-2013)*, December 4-6, 2013, IIT Madras, Chennai.

Presented a paper on “Role of Oceans in Earth System,” in *National Conference of Ocean Society of India (OSICON-2013)*, held during November 26-28, 2013, Indian Institute of Tropical Meteorology (IITM), Pune.

Participated in a *Workshop on Offshore Structural Engineering: Recent Developments, Challenges & Opportunities*, during September 25-29, 2013, NIT Durgapur.

Bambole, A. and Desai, Y. M.

Paper presented on “Three-Dimensional Elasto-Plastic Analysis of Thick Laminated Composite Plates Using Hybrid-Interface Elements,” at the *Seventh International Structural Engineering and Construction Conference (ISEC-7)*, Honolulu, June 18-23, 2013.

Barman, M., Nazari, M., Imran, A., Commuri, S., Zaman, M., Singh, D.V.

Paper presented on “Application of Intelligent Compaction Technique in Real-Time Evaluation of Compaction Level During Construction of Subgrade”, *Transportation Research Board, 93rd Annual Meeting*, Washington, D.C., 2013.

Behera, M. R. and Tkalich, P.

Presented a paper on “Overview of marine renewable energy potential in Singapore waters”, at *HYDRO 2013 International Conference*, IIT Madras, India, December 4-6, 2013.

Presented a paper on “Assessment of kinetic tidal energy resources using SELFE”, *INCHOE 2014*, NIO, Goa, India, during February 5-7, 2014.

Behera, M. R., Murali, K. and Sundar, V.

Presented a paper on “Extreme wave and Tidal current interaction”, at the *Third National Conference OSICON’13*, Indian Institute of Tropical Meteorology, Pune, India, November 26-28, 2013.

Banerjee, Sauvik

Participated at the *14th Asia Pacific Conference on Non-Destructive Testing (APCNDT)*, Renaissance Convention Centre Hotel, Mumbai, India, September 18-22, 2013.

Participated and presented a paper at the *6th International Conference on Structural Health Monitoring of Intelligent Infrastructure*, Hong Kong, China, December 9-11, 2013.

Delivered invited lecture at *India- Canada Collaboration Workshop on Advances in Sustainable Infrastructure Management Practices*, Ashoka Hotel, Chanakyapuri, New Delhi, February 4-5, 2014.

Behera Manasa, R.

Attended and presented a paper at the *18th Conference on Hydraulics, Water Resources, Coastal and Environmental Engineering (HYDRO 2013 International)*, December 4-6, 2013, IIT Madras, India.

Attended and presented a paper at the *Third National Conference OSICON’13*, November 26-28, 2013, Indian Institute of Tropical Meteorology, Pune, India.

Attended and presented a paper at the *5th Indian National Conference on Harbour and Ocean Engineering (INCHOE)*, February 5-7, 2014, NIO Goa, India.

Chaired a session at *1st Climate Science and Policy Workshop (CSPW)* on March 6-7, 2014 at IIT Bombay, Mumbai, India.

Chandiramani, N. K.

Presented two papers at *ASME 2013 International Mechanical Engineering Congress & Exposition IMECE 2013*, November 15-21, 2013, San Diego, California, USA.

Choudhury, D.

Participated and presented paper at *ASCE Geo-Institute’s Annual Conference Geo-Congress 2014*, February 23-26, 2014, Atlanta, GA, USA.

Delivered a Keynote Lecture at the *National Seminar on Soil Dynamics and Machine Foundations* jointly organized by Department of Civil Engineering, CHARUSAT, Changa, Gujarat and Indian Geotechnical Society Baroda Chapter, India, February 8, 2014, at Charotar University of Science and Technology (CHARUSAT), Changa, Gujarat, India.

Participated and presented paper at *International Symposium on Advances in Foundation Engineering (ISAFE-2013)*, organized by ISSMGE, SEAGS and NUS, December 5-6, 2013, Singapore.

Presented General Reports for Two Technical Sessions for International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE) Technical Committee TC 212 – Deep Foundations and One Technical Session for ISSMGE combined TC 212+307 - Sustainability at *ISSMGE's 18th International Conference on Soil Mechanics and Geotechnical Engineering, Challenges and Innovations in Geotechnics*, 18ICSMGE Paris 2013, September 2-6, 2013, France, Paris.

Also participated in *ISSMGE Council Meeting* on September 1, 2013 at Paris as Secretary of ISSMGE TC 212 – Deep Foundations.

Delivered Keynote Lecture at *International Conference on State of the Art of Pile Foundation and Pile Case Histories PILE – 2013*, organized by ISSMGE and Indonesian Geotechnical Society, June 2-4, 2013, Bandung, Indonesia.

Participated at *18th Southeast Asian Geotechnical Conference (18SEAGC) and the Inaugural Association of Geotechnical Societies in Southeast Asia Conference (IAGSSEAC)*, organized by ISSMGE and Southeast Asian Geotechnical Society (SEAGS), May 29-31, 2013, Singapore.

Participated at *Indian Geotechnical Conference, IGC-2013, Geotechnical Advances & Novel Geotechnical Applications (GANGA)*, organized by Indian Geotechnical Society (IGS) Roorkee Chapter, IIT Roorkee and CSIR-CBRI Roorkee, December 22- 24, 2013, IIT Roorkee, Roorkee. Also attended IGS National Executive Committee meeting as a member at IIT Roorkee on December 21, 2013.

Murty Dasaka S.

Coordinated and chaired a session on “Effect of spatial variability on the stability of geotechnical design decisions”, *4th Internal Symposium on Geotechnical Safety and Risk*, Hong Kong, December 4-6, 2013.

Dasaka, S.M., Dave, T.N., and Gade, V.M.

Presented a paper on “Reliability assessment of earth pressure on rigid non-yielding retaining walls”, *4th International symposium on Geotechnical Safety and Risk*, Hong Kong, December 4-6, 2013.

Desai Dhawal and Nanthagopalan Prakash

Presented a paper on “Experimental investigations on the influence of industrial by products on highly flowable high strength concrete,” at the *First International Conference on Advanced Nano Composite for Construction Materials*, India, 2013.

Desai Y.M.

Participated and presented a paper in the ISEC-7, *The Seventh International Structural Engineering and Construction Conference*, Honolulu, June 18-23, 2013.

Eldho T.I

Participated in an *International Conference on Hydraulics, Water Resources, Coastal & Environmental Engineering (HDRO International-2013)*, December 4-6, 2013, IIT Madras, Chennai, India.

Participated in an *International Conference on Water Technologies & Renewable Energy*, 92nd OMICS Group Conference, 2013, Mumbai, India.

Participated in *National Symposium on Computational Fluid Dynamics application in Water Engineering* at Bangalore on June 1, 2013, organized by IISc Bangalore.

Participated in *DAAD International GAWN Seminar*, during October 20-27, 2013, IIT Bombay, Mumbai, India

Participated in *National Conference on Sustainable Water Resources Development & Management (SWRDM-2013)*, September 30 – October 1, 2013, Aurangabad, India

Participated in *Indo-Mexican Workshop on Sustainable Water & Waste Water Management*, July 25-26, 2013, NEERI, Nagpur, India.

Participated in *Indian Water Congress*, February 7-8, 2014, Anand, Gujarat.

Participated in *Indian Water Works Association Annual Convention*, during January 17-18, 2014, Bangalore, India

Inamdar M.

Participated in an *International Focus Workshop on Connecting Theory and Experiments in Active Matter*, at Max Planck Institute for Physics of Complex Systems, Dresden, June 2013.

Jangid, R.S.

Attended the *World Congress on Advances in Structural Engineering and Mechanics*, Jeju, September 8-12, 2013.

Jothiprakash, V.

Attended *World Water Day Workshop on River Hydraulics and Management of Indian Rivers*, March 24, 2014, SVNIT Surat, India.

Participated in the *18th International Conference on Hydraulics, Water Resources, Coastal and Environmental Engineering, HYDRO 2013 International*, December 4-6, 2013, Department of Ocean Engineering, IIT Madras, India.

Participated in a *National Conference on Sustainable Water Resources Development and Management (SWARDAM-2013)*, Government College of Engineering, Aurangabad, September 30 - October 1, 2013.

Juneja A

Participated and chaired a session on “Numerical and Physical Modelling,” at the *Indian Geotechnical Conference (IGC 2013)* during December 22-24, 2013, Roorkee.

Participated and presented a paper at the *18th Southeast Asian Geotechnical Conference (18SEAGC) and Inaugural AGSSEA Conference (1AGSSEA)*, organised by Geotechnical Society of Singapore 29 - May 31, 2013, Singapore.

Krishna Rao K.V.

Attended and presented three papers at the *13th World Conference on Transport Research*, July 15-18, 2013, Reo de Janeiro, Brazil.

Mandal, J. N.

Participated in *18th Southeast Asian Geotechnical & Inaugural AGSSEA Conference*, SEAGC-2013, May 29-31, 2013, Singapore.

Design and Practice of Geosynthetic-Reinforced Soil Structures, October 14-16, 2013, Bologna, Italy.

Delivered a keynote lecture on “Numerical Modeling of 305 m high geogrid reinforced artificial mountain,” at a *National Seminar on Geotechnique Today 2014*, Kolkata, during February 28 - March 1, 2014, pp. 1-6.

Participated in *Indian Geotechnical Conference 2013*, IIT Roorkee, India

RAAJ Ramsankaran

Participated and Chaired one session on “RS & GIS Applications” during *Hydro International Conference* held at IIT Madras during December 2013.

Ghosh Siddhartha

Presented a paper in the *11th International Conference on Structural Safety and Reliability (ICOSSAR13)*, New York, USA, June 16-20, 2013.

Participated in the *Institute for Steel Development & Growth (INSDAG) and FICCI organized seminar on Steel - The Preferred Choice of Material for Construction*, Mumbai, India, March 14-15, 2014.

Singh D.N

Participated in *International Symposium on Coupled Phenomenon in Environmental Geotechnics (CPEG 2013)*, July 1-3, 2013, Turin, Italy

Participated in *2nd Conference of Transportation Research Group of India (CTRG)*, December 12-15, 2013, Agra.

Vedagiri P

Participated in the *National workshop on Review workshop of Indian Highway Capacity Manual*, March 28-30, 2014, Chennai.

Session chair and Participated in the *International Conference on Energy & Environment* on December 12-14, 2013 at Rajiv Gandhi Institute of Technology (Govt. Engineering College), Kottayam. Kerala.

Viswanadham, B.V.S.

Attended and participated in *8th International Conference on Physical modelling in Geotechnics* held at University of Western Australia, Perth, Australia during January 13-15, 2014 and also chaired two sessions on “Ground improvement and Geohazards during the conference”.

Invited Lectures

Maji Avijit

Delivered a lecture on “Trip Distribution” in a short-term course on *Urban Transportation Demand Modeling*. The course was coordinated by Prof. Gopal Patil of Civil Engineering Department at IIT Bombay from June 17-21, 2013.

Delivered a lecture on “Highway Design – Best Practices and Safety” at *1st Build Jharkhand Summit*. The summit was organized by Road Construction Department, Government of Jharkhand at Ranchi on October 30-31, 2013.

Balaji, R.

Delivered a talk on “Coastal erosion, protection and impacts”, *India-UK seminar*, University of Edinburgh, UK, during March 26-28, 2014.

Delivered a talk on “Coastal engineering: Education and Research”, *IITB-Monash Academy Symposium*, University of Monash, Melbourne, Australia, March 5, 2014.

Delivered a talk on “Physical and numerical modeling of coastal processes”, *CSIRO*, Melbourne, Australia, March 6, 2014.

Delivered a talk on “Analysis of ocean wave time series”, at *QIP/CEP Short term course on Soft*

Computing Techniques in Hydrologic Time Series Modeling, at IIT Bombay, November 11-15, 2013.

Delivered a talk on “Wave-structure interaction: Beyond regular and random waves”, *Workshop on Offshore Structural Engineering: Recent Developments, Challenges & Opportunities* at NIT Durgapur, September 25-29, 2013.

Behera Manasa, R.

Delivered lectures on “Wave Hydrodynamics” and “Extreme Waves” at a *five-day workshop on Offshore Structural Engineering: Recent Developments, Challenges & Opportunities* at NIT Durgapur, September 25-29, 2013.

Delivered an invited lecture on “Time series analysis using statistical and analytical methods” for the *five-day QIP/CEP short term course on Soft Computing Techniques in Hydrologic Time Series Modeling* held at IIT Bombay, November 11-15, 2013.

Choudhury, D.

Delivered a lecture on “Soil Dynamics”, during the *National Seminar on Soil Dynamics and Machine Foundations*, on February 8, 2014, at Charotar University of Science and Technology (CHARUSAT), Changa, Gujarat, India.

Delivered a lecture on “Advances in Research at IIT Bombay: Sustainable Foundation Solutions for Buildings to Mitigate Earthquake Disasters”, during the seminar on *Research Avenues in Geotechnical Engineering*, at R.V. College of Engineering on January 27, 2014, Bangalore.

Delivered a lectures on “Design of Combined Pile-Raft Foundation (CPRF) in Alluvial Sites”, during the *discussion meeting on Engineering on foundations for NPP structures in alluvial soils*, at AERB on January 24, 2014, Mumbai.

Delivered a lecture on “Research and Developments at IIT Bombay: Advances in Geotechnical Earthquake Engineering” at IIT Patna, on December 31, 2013, India.

Delivered a lecture “Soil Properties Under Dynamics Loadings and Their Applications” during STTP, at SVNIT, Surat, on October 22, 2013, Gujarat.

Delivered a lecture on “Sustainable Foundation Solutions for Buildings to Mitigate Earthquake Disasters” at Department of Civil Engineering, SIT Tumkur, on October 3, 2013, Karnakata.

Delivered a lecture on “Need and Research Advances in Geotechnical Earthquake Engineering”, at Department of Engineering Geology and Hydrogeology, RWTH Aachen University, on July 18, 2013, Germany.

Delivered a talk on “Research and Developments at IIT Bombay: Advances in Geotechnical Earthquake Engineering”, at Division of Soil Mechanics and Foundation Engineering, University of Luxembourg, on June 24, 2013, Luxembourg.

Delivered a talk on “Behaviour of Piles in Liquefied Soils under Seismic Conditions”, during International Conference on *State of the Art of Pile Foundation and Case Histories PILE-2013*, at Savoy Homann Bidakara Hotel, Bandung, on June 4, 2013, Indonesia.

Delivered a lecture on “Advances in Seismic Design Issues of Various Geotechnical Structures,” at Department of Civil Engineering, Indian Institute of Science (IISc), Bangalore, on May 14, 2013, India.

Murty Dasaka, S.

Delivered lectures on “Calibration Chamber Tests in Geotechnical Engineering, 1-g field load tests,” at IEOT, Mumbai in March 2014,

Deo, M.C.

Delivered a lecture on “Modern data driven methods to solve problems in coastal engineering”, *Annual INAE Conventions*, SOS University, December 12-13, 2013, Bhubaneswar.

Delivered a lecture on “Effect of climate change on waves and wind at some Indian offshore locations”, at *Indian Society for Theoretical and Applied Mechanics-2013, ISTAM-2013 Conference*, Bengal Engineering and Science University, December 18-21, 2013, Kolkata.

Delivered a lecture on “Effect of climate change on waves and offshore wind and wind potential”, at *UK-India Seminar of Climate Change and Coastal Processes*, University of Edinburgh, March 26-28, 2014, UK.

Eldho, T.I

Delivered keynote lecture on “Groundwater Contamination Problems and Remediation”, at *Indian Water Congress*, Organized by GH Patel College of Engineering & Technology, Anand, February 7, 2014, Gujrat.

Delivered a lecture on “Computer Modeling of Hydrologic Processes for Water Resources Management,” at National Symposium on *Computational Fluid Dynamics application in Water Engineering* at IISc Bangalore on June 1, 2013, Bangalore.

Delivered a lecture on “Rain Water Harvesting Models & Their Impacts”, at *Sai Jal Rainwater Harvesting*, Seminar organized by Sri Sathya Sai Seva Organization, Andheri, March 30, 2013, Mumbai.

Delivered a lecture on “Application of Fluid Mechanics in real life”, “Watershed Management” and “Groundwater Flow Modelling” at Yeshwantarao Chavan College of Engineering, on October 9, 2013, Nagpur.

Delivered a lecture on “Hydraulic Model Investigation for Design of Raft Foundations for Bridges”, at Dar Company Pune on October 17, 2013, Pune.

Inamdar, M

Delivered a talk on “Role of thermal fluctuations in mechanical stability of microtubules,” at *Young Investigators Meeting Soft Matter*, Puducherry, in January 2014.

Jothiprakash, V.

Delivered a lecture on “Reservoir Optimization Using Hybrid Chaotic Genetic Algorithm”, at a Workshop on *River Hydraulics and Management of Indian Rivers, World Water Day Workshop* at SVNIT Surat, March 24, 2014.

Delivered a talk on “Soft Computing Techniques in Reservoir Optimization,” National Conference on *Sustainable Water Resources Development and Management (SWARDAM-2013)*, Government College of Engineering, Aurangabad, October 1, 2013.

Delivered lectures on “*Motivating the Civil Engineering Students CARE*” and “Introduction to Water Resources System Engineering” at Tiruchirappalli, on September 2, 2013, Tamil Nadu.

Delivered a lecture on “Soft Computing Techniques in Hydrological Time Series Modeling,” at *QIP-STTP on Advanced Hydrological Modeling and Techniques*, SVNIT Surat, July 4, 2013.

Juneja, A.

Delivered a lecture on “Application of soil constitutive models in finite element analysis”, during *CEP/QIP short-term course on Finite element methods with applications in civil engineering* at IIT Bombay, in July 2013, Mumbai.

Krishna Rao, K.V.

Delivered Expert Lecture on “Sustainable Urban Transportation Planning Through Transit Oriented Development,” at the National Conference on *Mega Construction Projects and CBR Construction Award -2013* at Agri-Koli Sanskriti Bhavan Auditorium, Nerul, held on November 16, 2013, Navi Mumbai.

Mandal, J.N

Delivered keynote lecture on “Numerical Modeling of 305 m high geogrid reinforced artificial mountain,” National Seminar on *Geotechnique National Seminar on Geotechnique Today 2014* at Kolkata, during February 28 – March 1, 2014.

Velaga Nagendra, R.

Presented a talk on “Effective Integration of GIS and GPS for Transport Telematics Applications”, at a Workshop on *Remote Sensing and GIS Application to Civil Engineering*, during January 8-11, 2014 at S.GS.I.T.S, Indore.

Delivered a keynote lecture at a Workshop on *Modeling for Integrated Monitoring of Large Systems for Health & Sustainability*, at R.V. College of Engineering, during January 30-31, 2014, Bangalore.

Delivered a lecture on “Data Collection Methods for Demand Model” at *CEP and QIP short term course on Urban Transportation Demand Modeling*, IIT Bombay, held during June 17-21, 2013, Mumbai.

Nanthagopalan Prakash

Delivered a talk on “Rheology and Particle Packing – Tools for Mixture Design of Self-Compacting Concrete,” at Chandubhai S Patel Institute of Technology, Anand, Gujarat, in October 2013.

Delivered a lecture on “Durability testing and limiting values of special concrete,” at one-day National Workshop on *Achieving Durable Concrete Construction through Performance Testing*, at IIT Bombay, on February 1, 2014, Mumbai.

Rastogi, A.K.

Delivered a keynote address on “Recent Advances in Groundwater Hydrology,” at *Fourth National Conference on Emerging Vistas of Technology in 21st Century*, Organised by Parul Institute of Technology, Vadodara, May 10-11, 2013.

Delivered an expert lecture on “Emerging Techniques in Groundwater Hydrology (inverse modeling for sustainable development of water resources),” in *Advances in Hydrology and Water Resources Engineering Organised* by S P College of Engineering, Visnagar, October 17, 2013.

Ghosh Siddhartha

Delivered lectures for a workshop on “Limit State Design of Steel Structures”, organised by the Indian Society of Structural Engineers at MIT, Aurangabad, India, July 12-14, 2013.

Gosh Subhimal

Invited lecture on “Regional Modeling of Climate Change and its Impacts Assessment” in workshop on Climate Science: Recent Research, 4-5 October 2013, organized by Ministry of Earth Sciences.

Singh, D.N

Delivered a lecture on “Geoenvironmental Engineering,” at S.V.C.E. Tirupati, in October 2013.

Delivered lecture on “Need Based Instrumentation for Various Geoenvironmental Issues,” at M.N.I.T., in August 2013, Jaipur.

Delivered lecture on “Environmental Geomechanics: A Recent Development” and “Need Based Instrumentation for Various Geoenvironmental Issues,” at IIT Bombay, in June 2013, Mumbai.

Delivered lecture on “Environmental Geomechanics: A Recent Development” and “Need Based Instrumentation for Various Geoenvironmental Issues,” at K. K. Wagh College of Engineering, in May 2013, Nashik.

Singh, D.V

Delivered a lecture on “Emerging Materials and Technologies for Construction of Sustainable Highways” at *1st Build Jharkhand Summit* organized by Government of Jharkhand, Ranchi, October 30-31, 2013, Jharkhand.

Delivered a lecture on “Emerging Technologies and Test Methods for Construction of Sustainable Pavements in Cold Regions” at *Border Roads Organization, Tech Seminar*, GREF Center, Pune, July 18-19, 2013, Pune.

Delivered a lecture on “Emerging Green Technologies for Sustainable Construction of Highways-Plan to Move Forward,” *Infrastructure Outlook 2013*, organized by Bricas Consulting, The Hotel Lalit, Mumbai, July 1-2, 2013.

Viswanadham, B.V.S.

Delivered an invited lecture on “Application of Centrifuge-based Physical Modelling to Geotechnical Engineering Practice” was delivered at a *National workshop* organized by Indian Geotechnical Society, Kakinada Chapter.

Delivered a lecture on “Geotechnical Centrifuge Modelling” and “Centrifuge model studies on offshore foundations” at *IEOT*, ONGC, Panvel on March 20, 2014.

Delivered an invited lecture on “Centrifuge-based geotechnical physical modelling: Pile foundations”, at NIT Trichy on February 18, 2014.

Delivered an invited lecture on “Centrifuge-based Geotechnical Modelling” and “Centrifuge modelling of ground improvement techniques” at NIT Surat on February 9, 2014.

Delivered an invited lecture on “Potential of Geosynthetics for road infrastructure development” at VJTI Matunga on January 8, 2014.

Delivered an invited lecture on “Centrifuge Model Studies on the Performance of Hybrid Geosynthetic

Reinforced Soil Slopes/Walls” at IISc Bangalore, on January 9, 2014

Delivered an invited lecture “Studies on Slope stability analysis of Ash Pond Dams” at NTPC, Ramagundam on May 22, 2013.

Delivered an invited lecture on “Centrifuge-based Physical model studies on Railway Embankments Constructed with Coal ash” at NTPC, Ramagundam on May 22, 2013.

Delivered a lecture on “Performance of Reinforced Soil Structures” at QIP course on advancements in geotechnical engineering conducted at IIT Bombay on June 25, 2013.

Significant Awards and Distinctions

Choudhury, D.

Visiting (Guest) Professor, Department of Civil and Environmental Engineering, Technical University Darmstadt, Germany, during June-July 2013.

Inducted as “Member” of core committee of International Building Code (IBC-1803) on ‘Foundations’, which is the national design code of USA. Only non-USA member in this IBC, USA, since April 2013.

Eldho, T.I

Best Lecture Prize for the year 2013 at India Water Works Association (IWWA), Mumbai, by IWWA in the 46th Annual Convention, Bangalore.

Jothiprakash, V

The Union Ministry of Water Resources: Department of Irrigation Prize (Best Paper Award) awarded by *Institution of Engineers (India)*, during the 28th Indian Engineering Congress held at Chennai, on December 20, 2013.

R.J. Garde Research Award 2013, awarded by *Indian Society for Hydraulics (ISH) Pune*, for outstanding research in the field of hydraulics and water resources in the category of Young Scientist, during the *HYDRO-2013 International Conference* held at IIT Madras, Chennai on December 4, 2013.

IRCC Industrial Impact Award 2012, awarded by IIT Bombay, during the Teacher’s Day Celebrations held at IIT Bombay, on September 5, 2013.

Krishna Rao K.V.

CBR International Construction award 2013 by Construction and Business Records

Gosh Subhimal

National Academy of Science (India) Platinum Jubilee
Young Scientist Award 2013

Viswanadham, B.V.S.

IGS-Prof. A. V. Shroff, Baroda Biannual Prize for the
BEST Paper on “Grouting Technology/Environmental
Geotechnical Engineering” for the year 2011-2012 for
the paper entitled “Gas breakthrough characteristics
of soil barriers of landfill cover system,” awarded in
December 2013 at IGC 2013 at IIT Roorkee.

IGS-Dr. B.B. Rai – S.N. Gupta Biannual Prize for the
BEST Paper on “Earth and Earth-Retaining Structures,
Including Interaction and Instrumentation” for the year
2011-2012 for the paper entitled “Some studies on the
Seepage Analysis of Geosynthetic Reinforced Soil
Walls,” awarded in December 2013 at IGC 2013 at IIT
Roorkee.

Honorary Work**Maji Avijit**

Panel member of National Cooperative Highway
Research Program (NCHRP), USA.

Evaluating the performance of corridors with
roundabout: As research panel member reviewed
quarterly reports and the final report submitted in 2013.

Workzone crash characteristics and countermeasure
guidance: As research panel member reviewed
quarterly reports that are submitted till 2013.

Paper review for journal and conferences:
Transportation Research Record and Transportation
Research Board’s 93rd Annual Meeting 2014. 2nd
Conference of Transportation Research Group of India
(CTRG), The Scientific World Journal, Journal of
Construction Engineering

Operational Effects of Geometrics committee – A
Transportation Research Board committee.

Internal Examiner: 2 students MTech (completed),
External Examiner: 1 student MTech (on going)

Balaji R

Reviewed paper for; Journal of Engineering
Applications of Computational Fluid Mechanics, ISH
Journal of Hydraulics Research, International Journal
of Ocean and Climate Systems, Journal of Atmospheric
and Oceanic Technology

Technical review committee member, 5th Indian National
Conference on Harbour and Ocean Engineering,
February 5-7, 2014, NIO, Goa.

Banerjee, Sauvik

Reviewed technical papers for international journals &
conferences: Journal of Nondestructive Evaluation,
Journal of Composite Materials, Wave Motion, Journal
of Sound and Vibration, Sadhana – Academy
Proceedings in Engineering Science, 10th International
Conference on Vibration Engineering and Technology
of Machinery

Behera Manasa R

Reviewed paper for Journal of Hydro-environment
Research (JHER) and International Ocean and Polar
Engineering Conference.

Technical review committee member for National
Seminar on Climate Change Impacts on Water
Resources Systems, November 27-29, 2013, PIET,
Vadodara.

Member and member secretary of Department Post
Graduate Committee (DPGC).

Member of Department Time Table Coordinator
Committee and Department Communication and
Computer Committee (DCCC).

Department Faculty Coordinator for TECHCONNECT
2014.

Institute Representative for CEED 2013.

Chandiramani, N. K.

Reviewer for Journals: ASME Journal of Dynamic
Systems, Measurement and Control; Structural and
Multidisciplinary Optimization; International Journal
of Mechanical Sciences; Sadhana; Journal of Low
Frequency Noise, Vibration and Active Control.

Reviewer for Conference: ASME 2013 International
Mechanical Engineering Congress & Exposition IMECE
2013

Thesis Examiner: Dept of Mechanical Engineering, IIT
Kharagpur, thesis titled ‘Modal Damping Prediction
for Vibrating Solids: Constitutive Models and Finite
Element Computations’.

Choudhury, D.

MHRD Review for Department of Civil and
Infrastructure Engineering, Indian Institute of
Technology Patna, IIT Patna, India during December
30-31, 2013.

One of the two ‘Guest Editor’ for a Special Issue (Vol. 3,
Issue 1, 2013) hosted by ISSMGE Technical Committee
TC 212 – Deep Foundations for September 2013 issue
of ‘International Journal of Geoenvironment Case
Histories (IJGCH)’ (ISSN: 1790-2045), published by
International Society for Soil Mechanics and
Geotechnical Engineering (ISSMGE), UK.

Geo-Coalition Code Committee Member of International Building Code (IBC), USA, IBC Section 1803 – Foundations, since 2013.

Expert Reviewer of Code, IRC 75: “Guidelines for the design of high embankments”, published by Indian Road Congress (IRC), New Delhi, India, by IRC Technical Committee H-4, since 2013.

Editorial Board Member of ‘ISSMGE Bulletin’, published by International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE), London, U.K.

Editorial Board Member of the following Journals, (a) Disaster Advances’ (ISSN: 0974-262X) (Quarterly Journal), SCIE and SCOPUS indexed with Impact Factor 2.292, published from India, (b) Indian Geotechnical Journal (ISSN: 0046-8983) (Quarterly Journal), Springer, SCIE and SCOPUS indexed, published by Springer in association with Indian Geotechnical Society, New Delhi, India, (c) International Journal of Geotechnical Earthquake Engineering (IJGEE) (ISSN: 1947-8488) (Semi-Annually Journal), IGI publishing, (d) Electronic Journal of Geotechnical Engineering (EJGE) (ISSN: 1089-3032), SCOPUS indexed, published from USA, (e) Journal of Civil Engineering and Science (JCES) (ISSN: 2227-4634), SCOPUS indexed, published from USA, (f) Journal Dataset Papers in Geosciences (ISSN: 2314-5323), SCOPUS indexed, published from USA, (g) ISRN Civil Engineering Journal (ISSN: 2090-5114), SCOPUS indexed, published from USA, (h) The Scientific World Journal, Civil Engineering, published by Hindwai Publishing Company.

Reviewer of several papers from various Geotechnical Engineering and Earthquake Engineering International and National Journals.

Reviewer for (a) GeoCongress – 2014, Annual Conference of Geo-Institute, ASCE, Feb 23-26, 2014, Atlanta, GA, USA organized by Geo-Institute, ASCE, USA, (b) Indian Geotechnical Conference (IGC-2013), December 22-24, 2013, IIT Roorkee, India, Annual Conference of Indian Geotechnical Society, New Delhi, India. (c) *18th International Conference on Soil Mechanics and Geotechnical Engineering, Challenges and Innovations in Geotechnics, 18ICSMGE Paris 2013*, organized by International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE), September 2-6, 2013, France, Paris. (d) *International Conference on “State of the Art of Pile Foundation and Pile Case Histories” PILE – 2013*, organized by ISSMGE and Indonesian Geotechnical Society, June 2-4, 2013, Bandung, Indonesia.

One of the three ‘Editor’ of *Proceedings of International Conference on “State of the Art of Pile Foundation and Pile Case Histories” PILE – 2013*,

organized by ISSMGE and Indonesian Geotechnical Society, June 2-4, 2013, Bandung, Indonesia.

Reviewer for NPTEL Phase-II web course on “Geotechnical Earthquake Engineering” developed by IIT Kanpur, India.

Member of Award Nomination Committee of ‘Unsaturated Soils’ Technical Committee of Geo-Institute, American Society for Civil Engineers (ASCE), Reston, VA, USA.

Secretary and One of the Key Member of Technical Committee TC 212 – Deep Foundations of International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE), UK to develop ‘International ISSMGE Guidelines for Combined Pile-Raft Foundations’ technical guideline/code.

Member of Technical Committee TC 203 - Earthquake Geotechnical Engineering of International Society of Soil Mechanics and Geotechnical Engineers (ISSMGE), U.K.

Reviewer and Expert Member for M.Tech. & Ph.D. Theses evaluation during Research week of Gujarat Technological University (GTU), Gandhinagar, Gujarat, India.

Mentor for INSPIRE Student Award Program of Department of Science and Technology (DST), New Delhi, Government of India.

Expert Reviewer for 4-year B.Tech. course curriculum of Department of Civil and Infrastructure Engineering, IIT Patna, Patna, India.

Expert Reviewer for 2-year M.Tech. course curriculum of Department of Civil and Infrastructure Engineering, IIT Patna, Patna, India.

Expert Member, of the Board of Courses and Studies (BOCS) for 4-year B.Tech. course of Department of Civil Engineering, Indian School of Mines, Dhanbad, India, nominated by the Director of ISM, Dhanbad, India.

Examiner for Ph.D. Theses from IIT Kanpur, IISc Bangalore, SIT Tumkur, Jadavpur University Kolkata, India.

International Advisory Committee Member for International Symposium on Advances in Foundation Engineering (ISAFE – 2013) during December 5 – 6, 2013, Singapore.

Session Organizing Member as Secretary of ISSMGE TC 212 – Deep Foundations for Theme 4.2 ‘Foundations and Retaining Structures’ of The 18th International Conference on Soil Mechanics and Geotechnical Engineering (18ICSMGE – 2013) during September 2 – 6, 2013, Paris, France.

International Advisory Committee Member for The International Conference on State of the Art of Pile Foundation and Pile Case Histories (PILE 2013), June 2-4, 2013, Bandung, Indonesia.

Expert Review Committee Member for BRNS-DAE, Department of Atomic Energy, Mumbai, Govt. of India to evaluate sponsored research project proposals (Civil Engineering) since July 2013.

Reviewer for UKIERI (Indo-UK joint) Sponsored Research Project Proposal of 2013 for University Grant Commission (UGC), Government of India.

Murty Dasaka, S.

Reviewer of Ph.D. and M.S. (Engg.) thesis submitted to IISc Bangalore, JNTU, Kakinada, NIT Surat, JNTU Hyderabad, Reviewed manuscripts submitted to several national and international journals.

Deo, M.C.

Chief Editor, 'International Journal of Ocean and Climate Systems', Multi-Science Publ., UK.
Chairman, Editorial board of ISH Journal of Hydraulic Engineering, Taylor and Francis, UK
Associate Editor, ASCE Journal of Computing in Civil Engg.

Member the following editorial board: Applied Ocean Research, Elsevier; International Journal of Ships & Offshore Structures, Taylor & Francis; Open Ocean Engineering Journal, Bentham Press, UK; and Journal of Advances in Civil Engineering, Hindawi Pub., New York.

Member of the following: Maharashtra Coastal Zone Regulation Authority; Governing Council, CWPRS, Pune; Technical Advisory Committee, CWPRS, Pune; Technical Advisory Council, NIOT, Chennai; Project Management Board, NIOT, Chennai; Research Advisory committee, ICMAM, MoES, Chennai; and Hydrology project group, Govt. of Maharashtra.

Reviewed the following: 30 papers for various national and international Journals, and a project proposal on Prediction of Ocean Currents, sent by Govt. of Croatia

Member of selection Committees of Faculty, Scientists of UPSC, CSIR, IIT Bhubneshwar, NITIE.

Acted as Consultant, World Bank, on an Institutional Review

Member, Committee of MoWR on Performance Review of CWPRS, Pune

Reviewer of Ph D theses of IIT-M (4), IIT-R, IISc.

Desai, Y.M.

Expert member in various Selection Committees at various IITs, NITs, Universities

Reviewer for PhD / MTech Dissertations for candidates from various IITs, NITs, Universities.

Reviewer for journal papers for various international and national journals

Eldho, T.I

Chairman, Board of Governors, IHRD Government College of Engineering, Adoor, Kerala

Associate Editor of International Journal of Ecology and Development.

Editor-in-Chief of the "International Journal of Water Resources and Environmental Management, published by Research Science Press.

Vice Chairman & Associate Editor of ISH Journal of Hydraulic Engineering, Taylor & Francis.

Editorial Board Member of Journal Indian Water Works Association

Executive Committee Member of Indian Water Works Association, Mumbai Center

Editorial Board Member of Journal of Indian Water Resources Society.

Associate Editor of Journal of Groundwater Research

Referee Ph.D. Thesis: IIT Madras, IIT Roorkee, IIT BHU, Anna University.

Technical Review Member of *Hydro2013*, held at IIT Madras

Reviewed Project proposal for DST, New Delhi, 2013-14

Member, Board of Studies, S.P. College of Engineering, Mumbai, 2013-14

Technical Advisory Committee Member of Water Supply & Rainwater Harvesting, MCGM, Mumbai, and International Symposium on Integrated Water Resources Management (IWRM-2014) February 19-21, 2014, CWRDM, Kozhikode, Kerala, India

Technical Committee Member, 5th National Conference on Harbour & Ocean Engineering, NIO, Goa, February 5-7, 2014.

Advisory Committee Member of Int. Conf. on Innovations in Civil Engineering, May 9-10, 2013.

Janga Reddy, M.

Reviewed technical papers for Journals: Journal of Hydrologic Engineering (ASCE), Journal of Water Resources Planning and Management (ASCE), Journal of Earth Science and Systems, Hydrological Science Journal; Water Resources Management; Journal of Hydrology, Environmental Modeling and Software; Applied Soft Computing, Journal of Hydroinformatics, Transactions on Evolutionary Computation, Sadhana Journal, Stochastic Environmental Research and Risk Assessment, Automation in Construction, KSCE Journal of Civil Engineering

Jangid, R.S.

Reviewer for Research Papers of International Journal of Structural Stability and Dynamics, Soil Dynamics and Earthquake Engineering, Structural Control and Health Monitoring, IES Journal Part A: Civil and Structural Engineering, Engineering Structures, ISET Journal of Earthquake Technology, Structural Engineering International, Earthquake Spectra, Journal of Sound and Vibration

Editorial Board Member of the following journals: The Open Ocean Engineering; The Open Construction and Building Technology and Earthquakes and Structures.

Jothiprakash, V.

Evaluated Ph.D thesis for NIT Surathkal, MNIT Jaipur, SVNIT Surat, Anna University and IIT Kanpur. Reviewer for various International and National Journals.

Member, Interdisciplinary Programmes Committee (Centre for Urban Science and Engineering-(C-USE)) for the year 2013.

National Service Scheme (NSS) Coordinator, IIT Bombay (December 30, 2010 to till date).

Member Departmental Policy Committee (January 2013 to till Date).

Member Green Campus Committee (from February 2010 to till date).

Executive Council Member (2012-2014) Indian Society for Hydraulics, Pune.

Juneja, A

Examiner of M.Tech thesis from NIT, Kurukshetra.

Reviewer of International and National Journal papers (Geotechnical Testing Journal, ASTM, Journal of Materials in Civil Engineering, ASCE, Ground Improvement, ICE, Soils and Foundations, JGS, Canadian Geotechnical Journal, NRC Research Press, Indian Geotechnical Journal, Springer).

Faculty Advisor Academic Rehabilitation Programme and Student Mentorship Programme Core-member

ATC-18 “Deep excavations and Mega Foundations” of ISSMGE, Member TC 305 “MegaCities” of ISSMGE

Rao Krishna, K.V.

Member of the Committee constituted by MMRDA for the evaluation of EoIs for General consultancy for Metro Line 3 (Colaba – Bandra – Seepz).

Mandal, J.N

Reviewer: International Journal of Geomechanics, ASCE, USA.

Paper Review: International Journal of Geotechnical and Geoenvironmental Engineering, ASCE, USA. Geosynthetics International Journal, Thomas Telford Ltd. UK. International Journal of Soils and Foundation, Japan. International Journal of Earth Science and Engineering, India. Indian Geotechnical Journal, India. Editorial Board member: International Journal of Geological Engineering, Sciknow Publishers, NY, USA. International Journal of Civil Engineering and Architecture, Horizon Research Publishing, (HRPUB) USA.

Editorial board member of Journal of Geological Resources & Engineering, Devid Publication, New York, USA.

Editorial board member for Journal of Geotechnical Engineering

Nanthagopalan Prakash

Reviewer: ASCE Journal of Materials in Civil Engineering, Cement and Concrete Research KSCE Journal of Civil Engineering,, CSIR – Extra Mural Research, Indian Concrete Institute, Current Science, Indian Journal of Engineering and Material Science, Sadhana – Academy Proceedings in Engineering Science, Smart and Sustainable Built Environment

RAAJ Ramsankaran

Acted as a reviewer for following Journals, ASCE journal of Hydrologic Engineering, Water Resources Management, SADHANA Academic Proceedings, ISH Journal of Hydraulic Engineering.

Member Interdisciplinary Program Committee for IDP in Climate Studies.

Member Departmental UG Programs Committee (DUGC).

Member Departmental Admissions (M.Tech and PhD) Committee.

Member Departmental Curriculum Review Committee

Raje, D.

Reviewer for national and international journals: Journal of Earth System Science, Journal of Water and Climate, Hydraulic Water Resources Management, Water Science and Technology, Current Science

Rastogi, A.K.

Advisor UPSC Civil Services (Main) interview board, April 15-18, 2013, UPSC, Dholpur House, New Delhi

Invited Director's nominee as Expert in the Faculty Selection Committee, Dept. of Civil Engg, NIT – Kurukshetra, July 27-28, 2013.

Board's nominee as Expert in the Faculty Selection Committee, Department of Civil Engineering, IIT Delhi, October 23, 2013.

Senate and Board's nominee as Expert in the Faculty Selection Committee, Dept. of Hydrology, IIT Roorkee, March 29, 2014.

Invited to evaluate Ph.D. Thesis, 'Meta-heuristic Multi-Objective Optimization for Institute of Bioremediation of Groundwater' Department of Civil Engineering, IIT Delhi, July, 2013.

Invited to evaluate Ph.D. Thesis, 'Study of Analytical and Numerical Approach of Solute Transport Modeling' Department of Applied Mathematics, ISM Dhanbad, August 2013.

Invited to conduct Ph.D. viva, 'Meta-heuristic Multi-Objective Optimization for Insitu Bioremediation of Groundwater' Department of Civil Engineering, IIT Delhi, October 22, 2013.

Invited to conduct Ph.D. viva, 'Study of Analytical and Numerical Approach of Solute Transport Modeling' Department of Applied Mathematics, ISM Dhanbad, November 11, 2013.

Evaluated 5 Ph.D. synopsis as external expert member of Research and Recognition Committee of the Board of Civil Engg, Mumbai University

Editor Journal of Groundwater Research

Member Advisory Committee, Dept. of Civil and Environment Engineering, VJTI, Mumbai

Member Board of Studies, Dept. of Civil and Water Management Engineering, SGGS Institute of Engineering and Technology, Nanded.

Member Research Committee Dept. of Civil Engineering, Dr. Babasaheb Ambedkar Technological University, Lonere

Member Expert Panel – Indian National Committee on Groundwater, Govt. of India.

Member Expert Panel – Indian National Committee on Hydraulics, Govt. of India.

External Expert on Research and Recognition Committee for the Board of Studies Civil Engineering

appointed by the Vice Chancellor University of Mumbai.

Research Papers Reviewed: Groundwater Modelling of Chambal Basin for HYDRO 2013 International, IIT Madras.

The Feasibility Analysis for Produced Water Reinjection: An Example in Sichuan Province, China for KSCE Jr. of Civil Engg.

Potential of Rainwater Harvesting in Buildings to Reduce Over Extraction of Groundwater in Urban Areas of Bangladesh for Water Science and Technology: Water Supply

Exploring groundwater in basaltic Deccan traps in India for JESS

Feasibility study of groundwater banking under varying climate conditions for JGWR

Confidential assessment referee of Prof S K Mishra for the post of Professor Dept. of Water Resource Development and Management at IIT Roorkee, March 7, 2014

Confidential assessment referee of Prof Suresh Kumar for the post of Professor Dept. of Ocean Engineering at IIT Madras, March 6, 2014

Gosh Siddartha

Served as an Expert Member in the Atomic Energy Regulatory Board's committee CESC-WG1.

Served as an External Expert in Bhabha Atomic Research Centre's panel of interviewers for promotional interviews.

Served as an External Expert in Homi Bhabha National Institute's panel of examiners for PhD progress seminars.

Singh, D.V.

H-6 Committee on Road Maintenance and Asset Management, India Road Congress, New Delhi, March 2013-present.

Technical Proposal Reviewer, Department of Science and Technology (DST), New Delhi, India

Guidelines for Construction and Maintenance of Bituminous Roads Using Cold Mix Technology, Indian Road Congress, Committee on Road Maintenance and Asset Management (H-6), August 2013

Guideline for Ready-to-Use Bituminous Mixes for Pothole Repair and Patching and "Guidelines for Effective Use of Pothole Patching Mix", Indian Road Congress, Committee on Road Maintenance and Asset Management (H-6), August 2013

Gosh Subimal

Reviewed proposals submitted to Ministry of Earth Sciences.

Reviewed manuscripts in Water Resources Research, J. Of Geophysical Research, Geophysical Research Letters, Journal of Hydrology, Journal of Hydrologic Engg (ASCE), J. Of Computing in Civil Engg. (ASCE) and many more. Editorial Board member of World Scientific Journal.

Mathew Tom, V.

Member, Research Council, NATPAC.

Viswanadham, B.V.S

Reviewer for papers in the following journals: ASCE Journal of Hazardous Toxic, and Radioactive Waste Management, ASCE Journal of Materials in Civil Engineering, ASCE Journal of Geotechnical and Geoenvironmental Engineering, Geotextiles and Geomembranes, Geosynthetics International, International Journal of Physical Modelling in Geotechnics, Indian Journal of Geosynthetics and Ground Improvement, Indian Geotechnical Journal, Ground Improvement, Soils and Foundations, Sadhana, Waste Management.

For a special issue on Physical modelling in Geotechnics of Geotechnical Engineering Journal of the SEAGS & AGSSEA

Faculty Members and their Specializations

1. Ajit Srividya

Structural reliability, Optimization, Quality systems

2. Avijit Maji

Highway planning, Geometric Design, Innovative intersection/interchange design, Traffic Operations

3. K.M.Bajoria

Structural engineering: Computer aided design, Non-linear analysis, Nuclear structures.

4. P. Banerji

Structural engineering: Earthquake analysis, Risk assessment, Artificial neural networks, Nuclear structures.

5. Sauvik Banerjee

Structural engineering: Structural and solid mechanics, Ultrasonic wave propagation in solids, Non-destructive quality evaluation of composites, Structural health monitoring, Dislocation mechanics, Multiscale materials modeling.

6. R. Balaji

Ocean/coastal engineering, coastal structures, modeling of coastal processes.

7. Manasa R. Behera

Ocean engineering: Computational ocean dynamics and coastal processes, Numerical modelling of water waves, tide, tsunami and storm surge, Impact of changing climate on coastal and ocean processes, Wave-current interaction, Wave and tidal energy assessment, Multi-phase flows, Fluid-structure interaction.

8. N.K. Chandiramani

Area of research: Active vibration control, Nonlinear dynamics, Stability; Computational mechanics; Solid mechanics.

9. D. Choudhury

Geotechnical engineering: Geotechnical Earthquake Engineering, Earth retaining structures, Slope Stability, Anchor, Pile, Bearing capacity problems, Earth Dams, Seismic effects on Reinforced Soil-Wall, Dynamic Soil-Structure interaction problems, Tsunami resistant design of waterfront structures, Seismic behavior of Landfills, Seismic Ground Characterization, Behavior of Subgrade Soil under Cyclic railway and airways loads, Soil Dynamics, Machine Foundations, GIS-GPS based Hazard analysis, Soil Liquefaction, Seismic Microzonation, Centrifuge Modeling, Numerical and Analytical modeling of geotechnical problems.

10. Dasaka S. Murty

Geotechnical engineering: Site investigation, Stability of shallow and deep foundations, Reliability based design, Ground improvement, Landfill engineering and modeling of soil and rock.

11. M.C. Deo

Ocean engineering: Random data analysis using artificial intelligence techniques, Neural networks, Genetic programming, Model trees, Locally weighted learning, Support vector machines, Soft computing, Data mining, Statistical and stochastic analysis, Hydrology (Random data analysis using soft computing tools)

12. Y.M. Desai

Structural engineering: Wind induced vibrations, Computational mechanics, Nonlinear analysis, Finite elements, Parallel computing, Fiber reinforced polymer composites, Composites in construction.

13. D.M. Dewaikar

Geotechnical engineering: Offshore foundations, Ground improvement, Seepage.

14. Dharamveer Singh

Characterization of Pavement Materials (Asphalt, Hot Mix Asphalt, Soil, and Aggregates), Recycled Asphalt Mixes, Warm Mix Asphalt, Locally Available Materials, Stabilization of Soil and Aggregates, Intelligent Asphalt Compaction, Constitutive Modeling of Pavement Materials, Simple Performance Tests (Rutting, Fatigue,

Dynamic Modulus) on Asphalt Mixes, Pavements (Flexible and Rigid) Design and Evaluation, Forensic Investigation of Pavements, Pavement Maintenance and Rehabilitation”

15. S.L. Dhingra

Transportation systems engineering: Modeling, Simulation, Economics, Environmental impact assessment, GIS, Expert systems, Artificial intelligence, Genetic algorithms, Fuzzy set theory.

16. T.I. Eldho

Water resources engineering: Groundwater flow, pollutant transport, remediation – numerical & experimental investigations Computational fluid dynamics – Incompressible viscous flows, shallow water flow, estuary dynamics, pollutant transport Watershed management – applications of numerical models, Geographical Information Systems, Remote sensing.

17. Siddhartha Ghosh

Structural engineering: Performance-based seismic design, Reliability-based seismic design, Plastic design of steel structures, Analysis and design of special plate shear walls.

18. Gopal K. Rao

Remote sensing: Digital image processing (DIP) of multispectral, thermal and microwave data, Digital elevation modelling (DEM), Geographic information systems (GIS), Artificial neural networks (ANN), Applications of RS, GIS, DEM and ANN in hydrology.

19. A. Goyal

Structural engineering: Base isolation systems and energy absorbing devices, Earthquake analysis and design, Liquid storage tanks, Bridges, Vibration control of structures, Service life assessment of buildings.

20. Kapil Gupta

Water resources engineering: Urban water supply systems, Urban drainage, Urban water infrastructure management, Flood Protection structures, Computational fluid dynamics, Optimization, Environmental impact assessment, Water quality analysis and modeling, Constructed wetlands, Urban disaster management.

21. M. Inamdar

Structural engineering: Solid mechanics, Cellular adhesion and motility, Mechanics of soft materials, Dissipation in structural and mechanical systems.

22. Janga Manne Reddy

Water resources engineering: Water resource systems, Evolutionary computation for single and multi-objective optimization, Stochastic hydrology, Soft computing applications in hydrology, Climate change impacts on watersheds, water resources and agriculture, Design and performance evaluation of drip and sprinkler

irrigation systems, Application of remote sensing and GIS tools in watershed development and management, Precision agriculture and developing decision support systems for water resources management.

23. R.S. Jangid

Structural engineering: Structural mechanics, Structural dynamics and earthquake engineering, earthquake-resistant design, Base isolation for a seismic design of structures, Seismic isolation of bridges and liquid storage tanks, Non-classically damped system, Vibration control using tuned mass dampers.

24. V. Jothiprakash

Water resources engineering: Water resources systems analysis, Reservoir operation, Policy issues, Multi-objective analysis, Stochastic hydrological modeling, Irrigation water management.

25. A. Juneja

Geotechnical engineering: In-situ and laboratory engineering properties of soil, Numerical and physical modeling in geotechniques, Earthwork, Ground improvement.

26. Tarun Kant

Structural engineering: Solid mechanics, Plates, Shells, Fiber reinforced polymer composite laminates, Higher order theories, Thermal stresses, Transient dynamic techniques, Finite elements, Numerical techniques, Polymer composites in construction, Composite mechanics, Computational mechanics.

27. K.V. Krishna Rao

Transportation systems engineering: Travel demand modeling, Evolutionary algorithms, Neural networks and GIS in transport planning, Traffic design and analysis.

28. J.N. Mandal

Geotechnical engineering: Geosynthetics for civil engineering construction.

29. Nagendra Velaga Rao

Transportation systems engineering: Intelligent Transportation Systems (ITS); Transportation accessibility and mobility; GIS and GNSS applications in transport; ICT and smart-mobile phone applications in ITS.

30. B.S. Pani

Water resources engineering: Diffusion of jets and plumes, Multiple diffusers, Offshore pipelines, Scour problems, Cooling water structures.

31. G.R. Patil

Transportation systems planning, Network optimization, Freight transportation modeling, Traffic operations, Demand modeling, Traffic emissions

32. Prakash Nanthagopalan

High performance concrete, Sustainable construction materials, Mineral and chemical admixtures in concrete, Rheology of cement based materials.

33. RAAJ Ramsankaran

Remote sensing and Geographical Information Systems and its applications to water resources engineering, Urban Sensing, High Definition Surveying.

34. D. Raje

Water resources engineering: Stochastic hydrology, uncertainty quantification, water resources systems, climate change impacts and adaptation

35. E.P.Rao

Remote sensing: Remote sensing applications to water resources, Runoff modeling, Water distribution systems optimization.

36. A.K. Rastogi

Aquifer Remediation Strategies, Inverse Modeling of the Aquifers and Auto Calibration of Field Models, Solute Transport Modeling involving Hydrodynamic Dispersion in Aquifers, Ground Water Flow Modeling of Unconfined and Confined Aquifers, Well Hydraulics Modeling, Groundwater Systems Planning and Management and Coastal Aquifer Hydrodynamics Modeling

37. Ravi Sinha,

Structural engineering: Earthquake engineering, Vibration control and isolation, Structure rehabilitation and condition monitoring, Disaster management.

38. D.N. Singh

Geotechnical engineering: Environmental geotechnics, Radioactive waste disposal, Solid waste utilization, Geotechnical centrifuge modeling.

39. Subimal Ghosh

Water resources engineering: Uncertainty modeling, Water resources systems, Hydroclimatology.

40. Tom.V.Mathew

Transportation systems engineering: Traffic flow modeling and simulation, Transportation network optimization, control and management.

41. P. Vedagiri

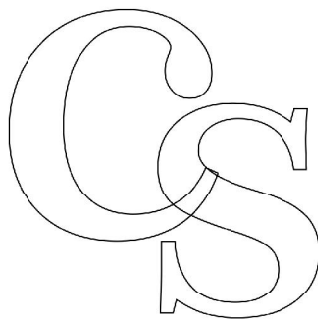
Pedestrian Flow Modeling, Traffic Flow Modeling and Simulation, Traffic Monitoring, Management and Control, Road Safety Audit, Public Transit System Design and Operations.

42. G. Venkatachalam

Geotechnical engineering: Finite element analysis, Digital image processing, Digital terrain modeling, Centrifuge, Numerical and GIS modeling of landslides.

43. B.V.S. Viswanadham

Geotechnical engineering: Centrifuge modeling, Soil reinforcement, Ground improvement, Environmental geotechnics-waste materials' behaviour, waste containment systems.



Computer Science & Engineering

Introduction

The Department of Computer Science and Engineering at the Indian Institute of Technology Bombay is one of the largest departments in the country. The Department's teaching and research activities are handled by 40 faculty members. Currently, about 100 Ph.D. students, more than 200 M.Tech. students and more than 250 B.Tech. students form the student pool of the department. While several research activities are pursued by individual faculty and external collaborators, the department houses about 10 research labs spanning the areas of networks, databases, embedded systems, computer graphics, language technologies, machine learning, compiler and geospatial systems.

Faculty member Prof. Deepak B. Phatak from the Department was awarded the Padmashri by the Government of India and another faculty Prof. Ashwin Gumaste has been awarded the Swarnajayanti Fellowship award in Engineering Sciences 2014 from the Department of Science and Technology, Government of India. Three new faculty members have joined the department. The department continues to make its presence felt in prestigious international conferences through its research work.

List of the projects are as under:

Sr. No.	Title of the Projects	Sponsoring agency	Status
1	"An Energy Management System for Core, Metro, Access Networks and Backhaul Traffic Using Indigenous Routers"	Department of Information Technology (DIT)	New
2	"INSPIRE Faculty award research grant"	Department of Science & Technology (DST)	New
3	"The Technology and Development Solutions Cell"	IIT Bombay Alumni Association and Class of 1987 of IIT Bombay.	New
4	"Improving memory management mechanisms of virtual machine monitors"	International Business Machines Corporation.(IBMC)	New
5	"CARTS: Communication Assisted Road Transportation Systems"	Information Technology Research Academy	New

Academic Programmes

Degrees Awarded:

B.Tech.	:	73
Dual Degree	:	4
M.Tech	:	96
Ph.D.	:	9

Fellowships: One Microsoft India Research India Pvt Ltd. for Ph.D students, one IBM Ph.D. Fellowship and eight TCS Ph.D. Fellowship were awarded.

R & D Activities

Sponsored Research Projects

Sponsored Projects

No. of Ongoing Projects	:	85
No of New Projects	:	17
No of Completed Projects	:	10

Sr. No.	Title of the Projects	Sponsoring agency	Status
6	“Testing field deployment of Aakash tablets in developmental activities”	Ministry of Human Resource Development (MHRD)	New
7	“e-Yantra - Robot enhanced teaching in engineering colleges and schools (Phase 2)”	MHRD	New
8	“National Conference on Use of Technology in Higher Education”	Microsoft Research Lab India Pvt. Ltd.	New
9	“Next Generation Information Extraction”	Tata Consultancy Services (TCS) IIT Bombay research cell	New
10	“Performance Prediction of Multi-Tier Enterprise Applications”	TCS-IIT Bombay research cell	New
11	“Railway Scheduling and pricing”	TCS-IIT Bombay research cell	New
12	“Program Analysis for precise and scalable system verification and transformations”	TCS-IIT Bombay research cell	New
13	“Smart and safe electric power management for homes and buildings”	TCS-IIT Bombay research cell	New
14	“Testing Database Applications”	TCS-IIT Bombay research cell	New
15	“Distributed Optimization techniques for Machine Learning on Grid”	YAHOO INC.	New
16	“Grid Dynamic Server Consolidation in Cloud Computing”	YAHOO INC.	New
17	“SanGeniX: A comprehensive Next Generation Sequence (NGS) data analysis solution”	Department of Biotechnology	Ongoing
18	“Designing a Smarter and Greener Electric Grid: A Sensor-data Driven Approach”	Department of Electronics & Information Technology	Ongoing
19	“Some Train Pathing Problems”	DST	Ongoing
20	“Development and Demonstration of Mobile based ICT Advisory to Farmers”	DST	Ongoing
21	“Exploring Technologies and Solutions to Architect the Carrier-Class Data-Center and Cloud Networking Environment”	IBMC	Ongoing
22	“Query Optimization for Massively Parallel Data Processing”	IBMC	Ongoing
23	“Scalability of Complex Event Processing Engines.”	ISPAT Industries	Ongoing
24	“Hardware and Software optimization, and testing of Low Cost Access Devices (LCAD)”	MHRD	Ongoing
25	“Teachers Empowerment, Students Empowerment and Integration Tools for Empowerment (Synchronous Delivery), abbreviated as the Talk to a Teacher project (Phase 2)”	MHRD	Ongoing
26	“Mining cluster file system performance logs”	Netapp India Private Limited.	Ongoing
27	“TCS Research Scholar program”	TCS	Ongoing

Sr. No.	Title of the Projects	Sponsoring agency	Status
28	“Development of Techniques and Tools for Formal Verification of Computer Systems with Improved Precision and Scalability”	Board of Research in Nuclear Sciences (BRNS)	Ongoing
29	“Development and Evolution of Sanskrit Word -Net (PHASE II)”	Central Institute of Indian Languages	Ongoing
30	“India Telco Summit”	Conferences on Indiatelco Summit	Ongoing
31	“Development of English to Indian Language Machine Translation system (EILMT) PHASE-II”	DIT	Ongoing
32	“Development of Dravidian WordNet: An integrated WordNet for Telugu, Tamil, kannada & Malayalam”	DIT	Ongoing
33	“SPARC: Spectrum Aware Rural Connectivity”	DIT	Ongoing
34	“Development of Radiosonde for Meteorological System”	Defence Research & Development Organisation (DRDO)	Ongoing
35	“Structural Health Monitoring with Networked Embedded Systems”	DST	Ongoing
36	“Rural Technology Action Group (RuTAG)”	DST	Ongoing
37	“Databases and Information Retrieval”	DST	Ongoing
38	“Endowment Interest for CSE/KRESIT Department”	ENDOINTCSE	Ongoing
39	“Entity & Relation Search on The Uncertain Web”	GOOGLE	Ongoing
40	“IBM Faculty Award 2011 “	IBMC	Ongoing
41	“Unrestricted Research Project Grant”	Microsoft Research Lab India Pvt. Ltd.	Ongoing
42	“Availability Analysis of Storage Systems”	Netapp India Private Limited	Ongoing
43	“High quality domain specific statistical machine translation system from English to Indian Languages”	YAHOO INC.	Ongoing
44	“Design and Development of Gigabit Networking Solutions for C&I Applications”	Bhabha Atomic Research Centre	Ongoing
45	“BRNS/ Analysis of SCADE Lustre models: Runtime Monitoring & Testing”	BRNS	Ongoing
46	“High-Speed Switching Fabric for Transport Networks and Distributed Processor Interconnects”	BRNS	Ongoing
47	“Fiber to the home-key Ingredient Technologies for Energy Conservation and Bridging the Indian Digital divide”	DIT	Ongoing
48	“Development of Indradhanush: An integrated Word Net for Bengali, Gujarati, Kashmiri, Konkani, Oriya, Punjabi & Urdu”	DIT	Ongoing

Sr. No.	Title of the Projects	Sponsoring agency	Status
49	“Virtualized Cloud Computing Infrastructure using Light Trails and very fast switching”	DIT	Ongoing
50	“Network Sanitization”	DIT	Ongoing
51	“Deploying omnipresent Ethernet based data-centers in actual networks - Validation of project periscope”	DIT	Ongoing
52	“PHASE II —Development of Indian Language to Indian Language Machine Translation System (II-IL-MT)”	DIT	Ongoing
53	“Development of Cross Lingual Information Access (CLIA) System Phase II”	DIT	Ongoing
54	“Immersive Digital Heritage”	DST	Ongoing
55	“Support for Cloud Computing related research”	IBMC	Ongoing
56	“Cloud Collaboratory”	IBMC	Ongoing
57	“Parallel Computing Research Prospects”	Intel Technology India Pvt. Ltd.	Ongoing
58	“Geo-spatial data base Management-The Ganga River Basin Management Project (GRBMP)”	Ministry of Environment & Forest	Ongoing
59	“OSCAR++ (Open Source Courseware Animations Repository)”	MHRD	Ongoing
60	“IIT Bombay -NSN: Next Generation Optical Access”	Nokia Siemens Networks	Ongoing
61	“Development of Multilingual Resources and Technologies for Indian Languages”	Xerox Corporation	Ongoing
62	“Yahoo INC./ Yahoo Research Grant 2010”	YAHOO INC	Ongoing
63	“Bridging Query Intents to Catalogs and Annotated Documents”	YAHOO INC.	Ongoing
64	“GCC Resource Center”	DIT	Ongoing
65	“DST/ Advanced Research Lab for Geospatial Information Science and Engineering”	DST	Ongoing
66	“SwarnaJayanti Fellowship for Large Scale Gene Expression Analysis on High Performance Parallel Computers for Functional Genomics and Systems Biology”	DST	Ongoing
67	“GEYSERS: Generalized architecture for dynamic infrastructure services”	European Commission	Ongoing
68	“Virtual Machine Placement in Infrastructure Clouds”	IBMC	Ongoing
69	“Empowerment of Student & Teachers through Synchronous & asynchronous instruction”	MHRD	Ongoing

Sr. No.	Title of the Projects	Sponsoring agency	Status
70	“E-Yantra : Robot Enhanced Teaching of Subjects in Engineering Colleges - Centrally Sponsored scheme of National Mission of Education through Information & Communication Technology”	MHRD	Ongoing
71	“Project OSCAR++, Open Source Course-ware Animation Repository for higher education”	MHRD	Ongoing
72	“Creation of Machine translation tools and resources for English to Dravidian Languages”	MHRD	Ongoing
73	“Microsoft Research India Outstanding Young Faculty Award”	Microsoft Research India Outstanding Faculty Award (under IRCC)	Ongoing
74	“Unrestricted Grant for Research Support (Microsoft Research Lab India Pvt. Ltd., Bangalore)”	Microsoft Research Lab India Pvt. Ltd.	Ongoing
75	“Microsoft Grant (Microsoft Research Lab India Pvt. Ltd, Bangalore)”	Microsoft Research Lab India Pvt. Ltd.	Ongoing
76	“Interference and Affinity Characterization of VMs for Server Consolidation in Infrastructure Clouds (Yahoo Software Development India Pvt. Ltd., Bangalore)”	YAHOO INC.	Ongoing
77	“Development of NE-Wordnet : An Integrated Wordnet for North East Languages- Assamese, Bodo, Manipuri & Nepali”	DIT	Ongoing
78	“Semantic Linkage Between the Web, Intranet and Wikipedia: Discovery and Exploitation in Search and Aggregation”	Hewlett Packard Co.	Ongoing
79	“2008 IBM Faculty Award”	IBMC	Ongoing
80	“Research Collaboration on Mobile and Wireless Systems, with Microsoft Research India (MSRI)”	Microsoft Research Lab India Pvt. Ltd.	Ongoing
81	“Information Aggregation from tables on the Web”	YAHOO INC	Ongoing
82	“IBM Faculty Award / Building a self-aware and self-tuning distributed system using queuing theoretic and control theoretic approaches”	International Collaboration Projects	Ongoing
83	“IBM Faculty Award”	International Collaboration Projects	Ongoing
84	“IBM Faculty Award (Supratik Chakraborty) Approximate search and coverage based verification techniques for flattened circuits with locally specified reference models”	International Collaboration Projects	Ongoing
85	“Microsoft Award (Soumen Chakrabarti) Scalable annotation, search & aggregation of semi structured graph and text data models”	International Collaboration Projects	Ongoing

Sr. No.	Title of the Projects	Sponsoring agency	Status
86	“Large Scale Application Development and Knowledge Dissemination in Natural Language Processing and Text Mining (HP Labs, Bangalore)”	Private Organisations	Ongoing
87	“TCS - IIT Bombay Laboratory for Intelligent Systems”	Private Organisations	Ongoing
88	“Formal Verification of Large State Transition Systems (M/s.General Motors India Pvt. Ltd., B’lore)”	Private Organisations	Ongoing
89	“Building Check-Dams for Drinking Water: A Teaching and Research Initiative”	DONATION	Ongoing
90	“RTL Symbolic Simulation”	International Collaboration Projects	Ongoing
91	“IBM Faculty Awards-IBM Global Services India Pvt. Ltd”	Private Organisations	Ongoing
92	“Sponsorship Towards Creating a Logic Base at IIT Bombay”	Private Organisations	Ongoing
93	“Development Informatics”	Private Organisations	Ongoing
94	“Association For Computing Machinery - International Collegiate Programming Contest -IBM Canada Ltd”	International Collaboration Projects	Ongoing
95	“Exchange of Ideas on Data Mining and Data Cleaning Projects-Microsoft Research”	International Collaboration Projects	Ongoing
96	“Interest of Endowment Fund of the CFDVS”	DONATION	Ongoing
97	“Travel assistance from Microsoft for Sapna Jain”	Microsoft Research Lab India Pvt. Ltd	Completed
98	“Scalability of Complex Event Processing Engines”	ISPAT Industries	Completed
99	“Development and Evolution of Sanskrit Word -Net (PHASE II)”	Central Institute of Indian Languages	Completed
100	“Development of Radiosonde for Meteorological System”	DRDO	Completed
101	“Development of Indradhanush: An integrated Word Net for Bengali, Gujarati, Kashmiri, Konkani, Oriya, Punjabi & Urdu”	DIT	Completed
102	“Parallel Computing Research Prospects”	Intel Technology India Pvt. Ltd.	Completed
103	“GCC Resource Center”	DIT	Completed
104	“Creation of Machine translation tools and resources for English to Dravidian Languages”	MHRD	Completed
105	“Development of NE-Wordnet : An Integrated Wordnet for North East Languages- Assamese, Bodo, Manipuri & Nepali”	DIT	Completed
106	“Building Check-Dams for Drinking Water: A Teaching and Research Initiative”	DONATION	Completed

Consultancy Projects

No of Jobs	: 21
Faculty involved	: 12

Visitors to the Department

Dr. Ronny Lempel, Yahoo! Research, delivered a lecture on “Recommendation challenges in web media settings”.

Dr. Kapil Vaswani, Microsoft Research India, Bangalore, delivered a lecture on “Secure query processing on the cloud”.

Dr. Dietmar Berwanger, CNRS, ENS-Cashan, France, delivered a lecture on “Independence Logic –Games and descriptive complexity”.

Dr. Dominik Wojtczak, University of Liverpool, delivered a lecture on “Nash equilibria in stochastic games”.

Prof. Rahul Mangharam, University of Pennsylvania, delivered a lecture on “Closing the loop with cyber-physical system modeling”.

Prof. Prasad Jayanti, Dartmouth College, USA, delivered a lecture on “Tight time-space tradeoff for mutual exclusion”.

Dr. Gurulingesh R., CISTER Research Centre, delivered a lecture on “Real-time scheduling on heterogeneous multicores”.

Dr. Sameer Sahasrabudhe, AMD, Bangalore, delivered a lecture on “Heterogeneous computing”.

Prof. David Choffnes, Northeastern University, delivered a lecture on “Improving transparency and control in mobile internet systems”.

Dr. Sriram Rajamani and **Dr. Aditya Nori** from Microsoft Research India, delivered a lecture on “Programming Languages and Tools Research at Microsoft Research India”.

Prof. Ansuman Banerjee, ISI, Kolkata, delivered a lecture on “Counter example ranking using mined invariants”.

Prof. Shailesh Tipnis, Department of Mathematics, Illinois State University, delivered a lecture on “Decomposition of even degree regular graphs and multigraphs into small trees”.

Prof. Narendra Karmarkar, Scientific advisor to Govt. of India, delivered a lecture on “Advanced algorithmic approach to optimization”.

Dr. Siddhartha Chaudhuri, Princeton University, delivered a lecture on “Content creation with semantic attributes”.

Dr. Paul Barter, Adjunct Professor, LKY School of Public Policy, National University of Singapore,

delivered a lecture on “Rethinking parking in the context of Mumbai-Relationship to urban transportation, Urban form and affordable housing”.

Dr. Hermann Hartig, TU Dresden, delivered a lecture on “Towards smaller trusted computing bases”.

Dr. Umang Bhaskar, California Institute of Technology (Caltech), delivered a lecture on “Network improvement for equilibrium routing”.

Dr. Mayank Bawa, PhD, Stanford University, delivered a lecture on “Anecdotes of a first-time CS Entrepreneur”.

Dr. Emmanuel Filiot, Brussels University, delivered a lecture on “Transducer theory and streaming transformations”.

Prof. Rohit Parikh, City University of New York and Brooklyn College, delivered a lecture on “Knowledge from inadvertent and strategic communication”.

Mr. Kuldeep Singh Meel, Rice University, delivered a lecture on “Sampling techniques for constraint satisfaction and beyond”.

Prof. Sanjit A. Seshia, University of California, delivered a lecture on “Human-in-the-loop embedded systems: Specification, design and verification”.

Prof. Murali Krishnan R., IISc Bangalore, delivered a lecture on “Trace driven dynamic deadlock detection and reproduction”.

Prof. Paul Gastin, Ecole Normale Supérieure (ENS) de Cachan, France, delivered a lecture on “Specification and verification of quantitative properties via expressions, logistics and automata”.

Mr. Roshabh Iyer, University of Washington, delivered a lecture on “Submodular combinatorial problems in machine learning: Algorithms and applications”.

Dr. Dorothea Wagner, Karlsruhe Institute of Technology, delivered a lecture on “Algorithms for route planning in transportation networks”.

Prof. Prashant Shenoy, University of Massachusetts, delivered a lecture on “Demand side energy management in smart buildings”.

Conferences/Symposia/Workshops/Seminars (Participated/Papers Presented)

Soumen Chakrabarti

Participated in the 22nd International Conference *World Wide Web 2013*, track chair for search, systems and applications at Rio de Janeiro, Brazil.

Participated in the International Conference *EMNLP 2013: Conference on Empirical Methods in Natural Language Processing*, at Seattle, USA, from October 18–21, 2013.

Sridhar Iyer

Participated in ACM International Computing Education Research Workshop (ICER), San Diego, USA, in August 2013.

Participated in International Conference on Computers in Education (ICCE), Bali, Indonesia, in November 2013.

Sudarshan S.

Participated in *COMAD 2013*, Ahmedabad, as Chair, CSI SIGDATA, and presented a tutorial.

Participated in *VLDB 2013*, Italy, and attended a meeting of Board of Trustees, VLDB Endowment

Ashwin Gumaste

Participated in *OFC Conference* in SFO.

Pushpak Bhattacharyya

Participated in Global Word Net Conference (GWC 2014) held at Tartu, Estonia.

Varsha Apte

Participated in Third International Workshop on *Large-Scale Testing (LT 2014, co-located with ICPE 2014)* held at Dublin, Ireland, on March 22, 2014.

Presented a paper “PowerPerfCenter: A Power and Performance Prediction Tool for Multi-Tier Applications” at *5th ACM/SPEC International Conference on Performance Engineering* held at Dublin, Ireland, during March 24-26, 2014.

D. Bhamare, A. Gumaste and M. Krishnamoorthy

“Optimal and Heuristic Techniques for the Backbone VLAN Identifier (BVID) Allocation in 802.1Qay Provider Backbone Bridged – Traffic Engineered Networks,” *IEEE Transactions on Network Service Management*, February 2014.

Conferences/Symposia/Workshops/ Seminars (Coordinated/Chaired by Faculty)

Sridhar Iyer

Program Co-Chair - [IEEE International Conference on Technology for Education (T4E)] 2013.

Deepak B. Phatak

Coordinated conduct of several T10KT workshops.

Aakash Application development techniques for students by Prof. Deepak B. Phatak, attended remotely by over 15,000 students

Research Methodologies and Educational Technology by Prof. Sridhar Iyer, attended remotely by over 6,000 teachers

Data Base Management System by Prof. S. Sudarshan, attended remotely by over 8,000 teachers

Engineering Mechanics by Prof. Uday Gaitonde, attended remotely by over 6,500 teachers

Invited Lectures

National**Soumen Chakrabarti**

Keynote talk at COMSNETS 2014, Bangalore.

Ajit Diwan

NBHM Sponsored ATM Workshop on Graph Theory, Kerela

International**Bhattacharyya Pushpak**

Invitee, Google Focused Faculty Workshop on Natural Language Understanding and Knowledge Discovery, Nanjing, China. November 14-15, 2013.

Invited keynote talk to the Computational Linguistics Research Group at University of Toronto.

Sunita Sarawagi

Invited keynote talk at Google Focused Faculty Workshop on Natural Language Understanding and Knowledge Discovery, Nanjing, China, November 14-15, 2013.

Deepak B Phatak

Invited keynote at the plenary session of the International Conference on Transformations in Engineering Education on “Adopting MOOCs for quality engineering education in India” at Hubli, India, January 16-17, 2014.

Soumen Chakrabarti

Tutorial on Query Interpretation and Representation for Searching the Web of Objects at WWW 2013, Rio de Janeiro.

Significant Awards/Distinctions

Deepak B. Phatak

Padmashri awarded by Government of India on April 5, 2013.

Ashwin Gumaste

Swarnajayanti Award 2012-2013
P. K. Patwardhan award 2013.

Soumen Chakrabarti

INAE Fellowship 2014

Sunita Sarawagi
INAE Fellowship 2014

Honorary Work

Bhattacharyya Pushpak

Chair of Asian Language Resources Committee 2013-2014 under the aegis of AFNLP.

Vice President elect, Association of Computational Linguistics (ACL), 2014-15.

Sunita Sarawagi

VLDB Early career researcher, Ten year Best Paper Awards Committee 2013-2014

ACM SIGKDD 2013, 2014: Innovation Award and Service Award Committee

ACM SIGKDD 2014 Best Paper Award committee

ACM SIGMOD Panel Co-chair

PC Member: ICML, WSDM, WWW 2013

Sudarshan S.

VLDB Board of Trustees and SPEND Committee 2014

International Conference on Knowledge Management (CIKM) Senior PC 2013

SIGMOD International Conference on Data Management, PC Member 2013

Ganesh Ramakrishnan

Program Committee (PC) Member for KDD 2014, COLING 2014, ISWC 2014, ACL 2013, KDD 2013, ILP 2013

Suyash P. Awate

Best Paper Award at MBIA workshop at MICCAI International 2013

Faculty Members and their Specializations

1. Bharat Adsul

Formal methods in Concurrency, Logics and Games.

2. Varsha Apte

Performance Evaluation of Computer Systems and Networks

3. Kavi Arya

Functional Programming Applications (Domain Specific Languages), Embedded Systems/Parallel Programming Languages, Distance Learning

4. Suyash P. Awate

Image Processing, Medical Image Computing, Computer Vision, Statistical Inference, Machine Learning

5. Umesh Bellur

Autonomic Computing of Distributed Applications, Adaptive & QoS aware Event Broker Networks, Functional and Architectural adaption in pervasive computing, Middleware design for sensor networks, Object & Aspect oriented computing, Service oriented Computing

6. Pushpak Bhattacharyya

Natural Language Processing and Linguistics, Machine Translation and Machine Learning

7. Supratim Biswas

Parallel and Distributed Processing, Neural Nets , Architecture

8. Soumen Chakrabarti

Hypertext databases, Data mining

9. Supratik Chakraborty

Formal Methods, Formal Verification, Automata Theory, Logic and its Applications.

10. Sharat Chandran

Computer Graphics, Image Processing, Vision. High Performance Computation.

11. Parag Chaudhuri

Computer Animation, Computer Graphics and Geometric Computer Vision

12. Kameswari Chebrolu

Wireless Networks

13. Om P. Damani

Natural Language Processing

14. Dhananjay Madhav Dhamdhere

Distributed Algorithms, Programming Languages, Operating Systems, Optimizing Compilers

15. Ajit Diwan

Graph Theory, Algorithms.

16. Ashwin Gumaste

Optical Networks, Telecommunication Networks, Data Centers, Carrier Ethernet

17. Sridhar Iyer

Educational Technology, Ubiquitous Learning, Wireless Networks.

18. Saketha Nath J

Machine Learning, Data Mining, Convex Optimization

19. Rushikesh K Joshi

Object Oriented Systems, Distributed Systems, Software Architectures

20. Uday Khedkar

Programming Languages, Compilers, Data Flow Analysis.

21. Purushottam Kulkarni

Sensor and Wireless Networks, Distributed Systems and Data Dissemination. Developing solutions to problems in above areas for non-urban/rural settings.

22. Nutan Limaye

Algorithms and Complexity Theory

23. Bernard Menezes

Information Appliances, Electronic Commerce, Java Security, Parallel Computing, Time Series Forecasting

24. Deepak B Phatak

Data Base Management Systems, Software Engineering, System Performance Evaluation, Distributed Client Server Information Systems.

25. Ajit Rajwade

Image Processing, Computer Vision, Image Restoration, Image Compression, Probability Density Estimation, Bayesian Methods, Compressive Sensing and Matrix Completion

26. Krithi Ramamritham

Databases, real-time systems, and distributed applications, Dynamic Data in sensor networks, embedded systems, mobile environments and the web.

27. Bhaskar Raman

Computer networks, Wireless systems, Communication system design for developing regions

28. Ganesh Ramakrishnan

Statistical Relational Learning, Graphical Models, Some other topics in Machine Learning such as Support Vector Machines, Information Extraction

29. Abhiram G Ranade

Algorithms and Combinatorial Optimization

30. Krishna Shankaran Narayanan

Bio-inspired Computing, Formal Methods, Cyber-Physical Systems

31. S. Akshay

Formal Methods

32. Amitabha Sanyal

Functional Programming, Compilers, and Programming Languages

33. Sunita Sarawagi

Databases, data mining, and machine learning. Her current research interests are web information extraction, data integration, graphical models and structured learning.

34. Nandlal L Sarda

Databases, Information Systems, Software Engineering

35. Sivakumar G

Automated Reasoning, Logic Programming, Rewrite Systems, Networks, Distributed Systems

36. Milind Sohoni

Combinatorial Optimization, Mathematical Programming, Algorithms

37. Sudarshan S. (Head of the Department)

Database Systems

38. Trivedi Ashutosh

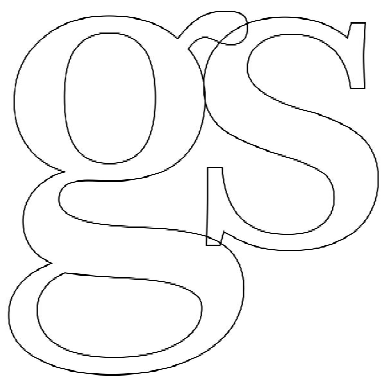
Formal Methods in Verification and Synthesis, Cyber-Physical Systems

39. Sundar Vishwanathan

Algorithms, Combinatorics, Complexity Theory.

40. Mythili Vutukuru

Computer Networking, Wireless Communication, Distributed Systems, Network Security



Earth Sciences

Introduction

The Department of Earth Sciences offers academic programmes leading to M.Sc. in Applied Geology & Applied Geophysics and to M.Tech. in Geo-exploration and Petroleum Geosciences. It also offers a Ph.D. programme. The Department has a total of 20 core faculty members.

Degrees Awarded

M.Sc (Applied Geology + Applied Geophysics)	:	41
M.Tech. (Geo exploration + Petroleum Geoscience)	:	5
PG Diploma	:	3
Ph.D.	:	8

Academic Programmes

The Department of Earth Sciences offers the following five academic programmes. An M.Sc.,- Ph.D integrated course in Geology and Geophysics was introduced in 2013.

- M.Sc. Applied Geology (2 years)
- M.Sc. Applied Geophysics (2 years)
- M.Tech. Geoexploration (2 years)
- M. Tech. Petroleum Geosciences (2 years)
- M.Sc.- Ph.D. integrated (5 years)
- Ph.D.

R&D Activities

Sponsored Research Projects	:	18
New	:	2
Ongoing	:	14
Completed	:	2
Faculty Involved	:	10

Sr. No.	Project Title	Sponsoring Agency	Project Status
1	Tectonothermal evolution of podiform granulites of Abu Road-Balaram area, Rajasthan	Department of Science & Technology (DST)	Ongoing
2	Organic Geochemistry of Paleocene-Oligocene Sediments of Upper Assam Shelf and their significance in interpretation of Paleo-climatic conditions of Deposition	Oil India Ltd.	New
3	Organic Geochemistry of the Lignite-bearing Palaeogene Sequence of western India.	Ministry of Petroleum	Ongoing
4	Geological and Contemporary Deformation in the Internal Thrust Sheets of the Higher Darjiling-Sikkim Himalaya	IITB Monash Academy	Ongoing
5	Morphotectonic Variability along the NW Himalayan Front: Tectonics-Climate Coupling	DST	Ongoing
6	River dynamics and Flood Risk evaluation of the Kosi River North Bihar plains: An integrated approach.	Ministry of Earth Sciences (MoES)	Completed

Sr. No.	Project Title	Sponsoring Agency	Project Status
7	Broadband seismic imaging of the crust and upper mantle structure beneath Northwestern India	MoES	Ongoing
8	Structural Geology and Extrusion Mechanism of the Higher Himalayan Shear Zone in the Bhagirathi Section	DST	Ongoing
9	Extrusion mechanism of the Sutlej section of the Higher Himalaya deduced from the thermal history and structures of the underlying lesser Himalayan rocks	DST	Ongoing
10	OSCAR for Geoscience Education	Ministry of Human Resources Development (MHRD)	Completed
11	National Facility on Electron Probe Micro Analyser (EPMA) and Main Project: Petrology of kimberlites from southern India and garnets from kimberlite concentrates: Implications on sub-continental lithospheric mantle.	DST	Ongoing
12	Structure and Rheological characteristics of the lithosphere below the Northern Indian Ocean based on the Gravity-Geoid modeling	Indian Space Research Organisation (ISRO) (MOP-III)	Ongoing
13	Case-studies for Sr-isotope-ratio-based numerical dating of Senonian and Oligocene-Miocene geological events in the Western Tethys and adjacent seas	OTKA Hungarian Scientific Research Fund	Ongoing
14	Organic geochemistry of the lignite bearing Palaeogene sequence of selected sections in Gujarat and Rajasthan	Oil Industry Development Board	Ongoing
15	Numerical investigation of the lunar magnetic anomalies and implications for remanent magnetisation	Physical Research Laboratory	New
16	To identify motionally induced magnetic fields from global ocean circulation models in land-based and space-borne geomagnetic observatory data	IRCC, IIT Bombay	Ongoing
17	Simulation of Lunar Reflectance Spectra Using Radiative Transfer Modeling and Spectroscopy of Lunar Analogues	ISRO	Ongoing
18	Application of imaging spectroscopy and thermal remote sensing techniques in delineating palaeo-channel related calcretes; as investigation in parts of Rajasthan and Gujarat for uranium exploration	ISRO	Ongoing

Patents

Sr. No.	Title of the patent	Inventor	National/ International	Status: filed/granted	Date of patent filed/granted
1.	Wide-field goniometer for spectroscopic measurement of albedo and emissivity in laboratory and field	Ramakrishnan, D.	Indian	Granted	December 6, 2013
2.	Aluminum silicide schottky diode for outdoor methane detection in hostile environment by spectroscopic technique	Roy, S., Dattagupta, S. and Ramakrishnan, D.	Indian	Filed	December 13, 2013
3.	A methane detection device for sensing the presence of methane gas in an aqueous environment	Roy, S., Dattagupta, S. and Ramakrishnan, D.	Indian	Filed	2014

Conferences/Symposia/Workshops/Seminars (Participated/Papers Presented)

National

Banerjee, S.

Presented a paper on “Discoidal microbial colony on clastic sediments: Examples from modern Gulf of Cambay and Precambrian Vindhyan basin,” *30th Indian Association of Sedimentologists Meeting*, Imphal, held during November 28-30, 2013, at Imphal.

Ansari, K., Srivastava, V., Mukul, M. and Jade, S.

Presented a paper “Understanding Himalayan Earthquakes using High-precision Global Positioning System (GPS): Insights from the Darjiling-Sikkim Himalaya,” *Research Scholars & Alumni Symposium*, IIT Bombay, Mumbai, March 2014.

Ansari, K., Mukul, M. and Jade, S.

Presented a paper “Dislocation modelling of near-field, high precision Global Navigation Satellite System (GNSS) based Coseismic displacements during September 2011 Himalayan earthquake in Darjiling-Sikkim Himalaya,” *Indian Geophysical Union Golden Jubilee Workshop on Holistic Scientific Approach using Integrated Geophysical Studies for the Management of Natural Hazards*. N. E. S. A. C., Umiam, Meghalaya, April 2013.

Singh, T.N.

Presented a paper “Numerical Assessment of slope stability under blast loading,” *National seminar on*

Problem of Mining Industry and Technological Advancement, MPAAEU, Udaipur, March 18-19, 2014.

Participated in *International Rock fall work slope*, Venice, Italy, September 2013.

International

Banerjee, S., Sarkar, S. and Eriksson, P.G.

Presented a paper on “Palaeoenvironmental and biostratigraphic implications of microbial mat-related structures: Examples from modern Gulf of Cambay and Precambrian Vindhyan basin,” *1st International Palaeogeography Conference*, held during September 14-17, 2013 at Beijing

Mallick, M., Dutta, S. and Greenwood, P.F.

Presented a paper on “Molecular characterization of fossil and dammar resin extracts: Insights into molecular taphonomy of sesquiterpenoids and triterpenoids,” *26th International Meeting on Organic Geochemistry*, September 15-20, 2013, Tenerife (Spain), Vol.1, pp. 272-273.

Bhattacharya, S. and Dutta, S.

Presented a paper on “Molecular signature of biodegradation from Neoproterozoic-Early Cambrian oil, western India,” *26th International Meeting on Organic Geochemistry*, September 15-20, 2013, Tenerife (Spain), Vol.1, pp. 464-46.

Bhattacharya, S., Dutta, S. and Raju, S.V.

Presented a paper on “Life in restricted saline environment during Neoproterozoic-early Cambrian time: Evidences from molecular fossils,” *26th International Meeting on Organic Geochemistry*, September 15-20, 2013, Tenerife (Spain), Vol.1, pp. 246-247.

Paul, S. and Dutta, S.

Paleovegetational reconstruction of Cretaceous coal-bearing sequence of Kutch Basin, western India, 26th International Meeting on Organic Geochemistry, September 15-20, 2013, Tenerife (Spain), v.2, P. 235-236

Jadhav, G.N.

Presented a paper on "International Mineral Processing Technology (MPT 2013)", at CSIR-IMMT, Bhubaneswar, Odisha, India, December 10-12, 2013.

Presented two joint technical papers at the *International Seminar on Sedimentary Processes and Metallogeny through time (SPMT)-2014* at SDM college of E&T, Dharwad, Karnataka, on January 21-23, 2014 and Co-Chaired III-Technical Session on January 21, 2014 during the SPMT-2014.

Roy, S., Dattagupta, S. and Ramakrishnan, D.

Presented a paper on "CO₂ detection using Al/Si Schottky diode by IR spectroscopic technique," in *IEEE- International Conference on Control, Instrumentation, Energy & Communication*, held during January 31- February 2, 2014 at Kolkata.

Mukherjee, S.

Delivered poster presentations on "Implication of the southern Tethyan Himalaya (Sutlej section, India) for the extrusion of the Higher Himalaya and the geometry of the mid-crustal channel", "Temperature predicted from quartz microstructures from the Main Boundary Thrust Zone, Dehradun-Mussourie region, western Himalaya", and "Symmetric and near-symmetric objects in ductile shear zones- examples from Higher Himalaya, Bhagirathi section, India", *European Geosciences Union*, held on April 11, 2013 at Vienna, Austria.

Co-convened a session on "Integrating Multiple Techniques to Determine the Evolution of the Himalayan-Karakorum-Tibetan Orogenic System: Surface, Sub-surface & Deep Earth Processes," *European Geosciences Union General Assembly*, held during April 11-12, 2013, at Vienna, Austria

Saraswati, P. K.

Participated in the *India - UK Scientific Seminar on Developing records of Paleogene greenhouse climate states from geological sections in India*, at Bhuj, held during January 15-18, 2014.

Sheth, H.C.

Participated in the *International Workshop on Volcanology and Volcanic Textures*, at the Technische Universitaet Bergakademie Freiberg, Germany, held during September 23-27, 2013.

Presented a paper on "The intrusive substructure of the Deccan Traps volcanic province" at the *International Conference Large Igneous Provinces of Asia, Mantle Plumes and Metallogeny*, at the

Vietnam Institute of Science and Technology, Hanoi, Vietnam, held during November 7-11, 2013.

Arora, A., Banerjee, S. and Dutta, S.

Presented a paper on "Signatures of shallow marine black shales deposition from Jhuran Formation, Kutch, Gujarat, western India," *30th Indian Association of Sedimentologists Meeting*, held during November 28-30, 2013, at Imphal.

Conferences/Symposia/Workshops/Seminars (Coordinated/Chaired by Faculty)

Saraswati, P.K.

Coordinated *India - UK Scientific Seminar on Developing records of Paleogene greenhouse climate states from geological sections in India*. Held during January 15-18, 2013, at Bhuj.

Jadhav, G. N.

Chaired one of the Session in *MPT-2013 at CSIR-IMMT*, Bhubaneswar, Odisha on December 10, 2013.

Invited lectures

National

Dutta, S.

Delivered a lecture on "Origin and Evolution of Asian Dipterocarps: Evidences from resin chemistry," at BSIP, Lucknow, November 15, 2013.

Delivered a lecture on "Eocene out-of-India dispersal of Asian Dipterocarps," at IISER Kolkata, March 15, 2014.

Jadhav, G.N.

Delivered a lecture on "Ore petrology of Gujarat bauxites and scope of value addition," in *Bauxite Beneficiation and Waste Recycling in Aluminum Industry Workshop* held at IIT Bombay from October 28-30, 2013.

"Bauxite deposits of India and their ore microscopic features," in *Bauxite Beneficiation and Waste Recycling in Aluminum Industry Workshop* held at IIT Bombay from October 28-30, 2013.

Saraswati, P.K.

Delivered "M.R. Sahni Memorial Lecture on Palaeogene Climate: Proxies and Records," Punjab University, Chandigarh, March 4, 2014.

Ramakrishnan, D.

Delivered a lecture on "Emission and Reflectance Spectroscopy: Theory and Practice," Indian Institute of Remote Sensing, June 12, 2013.

International

Saraswati, P.K.

Delivered a lecture on “Oxygen and Carbon Isotopes Approach to Palaeobiology of Foraminifera” at the Institute of Mineralogie and Geochemistry, Karlsruhe Institute of Technology, Germany, on November 13, 2013.

Significant Awards and Distinctions

Dutta, S.

Received INSA-DFG exchange fellowships; September-October, 2013

Singh, T. N.

Received Gopal Ranjan Research Award 2013. Indian Institute of Technology Roorkee, conferred the award in IITR Convocation on September 21, 2013.

Saraswati, P.K.

Member, Editorial Board, Journal of Petroleum Geology (Blackwell)

Member, Editorial Board, Energy Exploration and Exploitation (Multi Science Pub., UK)

Member, Editorial Board Journal of the Geological Society of India, Bangalore.

Member, Board of Governors, Rajiv Gandhi Instt. Of Petroleum Technology

Member, PAC (Earth Science), SERB, Department of Science and Technology

Singh, T. N.

Executive Editor: The Indian Mining and Engineering Journal.

Executive Editor: International, Journal of Earth Sciences and Engineering.

Member Editorial Board: Indian Landslide Journal; Himalayan Geology, WIHG, 2011; International Journal of Sustainable Energy and Environment; Journal of Geological Resource and Engineering; Journal of Geological Resources and Engineering; International Journal of Advanced Mining, Fuel and Mineral Engineering; International Journal of Advanced Earth Sciences and Engineering; and International Journal of Advances on Geology, USA.

Honorary Work

Jadhav, G. N.

Member, Editorial Board, Journal of Geological Society of India, Bangalore, Karnataka

Executive Committee member, Indian Institute of Mineral Industry (Iime), Jamshedpur, Jharkhand

Member, Board of Examiners (Ph.D. Thesis) ISM, Dhanbad, Jharkhand

Member, Board Of Examiners (M.Sc., M.Phil. and Ph.D.), Solapur University, Solapur, Maharashtra.

Member, Board of Studies (Geology, Geoinformatics and Environment), Solapur University, Solapur, Maharashtra.

Paper setter of Geology, Geoinformatics and Environment, (M.Sc., M.Phil. and Ph.D.) Solapur University, Solapur, Maharashtra.

Member, Board of Studies (Geology), St. Xavier's College, Fort, Mumbai, Maharashtra

Solapur University, Ph. D. Course Work, Subject - Applied Geology, Paper Setter of: Paper- IV - Exploration and management of Mineral Recourses

EC meeting of IIME on September 28, 2013 at Bhubaneswar, Odisha

Geol. Soc. of India Member, in Conducting International Earth Science Olympiad-2014 (IESO-14) at PPS, Bhandup (W), Mumbai on April 19, 2014.

External examiner of a Ph.D. student from North Odisha University, Takatpur, Baripada, Odisha, 2013.

Mukul, M.

Member, Pamc Geosciences, Ministry Of Earth Sciences

Project Sanctioning and Monitoring, Ministry of Earth Sciences for Geosciences, New Delhi

Executive Council Member, Structural Geology & Tectonics Studies Group, (SGTSGI) India

Reviewed papers for: Geomorphology, Elsevier, September 2013, March 2014; Journal of Asian Earth Sciences, Elsevier, August 2013, September 2013, February 2014; Geomatics, Natural Hazard and Risk, Taylor and Francis, January 2013, March 2014; Journal of Geophysics and Engineering, Institute of Physics (IOP), August 2013; Current Science, Indian Academy of Sciences, August 2013, March 2014 and Journal of Geological Society of India, March 2014

Reviewed project proposal for National Science Foundation, USA, April 2013.

Reviewed project completion report for SERB, Department of Science and Technology, India, March 2014

Mukherjee, S.

Reviewed a manuscript submitted at Journal of Structural Geology. February-March 2014.

Reviewed and edited manuscripts submitted at International Journal of Earth Sciences. 2013-2014

Served as the lead Guest Editor for a Special Issue on Geosciences of the Himalaya-Karakoram-Tibet in the *International Journal of Earth Sciences*, published by Springer

Sheth, H.C.

Reviewed papers for Bulletin of Volcanology, Journal of Asian Earth Sciences, International Journal of Earth Sciences, 2013-14.

Served as co-Guest Editor for a Special Issue “Flood Basalts of Asia” in the Journal of Asian Earth Sciences, published by Elsevier

Singh, K.H.

Reviewed papers for Geophysical Journal International

Ramakrishnan, D.

National Coordinator: DST Committee on Hyperspectral Remote Sensing

Member: National Committee on Airborne Geophysical Mapping

Reviewed papers for 10 top journals involving Remote Sensing applications

Singh, T.N.

Review Papers for: International Journal of Rock Mechanics and Rock Engineering 2013-14;

International Journal Rock Mechanics and Mining Sciences; Engineering Geology; Applied soft computing; Neural computing and Application; Applied Geophysics; and Arabian Journal of Geosciences.

Faculty Members and Their Specializations

1. S. Banerjee

Sedimentology, Basin Analysis

2. S. Bharath

Exploration Seismology

3. T.K. Biswal

Structural Geology, Tectonics, Climate Geology

4. E. Chandrasekhar

Geo-electromagnetic induction, Wavelet analysis of Geophysical data

5. S. Dutta

Organic Geochemistry, Petroleum Geology

6. G.N. Jadhav

Ore Petrology, Fluid Inclusion

7. Mukul Malay

Structural Geology, Neo-tectonics, GNSS Geodesy

8. G. Mathew

Mineralogy and Tectonics

9. G. Mohan

Earthquake Seismology, General Geophysics

10. S. Mukherjee

Structural Geology, Tectonics

11. H.S. Pandalai

Mining Geology, Ore Geology, Geostatistics

12. K. Pande

Isotope Geology, Geochronology, Geochemistry

13. S.C. Patel

Metamorphic Petrology, Unstable Isotope Systematics

14. N. Prabhakar

Metamorphic Petrology, Tectonics

15. M. Radhakrishna

Gravity and Magnetic methods, Seismotectonics, Solid Earth Geophysics, Continental Margins

16. D. Ramakrishnan

Remote Sensing, Geomorphology & Mineral Exploration

17. P.K. Saraswati

Micropalaeontology, Biostratigraphy

18. H.C. Sheth

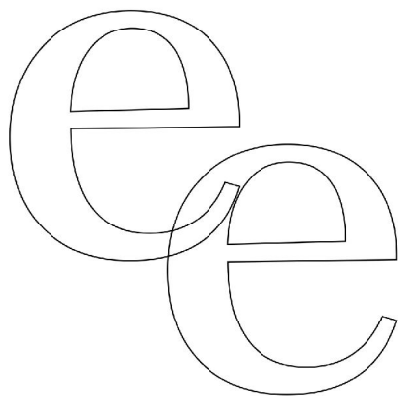
Volcanology, Igneous Petrology, Flood Basalts, Deccan Volcanism

19. K.H. Singh

Geomagnetism, Geomodelling, Inverse Theory, Satellite data analysis, Geophysical Signal Processing

20. T.N. Singh

Engineering Geology, Rock Mechanics, Slope Stability



Electrical Engineering

Introduction

The Department of Electrical Engineering has a dynamic faculty of 59 members with a focus on excellence in teaching and research. Research activities in the Department span a wide range of areas of electrical engineering. The department has some of the best laboratory facilities in the country for research and teaching, which have been funded generously by Ministry of Human Resource Development (MHRD) and other funding agencies like Department of Information Technology (DIT) etc. Substantial funding has also been received for research projects of individual faculty members through government agencies, as well as many private companies, both national and international. Currently, the department has 1198 students out of which about half are pursuing undergraduate program. Dr. Anupama Kowali recently joined the Department as a faculty member.

Initially the Department began with three programs to award degrees, namely, Bachelor of Technology, Master of Technology and Doctor of Philosophy. Since 1996, the department has been offering a five-year dual degree (Bachelor of Technology and Master of Technology) in two specializations viz. Communications and Signal Processing, and Microelectronics.

The broad focus of graduate teaching and research is in the areas of Communications & Signal Processing (termed as EE1); Control and Computing (EE2); Power Electronics and Power System (EE3); Microelectronics and VLSI (EE4); and Electronic Systems (EE5)

Currently, the department is involved in outreach through three mechanisms namely: Continuing Education Program (CEP), Centre for Distance Engineering Education Program (CDEEP) and Indian Nanoelectronics Users Program (INUP).

Following laboratories, research scholar room and five faculty rooms have been recently reconstructed at EE Department.

- Wireless Network Lab
- Reconfigurable Wireless Research Lab
- Simulation Centre for Power electronics and Power system: The major objective of the Centre is training of manpower in the areas of off-line and on-line simulation in the areas of power electronics and power systems.
- New Embedded Systems Lab with support from EE Department and Powai Labs.
- Optical Characterization Laboratory
- Newly constructed Research scholar room.

MoUs and Collaborations

Centre for Applied Mathematics (virtual centre operated from IISc)

Collaboration on one year sponsored research project with LSI Corporation in the area of Heterogeneous Cellular Networks.

Setting up Molecular Beam Epitaxy system for III-Nitride and Group IV semiconductor growth.

Proposed 75 GHz VNA through RIFC funds.

Collaboration with 31 universities, R&D organizations and industries from India and USA in the “Solar Energy Research Institute for India and the US” (SERIUS).

As per the MoU between Powai labs and IIT Bombay, Powai Labs donated 8 lacs for setting up the Embedded System Lab.

MoU with IBM and MOSIS for chip fabrication.

Academic Programme

Dual degree (M.Tech + Ph.D) Programme

The department offers admissions to a new, dual degree (M.Tech. + PhD) programme. The programme is designed to induct bright students who have completed their B.E./B.Tech./M.Sc. degrees directly to the doctoral program

Student Intake	
B.Tech.	: 60
Dual Degree	: 65
M.Tech.	: 151
Ph.D.	: 61
Degrees Awarded	
B.Tech.	: 58
Dual Degree	: 48
M.Tech.	: 112
Ph.D.	: 21

Following new courses were modified and introduced during the year :

EE346: Electronics Design Lab
EE309: Microprocessors
EE339: Microprocessors Lab
EE461: Electronic Design Project
EE749: Decentralized Control of Complex Systems
EE750: Digital Signal Processing –System Design Implementation

Student exchange programmes

A few Ph.D. students from the Department have enrolled with IIT Bombay Monash Research Academy, a joint venture between IIT Bombay and Monash University, Melbourne, Australia.

List of sponsored research projects initiated and ongoing in 2013-2014:

Sr. No.	Project Title	Agency Name	Status
1.	Material screening for memory and logic application.	Applied Materials Inc.	Ongoing
2.	Selective deposition of As-SAM and device characterization to study the effectiveness of As diffusion.	Applied Materials Inc.	Ongoing
3.	Medical Data Acquisition & Analysis System	Beans And Intellect Financial Technology Private Limited	Ongoing
4.	Online Fault Detection and Diagnosis of Self Powered Neutron Detectors (SPNDs) using Data Driven Techniques	Board of Research in Nuclear Sciences (BRNS)	Ongoing
5.	Upgradation of Full Spectrum Simulator	Centre for Development of Advanced Computing	Ongoing

R & D Activities

The Department of Electrical Engineering is at the forefront of research and development by exploring new dimensions, innovations, and creativity. The increasing thrust on high quality research has helped the Department's expansion in research and development. The growth in funded projects is apparent from the number of large sponsored projects and centers of excellence that have been setup in the Department in the last five years.

Sponsored Research Projects

Sponsored Projects	
No of Ongoing Projects	: 129
No of New Projects	: 36
No of Completed Projects	: 21
Consultancy Projects	
No of Jobs	: 27

Currently there are 10 sponsored projects running in the department with the funding of more than Rs. 1 Crore each. Some of the large projects and centres setup in the department are:

- Centre for Excellence in Nanoelectronics funded by the Ministry of Communications and IT.
- National Centre for Photovoltaic Research set up in 2010 (MNRE)
- Tata Teleservices IIT Bombay Center of Excellence in Telecom setup in 2008
- Bharti Center for Communications
- Power Anser Lab (with support from TCS)
- Power Electronics Simulation Center

Sr. No.	Project Title	Agency Name	Status
6.	CampuSense: Sustainable campus through sensor networks and data analytics	CISCO	Ongoing
7.	Workshop on Planning Center of Excellence in Technologies for Internal Security	Department of Electronics & Information Technology (DEIT)	Closed
8.	Nano Fabrication Prototyping facility for SMEs and Start-ups in the area of MEMS & NEMS	Department of Information Technology (DIT)	Ongoing
9.	Dual Connectivity LTE-WiFi Solution for Broadband Wireless Networks	DIT	Ongoing
10.	National Programme on Perception Engineering- Phase II	DIT	Ongoing
11.	Indian Nanoelectronics Users Programme (INUP) Phase - II	DIT	Ongoing
12.	Optimization Of Fabrication Process For Development Of MEMS Based Sensor Devices	Defence Research & Development Organisation (DRDO)	Ongoing
13.	Underwater Solar powered (tethered) platform (USOLA) for application as an offshore portable power source	DRDO	Ongoing
14.	Development of Polymer Composite Micro-Cantilever Based Explosive Detection Systems	Department of Science & Technology (DST)	Ongoing
15.	Inkjet Printed Flexible Thin Film Transistors	DST	Ongoing
16.	Cooperative and Antagonistic Control of Distributed and Multi-Agent Systems	DST	Ongoing
17.	Nano scale devices for bio-inspired computation and learning.	DST	Ongoing
18.	DST/Inspire- Nanoscale Electronic Devices for healthcare Applications	DST	Ongoing
19.	Advanced methods for the analysis of optical and radar remote sensing images acquired by last generation satellite systems (Phase - III)	DST	Ongoing
20.	Ramanujan Fellowship	DST	Ongoing
21.	Design Modelling and fabrication of new CMOS MEMS Sensors	DST	Ongoing
22.	Investigation of spin torque based strategies for nano-magnetic logic and memories	DST	Ongoing
23.	Distributed Power Control and Rate Adaptation in Wireless Systems	DST	Ongoing
24.	Coding against online adversaries	DST	Ongoing

Sr. No.	Project Title	Agency Name	Status
25.	Extraction and Concentration of Bioactive Compounds and Sugars from Horticultural Processing Waste using Microwave-Membrane Technology	DST	Ongoing
26.	Women Scientist Scheme A / Development of label-free aptamer biosensor for cancer cell detection.	DST	Ongoing
27.	Test-Bed for Affordable Broadband in India using Backhaul in TV White Space.	Ford Foundation	Ongoing
28.	IBM Faculty award (MOSFET, device scaling, negative bias temperature instability(NBTI))	International Business Machines Corporation (IBM Corp.)	Ongoing
29.	IBM Award	IBM Corp.	Ongoing
30.	eSynapse based on heterostructures of binary oxides	Indo-French Centre for the Promotion of Advanced Research	Ongoing
31.	Indo-Australia Early Career S&T Visiting Fellowship Programme	Indian National Science Academy (INSA)	Closed
32.	Manycore Computing: Network-on-Chip using Projective Geometry and Parallel Circuit Simulation	Intel Technology India Pvt. Ltd.	Ongoing
33.	Development of efficient Galerkin methods applied to compressible flows for modern computer architectures	Intel Technology India Pvt. Ltd.	Ongoing
34.	Dual Band Dual Polarized Multilayered Broadband Microstrip Antenna Array for Satellite Communication	Indian Space Research Organisation (ISRO)	Ongoing
35.	Uncoordinated, Secure and Energy Aware Access in Distributed Wireless Networks	Information Technology Research Academy	Ongoing
36.	Coordinated Multipoint Transmission/ Reception and Inter Cell Interference Coordination	LSI Corporation	Ongoing
37.	Plan Grant to IIT Bombay under the World Bank Assisted Technical Education Quality Improvement Programme of Government of India (TEQIP)-II for the year 2013-14	MHRD	Ongoing
38.	CUDA Centre of Excellence	NVIDIA Corporation, USA	Ongoing
39.	Synchrophasor Analytics for Electrical Transmission Systems	Power Grid Corporation of India Limited	Ongoing
40.	Mathematical modeling of device reliability	Synopsys Inc.	Ongoing
41.	BTI Impact of SRAM parameters.	Synopsys Inc.	Ongoing

Sr. No.	Project Title	Agency Name	
42.	Precision cooling for enhanced real time processor performance (output) Vs dynamic power (input) under Non-optimal operational conditions	Tata Consultancy Services -IITB research cell	Ongoing
43.	India-UK Advance Technology Center of Excellence in Next Generation Networks and Services- Phase 2	DST	Ongoing
44.	Technical Feasibility of TV White Space Operation in India	Ford Foundation	Ongoing
45.	Village Communication Network by Rural Internet Service Provider leveraging on Fiber to the Village	MHRD	Ongoing

Patents

No. of patents granted	: 14
No. of patents filed	: 8

Patents Granted :

Karandikar Abhay and Kumar Vinod,M.

“A Method to Develop Hierarchical Ring based Tree for Unicast and/or Multicast Traffic”, US Patent (8391 180) issued in March 05, 2013.

Kapadia Prateek, Srinadh, B., Karandikar Abhay and Maral Harshad

“Differentiating Wireless Uplink Bandwidth Request by Connection Priority”, US Patent (8509 210) issued on August 13, 2013.

Shetty Siddharth, Rathod Punit and Karandikar Abhay

“An Approach for Enabling Coexistence for Radio Technologies”, US Patent issued in 2014.

Shojaei Baghini, M. and Hande, V.G.

“Successive Approximation Register Analog to Digital Converter Circuit”, US Patent US 8,610,616, issue in December 2013.

Shrivastava,M., Iluss, C. C.,Gossner,H., Rao Ramgopal, V. and Shojaei Baghini, M.

“Device and Method for Coupling First and Second Device Portions”, US Patent US 8,455,947, issue in June 2013.

Breitwisch, M., Cheek, R. Lam,C., Modha, D. and Rajendran, B.

“System for electronic learning synapse with spike-timing dependent plasticity using phase change memory”. US Patent 8,447,714.

Breitwisch, M., Cheek, R., Joseph,E., Lam, C., Rajendran, B., Schrott, A. and Zhu, Y.,
“Thermally insulated phase material cells”. US Patent 8,466,006.

Jackson, B., Modha, D. and Rajendran, B.

“Producing spike-timing dependent plasticity in an ultra-dense synapse cross-bar array,” US Patent 8,527,438.

Rajendran, B., Ning, T. and Lam, C.

“Polysilicon emitter BJT access device for PCRAM,” US Patent 8,558, 210.

Dubourdieu, C., Frank, M. M., Rajendran, B. and Schrott, A.

“Phase change material cell with stress inducer liner,” US Patent 8,559,217.

Happ,T., Lung, H.L, Rajendran, B. and Yang, M.

“Integrated circuit including vertical diode,” US Patent 8,586,960.

Breitwisch, M., Lam, C., Modha, D. S. and Rajendran, B.

“Area efficient neuromorphic system that connects a FET in a diode configuration and a variable resistance material to junctions of neuron circuit blocks,” US Patent 8,589,320.

Rajendran, B.,Happ, T., Lung, H.L. and Yang, M.

“Method for fabrication of crystalline diodes for resistive memories,” US Patent 8,637,844.

Breitwisch, M. and Rajendran, B.

“Phase change memory electrode with sheath for reduced programming current,” US Patent 8,648,326.

Patents Filed :

Anvesha, A. and Shojaei Baghini, M.

“Voltage Reference Circuit”, Patent application No.3032/MUM/2013, filed in September 2013 (India).

“Constant Bandwidth and Gain, Low-Area, Low-Power and High Swing GmC Filter”, Patent filed in August 2013 (India).

Patkar Rajul, Apte, P.R. and Rao Ramgopal, V.

“Polymer anchored microelectromechanical system (MEMS) cantilever and method of fabricating the same”, Indian Patent Application No 204/MUM/2014, filed on January 21, 2014.

Ray Prasenjit, Pandey Swapnil and Rao Ramgopal, V.

“Graphene Nanoplatelet embedded Polymer Microcantilever for vapour phase explosive detection applications”, Indian Patent Application No 110/MUM/2014, filed on January 13, 2014

Vinchurkar Madhuri, Pandey Swapnil and Rao Ramgopal, V.

“Electrically stable conductive filler-SU8-glycidol polymer nanocomposite element having piezoresistive or piezoelectric properties and method for fabricating the same”, Indian Patent Application No 3848/MUM/2013, filed on December 9, 2013.

Lodha, Ganguly, U. and Pavan Kishore, V.

“Method of forming low resistance metal contacts simultaneously on n and p-type semiconductors”, patent filed in, February 2013.

Saha Dipankar

“GaN Based High Electron Mobility Transistor for Read/Write Memory with Gd Schottky Contact”, Patent Application No. 66/MU/2013.

“GaN Based Schottky Diode for Read/Write Memory and the method of forming Gd Schottky Contact”, Patent Application No. 65/MUM/2013.

Extension Activities

Following Conferences/Workshops were organised by the Department:

9th INUP Hands-on training workshop Nanofabrication Technologies, April 15-18, 2013.

18th INUP Hands-on Training workshop - May 20-24, 2013.

20th INUP Hands-on Training workshop- June 24-28, 2013.

Workshop on Center of Excellence in Technology for Internal Security, July 27, 2013.

Workshop on C-Si Solar cells and Modules: Theory, Fabrication and Characterization, September 11 - 13, 2013.

5th International Conference on Power and Energy Systems – October 2013 at Kathmandu. The conference was jointly organized by IIT Bombay and Tribhuvan University, Nepal.

20th INUP Hands-on Training Workshop Nanofabrication Technologies, November 26-30, 2013.

Workshop on High Dimensional Network Analytics, jointly organized with National Mathematics Initiative & Department of Computer Science and Automation, IISc, IBM India Research Labs and University Grants Commission held between the period December 16-19, 2013.

Workshop on Grid connected rooftop PV power plants: From Basics to installation with hands on experience, February 19 - 21, 2014.

“Spectrum Regulations and TV White Space Scenario in India”, CEP course on (Dynamic) Spectrum Management, January 2014.

Indo-UK Advanced Technology Center (IU-ATC) workshop, February 26-27, 2014, IIT Bombay, Mumbai.

CEP Courses organised during the year:

Four courses were held in April 2013: Innovation Capability Maturity Model (ICMM), Triz Innovation Bullet Proof Intellectual Property, Converter Topologies for Grid Connected Solar PV System, and Problem Solving and Opportunity Creation Using Triz Innovation.

Two courses were held in August 2013: Wavelets, Multirate Processing and Applications, and Problem Solving and Opportunity Creation Using Triz Innovation.

One day course on “C-Si Solar Cells and Modules, Theory, Fabrication & Characterization”, “Simulation of Power Electronic Circuits” and “Problem Solving and Opportunity Creation Using Triz Innovation” were held on September 11, 2013 and October 8, 2013 and November 13, 2013, respectively.

Courses on titled “Semiconductor Technology and Manufacturing”, “Simulation of Power System Transients”, “Matrix Computation for Complex Systems”, and “Problem Solving and Opportunity Creation using Triz Innovation” were held in December 2013.

Courses on the following were held during January 2014: (Dynamic) Spectrum Management; Information Theory and Coding; Radar Systems; Restructured Power System; Embedded System Design; Growth and Characterization of Nano Electronic Materials; Matrix Computation; RF Microelectronics Chip Design; Nanoelectronics; Computer Vision; Physics of Translators, and Application of Power Electronics To Power Systems. Course on Digital Signal Processing and its Applications was held on March 9, 2014.

Visitors to the Department

Dr. Hanumant Singh Shekhawat, Department of Applied Mathematics at University of Twente in Netherlands, delivered a lecture on “Optimal sampling and interpolation” on April 26, 2013.

Prof. Ashok Ray, Professor, Pennsylvania State University, delivered a lecture on Autonomous Perception and Decision-making in Cyber-Physical Systems” on May 20, 2013.

Prof. Shashi Phoha, Pennsylvania State University, delivered a lecture on “Big-Data to Decision Automation: Algorithms for Semantic Information Fusion”, on May 20, 2013.

Prof. Avik Ghosh, Department of EE, University of Virginia, delivered a lecture on Electronics beyond 2020 – New Materials Vs New State Variables”, on May 27, 2013.

Prof. Deb Narayan Nath, Department of Physical Chemistry, Indian Association for the Cultivation of Science, delivered a lecture on “4-wire 3-phase power distribution network sensor for monitoring minute load unbalance and harmonic noise”, on June 3, 2013.

Dr. Costin Anghel, Professor ISEP, delivered a lecture on “TFET – A nanoscale switch for ultra low-power applications”, on June 6, 2013.

Dr. Cristobal Voz, Polytechnic University of Catalonia, delivered a lecture on “Silicon Heterojunction Solar Cells: High-Efficiency at Low Temperature Processing”, on June 19, 2013.

Prof. Joaquim Puigdollers, Polytechnic University of Catalonia, delivered a lecture on “Organic solar cells: Correlation between density-of-states and efficiency”, on June 20, 2013.

Prof. Rahul Mangharam, University of Pennsylvania. He delivered a lecture on “Closing the loop with Cyber-Physical System Modeling”, on July 22, 2013.

Prof. Vijay G. Subramaniam, EECS, Northwestern University. He delivered a lecture on, “Comparative

Statics on The Allocation of Spectrum”, on July 25, 2013.

Prof. Yashodhan Kanoria, Graduate School of Business, Columbia University. He delivered a lecture on “Unbalanced Random Matching Markets”, on August 1, 2013.

Dr. D.R. Vaman, Prairie View A&M University. He delivered a lecture on “Graph Theoretic Based Dynamic Routing for Intra-Cluster and Inter-Cluster MANET Architecture for Efficient and Reliable High Quality of Multimedia Services”, August 2, 2013.

Prof. Venkat Anantharam, EECS department, University of California, Berkeley. He delivered a lecture on “Nash equilibrium structure of a class of blocking games arising in network security,” on August 6, 2013.

Prof. P. R. Kumar, College of Engineering Chair in Computer Engineering, Texas A&M University. He delivered a lecture on “A Clean Slate Approach to Secure Wireless Networking” on August 7, 2013.

Dr. Debasattam Pal, Professor in the Department of Electronics and Electrical Engineering, IIT Guwahati. He delivered a lecture on “State space representation of multidimensional systems” on August 12, 2013.

Prof. Pulkrit Grover, Carnegie Mellon University, Pittsburgh. He delivered a lecture on “Fundamental Limits on Communication Energy via Information-Friction” on August 14, 2013.

Prof Sir Mark Welland, University of Cambridge, UK. He delivered a lecture on “Nanoscience and Human Disease,” August 22, 2013.

Prof. Vineet Goyal, IEOR, Columbia University, NY, delivered a lecture on “A Markov Chain Approximation for Choice Modeling,” August 27, 2013.

Dr. Anup Biswas, Postdoc, EE, Technion, Israel. He delivered a lecture on “Many Server Queues,” August 30, 2013.

Prof. Sameer Sonkusale, Electrical and Computer Engineering & Associate Dean of Graduate Education, School of Engineering, Tufts University, Boston, delivered a lecture on “Integrated CMOS-Nano Sensors,” September 2, 2013.

Prof. Janak Patel, Dept. of Electrical and Computer Engineering, University of Illinois, Urbana-Champaign, delivered a lecture on “CMOS Process Variation: A Critical Operation Point “hypothesis,” September 30, 2013.

Dr. Shodhan Rao, University of Groningen, the Netherlands, delivered a lecture on “An algebraic

approach to state space realization of lossless systems and applications,” October 4, 2013.

Prof. Pallab Bhattacharya, University Professor and James R. Mellor Professor Electrical Engineering and Computer Science University of Michigan, USA, delivered a lecture on “Strong Coupling Phenomena, Polariton Lasers and Room Temperature Bose-Einstein Condensation,” October 4, 2013.

Prof. Sunil Bhawe, Cornell University, delivered a lecture on “Silicon Monolithic MEMS. Photonics Systems”, on October 10, 2013.

Prof. Manoj Gopalkrishnan, School of Technology and Computer Science, TIFR, delivered a lecture on “Thermodynamics of the Bit”, on November 13, 2013.

Prof. Peter Glynn, Department of Management Science and Engineering, delivered a lecture on “A Flexible Point Process Traffic Model”, on November 20, 2013.

Dr. Jaideva C. Goswami, Schlumberger, USA, delivered a lecture on “Overview of Sensor Design and Data Analysis Techniques for Well-Logging Industry”, on December 13, 2013.

Prof. Sanjit K. Mitra, University of California, delivered a lecture on “The Digital Allpass Filter: A Versatile Signal Processing Building Block”, on January 29, 2014.

Prof. Mandar Deshmukh, TIFR, delivered a lecture on “Nanoelectronics and Nanomechanics with Graphene”, on February 3, 2014.

Prof. Kaushik Roy, Purdue University, delivered a lecture on “Beyond Charge-Based Computing”, on February 5, 2014.

Prof. Sachin Sapatnekar, ECE Department, University of Minnesota, delivered a lecture on “Solving Linear Algebraic Equations Using Random Walks” and “What Happens When Circuits Grow Old: Managing Aging in CMOS Circuits and Systems”, on February 6 and February 12, 2014, respectively.

Dr. Subrahmanyam Iyre, Fellow, IBM USA, April 2014.

Conferences/Symposia/Workshops/ Seminars (Participated/papers presented)

Borkar V.S.

Participated in Workshop on “High Dimensional Network Analytics 2013”, held at Bangalore, ACODS 2014 held at IIT Kanpur, and NCC 2014 held at IIT Kanpur.

Participated in workshop on “High Dimensional Network Analytics” at IISc, Bangalore, during December 16-19, 2013.

Participated in workshop on Probability and Stochastic Processes VII at Indian Statistical Institute, Bangalore, during December 6-11, 2013.

Participated in workshop on EPSCICON 2014 at Thrissur, during January 8-10, 2014, International Conference on “Distributed Computing and Internet Technology” held at Bhubaneswar, during February 6-9, 2014.

Participated in workshop on “Stochastic Models in Systems Engineering” at Coimbatore, during March 14-15, 2014.

Participated in Workshop on “Stochastic Networks” held at Newton Institute, Cambridge, UK, in August 2013.

Participate in 2nd Workshop on “Cognition and Control,” held at University of Florida, Gainesville, during January 15-16, 2014 and workshop on “Information Theory and Applications” at San Diego, during February 10-14, 2014.

Gadre Vikram

Participated as instructor in a ‘Teach Thousands of Teachers’ (T10KT) Programme on Signals and Systems organized jointly by IIT Kharagpur and IIT Bombay under the auspices of MHRD in January 2014.

Karandikar Abhay

Participated in workshop on Center of Excellence in Technology for Internal Security, IIT Bombay on July 27, 2013

Khaparde S. A.

Participated as general Co-Chair for IEEE India Conference (INDICON), December 2013, held at IIT Bombay.

Participated in IEEE Power and Energy Society General Meeting (PES), July 2013 held at Vancouver, Canada.

Participated in exchange program of University of Wollengong, Australia, in December 2013.

Vasi J.

Participated in Intersolar (India), held at Mumbai in November 2013.

Participated in 39th IEEE Photovoltaic Specialists Conference (PVSC), Tampa, Florida, USA, in June 2013.

Ray Prasenjit, Nathawat Rashi, Apte Prakash R., Rao Ramgopal V.

“Plastic deformation study of vertical Zinc oxide nanowires for polymer cantilever based sensor

applications”, accepted for publication, *IEEE Transactions on Nanotechnology*, 2014.

Joshi Anupama, Nori Rajashree, Dhobale Sandip, Rao Ramgopal V., Kale, S.N. and Datar Suwarna

“Grain boundary engineering of La_{0.7}Sr_{0.3}MnO₃ films on silicon substrate: Scanning Tunneling Microscopy-Spectroscopy study”.

Nigam Akash, Nair, P.R., Premaratne, M. and Rao Ramgopal V.

“Role of Injection Barrier in Capacitance Voltage measurements of Organic Devices”, accepted for publication, *IEEE Electron Device Letters*, 2014.

Patkar Rajul S., Apte Prakash R. and Rao Ramgopal V.

“A Novel SU8 Polymer Anchored Low Temperature HWCVD Nitride Polysilicon Piezoresistive Cantilever”, accepted for publication, *IEEE/ASME Journal of Microelectromechanical Systems (J-MEMS)*, March, 2014.

Nori Rajashree, Kale, S.N., Ganguly, U., Ravi Chandra Raju N., Sutar, D. S., Pinto, R. and Rao Ramgopal V.

“Morphology and Curie temperature engineering in crystalline La_{0.7}Sr_{0.3}MnO₃ (LSMO) films on Si by pulsed laser deposition”, accepted for publications, *Journal of Applied Physics*, 2014.

Walke Amey M., Vandooren Anne, Rooyackers Rita, Leonelli Daniele, Hikavy Andriy, Roger Loo, Verhulst Anne. S., Kuo-Hsing. Kao, Cedric Huyghebaert, Guido Groeseneken, Rao Ramgopal V., Bhuwalka Krishna K., Marc M. Heyns, Nadine Collaert, Thean Aaron, V.Y.

“Fabrication and Analysis of a Si/Si(0.55)Ge(0.45) Hetero-Junction Line Tunnel FET”, accepted for publication, *IEEE Transactions on Electron Devices*, 2014.

Nayak Kaushik, Bajaj Mohit, Konar Aniruddha, Oldiges Philip J., Iwai Hiroshi, Murali, K.V.R.M. and Rao Ramgopal V.

“Negative Differential Output Conductivity in Gate-All-Around Si Nanowire FETs and its Impact on CMOS logic Circuits”, accepted for publication, *Japanese Journal of Applied Physics*, 2013.

Kandpal Manoj, Bandela Anil Kumar, Hinge Vijaya Kumar, Rap Ramgopal V. and Rao Chebrolu Pulla.

“Fluorescence and piezoresistive cantilever sensing of trinitrotoluene by an upper rim tetra-benzimidazole conjugate of calix[4]arene and the delineation of the features of the complex by molecular dynamics”, accepted for publication, *ACS Applied Materials & Interfaces*, 2013.

Patil Sheetal J., Duragkar Nikhil and Rao Ramgopal V.

“An Ultra-sensitive Piezoresistive Polymer Nano-composite Microcantilever Sensor Electronic Nose Platform for Explosive Vapor Detection”, accepted for publication, *Sensors & Actuators B: Chemical (Elsevier)*, 2013.

Walke Amey M., Verhulst Anne S., Vandooren Anne, Verreck Devin, Eddy Simoen, Rao Ramgopal V., Guido Groeseneken, Nadine Collaert and Thean Aaron V.Y.

“Part I: Impact of Field Induced Quantum Confinement on the Subthreshold Swing of Line TFETs”, accepted for publication, *IEEE Transactions on Electron Devices*, 2013.

Walke Amey M., Vandooren Anne, Ben Kaczer, Verhulst Anne S., Rooyackers Rita, Eddy Simoen, Marc M. Heyns, Rao Ramgopal V., Guido Groeseneken, Nadine Collaert and Thean Aaron V.Y.

“Part II: Investigation of Subthreshold Swing in Line Tunnel FETs using Bias Stress Measurements”, accepted for publication, *IEEE Transactions on Electron Devices*, 2013.

Rajoriya Anukool, Shrivastava Mayank, Gossner Harald, Thomas Schulz and Rao Ramgopal V.

“Sub 0.5V Operation of Performance Driven Mobile Systems Based on Area Scaled Tunnel FET Devices”, accepted, *IEEE Transactions on Electron Devices*, 2013.

Ray Prasenjit and Rao Ramgopal V.

“ZnO Nanowire Embedded Strain Sensing Cantilever: A New ultra-sensitive Technology Platform”, accepted for publication, *IEEE/ASME Journal of Microelectromechanical Systems (J-MEMS)*, April 2013.

“Al- Doped ZnO thin-film transistor embedded micro-cantilever as a piezoresistive sensor”, accepted for publication, *Applied Physics Letters (APL)*, 2013.

Prashanthi, K., Miriyala, N., Gaikwad, R.D., Moussa, W., Rao Ramgopal V. and Thundat, T.

“Vibrational energy harvesting using photo-patternable piezoelectric nanocomposite cantilevers”, accepted, *Nano Energy (Elsevier)*, 2013.

Raval Harshil N., Sutar, D.S. and Rao Ramgopal V.

“Copper(II) phthalocyanine based organic electronic devices for ionizing radiation dosimetry applications”, accepted, *Organic Electronics (Elsevier)*, 2013.

Raval Harshil N., Sutar, D.S., Nair Pradeep R. and Rao Ramgopal V.

“Investigation of effect of ionizing radiation exposure on material properties of organic semiconducting oligomer - Pentacene,” accepted, *Organic Electronics (Elsevier)*, 2013.

Mehta, H., Lodha, S., Ganguly, U. and Ganguly, S.
“Calibration of the Density-Gradient TCAD Model for Germanium FinFETs” in *IEEE Regional Symposium on Micro and Nanoelectronics*, Malaysia, September 2013.

Mishra, R.K., Ganguly, U., Ganguly, S., Lodha, S., Nainani, A. and Abraham, M.
“Nickel germanide with rare earth interlayers for Ge CMOS applications” in *IEEE EDSSC*, Hong Kong, June 2013.

Sant, S., Lodha, S., Ganguly, U. and Ganguly, S.
“Novel nonlinear interpolation for Si1? xGex bandstructure parameters” in *IEEE International Conference of Electron Devices and Solid-State Circuits*, Bangkok, December 2013.

Invited Lectures

National

Karandikar Abhay
“Broadband Wireless in India: Addressing Radio Spectrum Efficiency”, Keynote in TechFest, AD Patel Institute of Technology, Anand, March 2014.

“Telecommunications Standards Development Society India: Role of Academia” Panel Discussion, National Conference on Communications, IIT Kanpur, March 2014.

“Broadband Wireless Networks”, Key note address in short term course ‘Fundamentals and Applications of Wireless Communications Systems’, SGS Institute of Technology, Indore, January 2014.

“Innovations in Rural Broadband for Inclusive Telecom Growth,” Telecom Summit in Convergence, 2014, New Delhi, January 2014.

“Affordable Backhaul for Broadband in Rural India: Opportunities in TV White Space”, IEEE ANTS, Chennai, December 2013.

“Wireless Broadband in India: Challenges, associated solutions and technology research directions”, Invited talk in Intel Academic Forum, Goa, September 2013,

“Spectrum Management Issues”, Workshop on Activities and R&D Roadmap for the Next Five Years of TCOEs: Achieving the Objectives of NTP 2012,” IIM Ahmedabad, July 2013.

Maryam Shojaei
“Data Converters”, IIT-Gandhinagar, March 2013.
“RF Energy Harvesting”, IEEE SCOPES 14, VIT Vellore.

Mukherjee Jayanta
“1010 Lecture series” at IIST Trivandrum and SGGSIET Nanded.

Rao Ramgopal V.
Dr. R. A. Mashelkar Endowment Lecture, National Chemical Laboratory, Pune, April 8, 2014.

Talk at Symposium on Sensors and Actuators in Healthcare and Automobile, IIT Hyderabad, March 13, 2014.

Plenary talk, 8th Chandigarh Science Congress (CHASCON-2014), February 26-28, 2014.

Talk at the International Conference on Advanced Functional Materials (ICAFM-2014), February 19-21, 2014, organized by the CSIR-National Institute for Interdisciplinary Science and Technology, Trivandrum.

Talk at 17th International Workshop on The Physics of Semiconductor Devices (IWPSD), December 10-13, 2013, Delhi, India.

International

Borkar, V.S.
Ergodic theory of diffusions and controlled diffusions (8 lectures), Lectures on “Probability and Stochastic Processes VII”, Indian Statistical Institute, Bangalore, December 6-11, 2013.

Four algorithms and a methodology, EPSCICON 2014, Thrissur, January 8-10, 2014.

Reinforcement learning and matrix computations, International Conference on Distributed Computing and Internet Technology, Bhubaneswar, February 6-9, 2014.

Introduction to stochastic approximation and applications (2 lectures), Workshop on Stochastic Models in Systems Engineering, Coimbatore, March 14-15, 2014.

Gadre Vikram
Delivered invited lecture at International Conference on Industrial Applications of Signal Processing at DACOE, Karad from 25-27 November 2013.

Rajendran Bipin
“Bio-inspired computational systems - Prospects and Challenges,” 27th International Conference on VLSI Design, 2014.

“Learning from biology - A path to novel computational systems,” Samsung India Research Network Meeting, 2013.

“Can silicon machines match the efficiency of the human brain?,” 26th International Conference on VLSI Design, 2013.

Sule V.R.

“Solving Boolean equations Boole Shannon expansion and Euclidean division approaches”, at Department of Information Technology, Monash University, Melbourne, Australia. March 6, 2014.

“Unified formulation of computational challenges. IITB-Monash Symposium,” Monash University, March 5, 2014

Rao Ramgopal V.

CMOS Emerging Technologies Symposium, “Research & Business Opportunities Ahead,” at CEA-MINATEC, Grenoble, France, July 6-8, 2013,

Nanyang Technological University (NTU) Singapore, September 15-21, 2013 & October 20-25, 2013.

The 5th IEEE Asia Symposium on Quality Electronic Design (ASQED 2013), Penang, Malaysia, August 26-28, 2013,

Fraunhofer Research Institution for Modular Solid State Technologies EMFT, Hansastraße 27 d, 80686 Munich, Germany, June 18, 2013.

Talk at Nanoscience Joint Academies’ Symposium on “Nanosciences” by the German National Academy of Sciences Leopoldina and the Indian National Science Academy (INSA) Halle (Saale), Germany, November 25 – 26, 2013.

Intel Corp. (Mobile Communications Group), Am Campeon 10-12, 85579 Neubiberg, Germany, June 17, 2013.

Institute of Semiconductor and Solid State Physics, Johannes Kepler University, A-4040 Linz, Austria, June 13, 2013.

Delivered an invited lecture on “Electron Devices & Solid-state Circuits (EDSSC),” at the 9th IEEE International Conference June 3-5, 2013, Hong Kong.

University of Alberta, Canada, May 9, 2013.

IEEE International Nanoelectronics Conference (IEEE INEC 2013), Singapore, January 2-4, 2013.

Awards and Distinctions**Gadre Vikram**

An award winning paper in the 14th ERSI India User Conference from December 10-12, 2013 at New Delhi, India, together with Saket Porwal (M. Tech. Student, EE, IIT Bombay). This paper was adjudged the best student paper in the conference and recognized with a citation and trophy.

Karandikar Abhay

Vividhlaxi Audyogik Samshodhan Vikas Kendra (VASVIK) Award 2010 in the category of Electrical and Electronics Sciences and Technology.

Shojaei Maryam

IESA Techno Inventor Award, India, 2013.

Rajendran Bipin

Ramanujan Fellowship, Department of Science and Technology, Government of India, 2013-2017.

Mahapatra Souvik

IBM Faculty Award for 2013.

Rao Ramgopal V.

The Infosys Prize 2013 for Engineering and Computer Science, Infosys Science Foundation awarded for Prof. Rao’s “wide-ranging contributions to nanoscale electronics, for insightfully integrating chemistry with mechanics and electronics to invent new functional devices, and for innovation and entrepreneurship in creating technologies and products of societal value.

Borkar V S.,

Fellowship of IETE, 2013

Vasi J.

Member, Scientific Advisory Committee to the Cabinet (SAC-C), Government of India.

Honorary Work**Borkar, V.S.**

Frequent reviewer for IEEE Trans. Automatics Control, IEEE CDC, SIAM J. Control and Optim., Automatica, IEEE J. Selected Areas in Signal Processing, IEEE Trans. Information Theory, and various other journals and conferences.

Member of the editorial boards of Texts and Readings in Mathematics (Book series), Applicationes Mathematicae (Poland), Indian Journal of Pure and Applied Mathematics, ‘Sadhana’ (Proc. of Indian Academy of Science for Engg.), Dynamic Games and Applications, Mathematical Control and Related Fields, IEEE Trans. on Information Theory, IEEE Trans. on Network Science and Engineering.

Served on CSIR Engineering Sciences Research Committee, Sectional Committee for Mathematics of INSA, Sectional Committee for Electrical Engineering of INAE, Executive Committee of International Society for Dynamic Games, managing committees of International Centre for Theoretical Sciences (TIFR), National Centre for Mathematics (TIFRIT)

Gadre Vikram

Served as reviewer for IEEE Signal Processing Letters; Signal Processing, Elsevier.

Examined six PhD Theses from various Institutes including IITs, IISc and various Universities.

Served as Associate Editor, 'SADHANA' Journal, Indian Academy of Sciences.

Served as external Senate member on the Senates of IIT Indore, IIITPDJ Jabalpur and Academic Council Member, TIFR, Mumbai.

Karandikar Abhay

Member (Secretary), Founding Governing Council, Telecom Standards Development Society, India (TSDSI), 2013.

Member, Telecom Center of Excellence Coordination Center Executive Council, 2013.

Expert for evaluating Technology Development and Investment Promotion (TDIP) scheme of Department of Telecom, October 2013.

Member, Expert Committee, Indo-US Science & Technology Forum, 2013.

Member, Project Review & Steering Group (PRSG) for the project "Next Generation (4G Advanced) Wireless Technology Research" by CEWiT, Chennai DeITY, Government of India, 2013.

Project Review & Steering Group (PRSG) for the project "Development of Broadband Wireless Communication System using Terahertz Technology by SAMEER, DeITY, GoI, 2013.

Member, Advisory Board, Bharti School of Telecommunications Technology and Management, IIT Delhi, 2013.

Member, Academic Committee, College of Military Engineering, Pune 2013.

Contributing author, Technology Vision 2035 on ICT and Telecom, TIFAC, 2013.

Jury member, Indian Semiconductor Association (ISA) Techno vision awards 2013.

Belur Madhu

Reviewing for several IEEE journals and conferences, and for AMS Mathematical Reviews (MR)

Reviewed for Systems & Control Letters and for International Journal of Control

Kasbekar Gaurav

Journals: IEEE Journal on Selected Areas in Communications, IEEE Transactions on Vehicular Technology, IEEE Transactions on Networking (3 papers), IEEE Transactions on Automatic Control, IEEE

Transactions on Information Theory, IEEE Communications Letters

Shojaei Maryam

TPC member, Emerging Applications and Technologies sub-committee, *IEEE A-SSCC* (Sister Conference of *IEEE ISSCC*), 2013 and 2014, Singapore and Taiwan.

Track chair (Analog and Mixed-Signal System Design) and TPC member, ISED 2013, Singapore.

Technical chair, (Signal Processing and VLSI), IEEE INDICON, 2013, India.

Chair of Design Contest, TPC member, Low-Power Design/Circuits and Technology Track, *IEEE International Conference on VLSI Design* (Sister Conference of *IEEE DAC*), 2013 and 2014, India.

TPC member, Circuit and System Design, IEDEC and ISQED Conferences), 2013 and 2014, USA.

TPC member, ASQED Conference 2013 and 2014, Malaysia.

TPC member, ISVLSI Conference 2013 and 2014, Brazil and USA.

Reviewer: IEEE, Elsevier and other journals & conferences

Project proposal review for DST.

Faculty Members and their Specializations

1. Arjun Arunachalam

Magnetic Resonance Imaging: Image reconstruction, Parallel Imaging, Compressed sensing, Rf antenna design.

2. Anil Kottantharayil

CMOS device physics, characterization, modelling and technology.

3. Abhay Karandikar

Communication Network, Quality of Service Guarantees in Internet, telecommunication switching, Digital communication.

4. Anil M. Kulkarni

Power System Dynamics, Flexible AC Transmission Systems, HVDC Transmission Systems.

5. Apurba Laha

Microelectronics, MBE growth, Oxide electronics, Si and Ge.

6. Animesh Kumar

Applied statistics, integrated circuits, signal processing sampling theory.

7. Anshuman Shukla

Multilevel converters, Modulation and control power electronic converters, Power electronics applications in power systems (FACTS, HVDC, custom power devices, etc.), Renewable energies, Energy storage, Control of electric drives, Hybrid and solid-state circuit breakers and current limiters.

8. Anupama Kowali

Power systems planning, operations and control, electricity markets, smart grids, smart buildings and grid integration of renewable generation.

9. Ashwin Tulapurkar

Physics and applications of spintronics devices, spin-injection, spin-current induced magnetization switching. High speed measurements of switching. Noise in nano-devices. Ferromagnetic resonance.

10. Ajit Kumar Verma

Reliability in Engineering Design, Software Reliability, Design and Analysis of Fault Tolerant Systems, Physics of Failures, PSA, RBI and Power System Reliability.

11. Bikash Kumar Dey

Error correcting codes, wireless communication, signal processing.

12. B. G. Fernandes

Power electronic interface for non-conventional energy sources, Electrical machine design and control.

13. Bipin Rajendran

Nanoscale science and technology, Biomimetic engineering & computation, Novel materials & devices for memory/logic applications, Three-dimensional & heterogeneous integration, Sensing & analytics for urban challenges.

14. Bhaskaran Muralidharan

Computational nanoelectronics, spintronics, nano scale energy conversion.

15. Debraj Chakraborty

Optimal Control, Differential Games, Nonlinear Theory, Control of Biological Systems and Diseases.

16. D. Manjunath

Computer and Communication Network Protocols, Systems and Algorithms Performance Modeling Queueing Theory and Simulation, Stochastic Systems.

17. Dipankar Saha

Microelectronics, New Device Physics, Semiconductor Spintronics, Spin injection, transport and detection in III-V systems, Device Reliability.

18. Dinesh K. Sharma

MOS device modeling, VLSI design and technology. Microelectronics-technology and Device characterization; and mixed signal design.

19. Gaurav Kasbekar

Modeling, design and analysis of wireless networks, Game theoretic and economic aspects of spectrum allocation, Cognitive radio networks, Lifetime and coverage problems in wireless sensor networks.

20. Girish Kumar

Microstrip antennas and arrays, Broadband antennas Microwave integrated circuits; EMI/ EMC; RF Circuits.

21. Harish K. Pillai

Control theory; Behavioural theory of Systems Multidimensional systems; optimal control; Coding theory; Optimization techniques.

22. H. Narayanan

Building large scale circuit simulators, Combinatorial optimization including submodular function theory, Large scale system partitioning.

23. Jayanta Mukherjee

RF VLSI Design, Testing, Noise Modeling, Analog VLSI

24. Joseph John

Electronic Circuits, Optical Fiber Communications Electronic Systems and instrumentation.

25. Kishore Chatterjee

Utility friendly converter topologies, Power Factor Correction techniques, STATCOM, Switched Mode Rectifiers, Electronic Ballast, Control of Electric Drives.

26. Maryam Shojaei Baghini

Technology-aware design, integrated circuit and system design with emerging devices, Integrated power management for SOC applications, Analog/ Mixed-signal. IC design for different applications, Circuit and system modeling, Circuit design optimization, Analog/Mixed-signal/RF EDA (CAD tools, theory and implementation), Circuit and system design with organic thin film components, RF/ Microwave integrated circuit design, VLSI design and embedded systems.

27. Madhu N. Belur

Systems & Control theory, Behavioral theory of Systems and Control, Optimal control, Numerical aspects, Hybrid systems.

28. Mukul C. Chandorkar

Electrical drives, Power electronic converters and control, Power system applications of power electronics, and electrical power quality for industrial and commercial installations, DSP applications in power electronics and power systems.

29. Madhav P. Desai

VLSI design and design automation, Graph theory and combinatorics Circuits and systems.

30. Mahesh B Patil

Semiconductor device modelling for circuit simulation
Semiconductor device simulation, Mixed-mode circuit Simulation.

31. Preeti S. Rao

Speech and Audio Signal Processing, Digital Signal Processing, Coding of speech at low bit- rates.

32. Prasanna Chaporkar

Information theory, Stochastic control, Optimal decision issues.

33. Pradeep R. Nair

Nanoscale devices for energy and healthcare applications, Semiconductor device physics and reliability, MEMS.

34. Prem C. Pandey

Speech & Signal Processing, Biomedical Signal Processing and Instrumentation, Instrumentation, Embedded Electronic System Design.

35. R. K. Shevgaonkar

Fiber Optic Communication; Photonics; Non-linear fibre optics; Antennas; Image Processing; Radio Astronomy; Communication.

36. Saravanan Vijayakumaran

Digital Communications, Computer Networks, Parallel Simulation Algorithms.

37. Subhananda Chakrabarti

Microelectronics, Growth, fabrication and characterization of III-VI semiconductor devices.

38. Subhasis Chaudhuri

Multimedia, Computer Vision, Image Processing, Pattern Recognition, Biomedical Signal Processing.

39. Siddhartha P. Duttagupta

Microelectronics.

40. Shalabh Gupta

High speed analog/RF IC design, optical fiber communications, ultra-high-speed data conversion using photonics, smart antenna systems, biomedical electronics and biophotonics.

41. Swaroop Ganguly

Physics and technology of novel nanoscale devices for information-processing and energy-harvesting.

42. S. A. Khaparde

Deregulation in Power Industry: Optimal bidding, congestion management, Object Oriented Power

System Analysis, Controlled series compensation using SSSC, Harmonic Distortion in Distribution systems, Design and Operation of small tidal powerplant, Modelling and Design of transformer.

43. S.V. Kulkarni

Transformer Design and Analysis, Electromagnetic and Coupled Field Computations, Efficient Finite Element Method Computations, Power Engineering: Distribution Automation and Distributed Generation, High Voltage Insulation Design.

44. Saurabh Lodha

CMOS process integration and device physics, Materials and processes for advanced CMOS devices, Metal-semiconductor interfaces Molecular devices.

45. Souvik Mahapatra

Flash EEPROMs, SONOS, Nanoparticle storage, NBTI and Hot carrier degradation in MOSFETs, High-k gate dielectrics.

46. S.N. Merchant

Signal Processing, Adaptive Signal Processing.

47. Sachin Patkar

Combinatorial optimization, Algorithms Design and Analysis, Graph Theory, Geometric Design and Graphics.

48. Sibi Raj B. Pillai

Fundamental Limits of Communication Systems Information Theory and its applications, Sensing, Stochastic Modeling, Allocation Problems, Interference Channels Relaying and Broadcasting.

49. S. A. Soman

Power System Analysis, Restructuring of Power Systems, Power System Protection, Optimization, Object Oriented Design, Computational Methods.

50. Uday B. Desai

Signal Processing, Wireless Communication (Multiuser Detection), Adaptive Signal Processing, Image and Video Processing Wavelets, Biomedical Signal and Image Processing, Artificial Neural Networks.

51. Udayan Ganguly

Flash Memory dielectric and structure optimization for traditional scaling, Non-traditional Flash Memory scaling with molecules (e.g. fullerenes, nanotubes), Future Flash Memory replacements.

52. Vivek Agarwal

Power Conversion, Power quality issues, Non-conventional energy, Intelligent control of power electronic systems, Design of electronic systems, Electromagnetic Interference and compatibility (EMI/ EMC).

53. Vivek S. Borkar

Stochastic Control, Learning Control Theory, Random Processes.

54. V.M. Gadre

Communications and signal processing with emphasis on multiresolution and wave based methods.

55. V.Rajbabu

Statistical and digital signal processing, Signal processing system design, Particle filter applications, and Target tracking systems.

56. V. Ramgopal Rao

Nanoelectronics, Circuit and System Considerations with Emerging CMOS Technologies(Multigate MOSFETs, Single Halo MOSFETs etc.), Technology and Characterization of Sub 100 nm CMOS devices, CMOS Reliability Characterization (plasma damage, radiation, hot-carrier), Bio-MEMS.

57. Virendra Singh

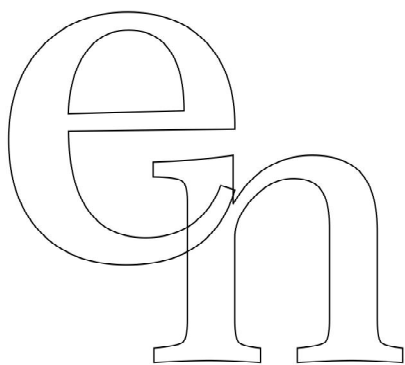
Computer Architecture, High Performance Computing, Robust System Design, Fault Tolerant Computing, Testing, Formal Verification, Self-Healing System Design, Design for Testability, SoC/NOC Design and Test, Reconfigurable System Design Hardware Accelerators, Trusted Computing.

58. J. M. Vasi

Silicon photovoltaic devices, Nanocrystal based solar cells, Reliability of solar modules.

59. V. R. Sule

Cryptography: Cryptographic Algorithms Elliptical curve based schemes, Algebraic cryptanalysis of block and stream ciphers satisfiability methods, Boolean equations and analysis. Control Theory: Feedback system design, Computational Methods for dynamic systems.



Energy Science & Engineering

Introduction

The Department of Energy Science and Engineering (DESE) is a young department started in 2007, prior to which it existed as an interdisciplinary programme for over 25 years. The department now offers Integrated B.Tech+M.Tech. (Dual Degree), Integrated M.Sc.+Ph.D. (Dual Degree) in addition to the conventional M.Tech. (Energy Systems Engineering), and Ph.D. programmes.

These unconventional programmes are aligned with the rapidly increasing needs of the nation's energy sector and directed at providing human resources to address and contribute towards the same. The Department has more than 500 alumni who currently occupy various positions in industry and research institutions.

The interdisciplinary nature of the course brings together faculty members and students with diverse backgrounds and interests in engineering (Energy, Mechanical, Electrical, Civil, Materials, etc.) and science (Physics, Chemistry, Maths, etc.). In the course of their pursuits for a degree, students are exposed to core areas of energy management including energy auditing, energy systems modeling and analysis, non-conventional energy sources, to name a few. In addition, students take elective courses in their areas of specialization. The Department also interacts with the industry (consultancy, sponsored projects), research institutions (seminars, workshops), and policy makers (seminars, workshops) for developing and promoting clean and efficient energy technologies in the country. The programme is well-recognized by the industry with fellowships and sponsorships from various organizations including Forbes Marshall, ONGC, Cummins, and MNRE etc.

On March 8, 2014, the department celebrated "Energy Day", by showcasing current research, innovation and the activities in the field of energy science and technology by its students and the researchers. "Helios", the annual fest of DESE, aims to realize its potential of being platform built for students, industrialists, professionals and enthusiasts to come

together, interact, compete and discuss the key issues concerning the energy future of this country, and the world in general. The Helios 2014 was held on March 9, 2014.

Special Initiatives

International Conference on Advances in Energy Research (ICAER) 2013

Challenges in Energy research and its future trends were discussed in 4th International Conference in Advances in Energy Research (ICAER 2013), hosted by the DESE during the period December 10-12, 2013. Eminent scientists, from India and abroad, offered lectures on their research and had one to one interaction with the students. The three-day conference covered most aspects of the current trends in energy research from Solar Photovoltaics to Energy Policy. The conference converged to an interesting discussion on "fundamental research" attended by eminent industrialist, social activist, scientists and students.

Academic Programme

In 2013, 29 students were admitted to the M.Tech. programme, 19 students were admitted to PhD programme, 4 students were admitted to M.Sc.-Ph.D. Dual Degree programme and 31 students were admitted to B.Tech.-M.Tech. Dual Degree programme.

Degrees Awarded	:	56
Dual Degree B.Tech / M.Tech	:	19
M.Tech	:	32
PhD	:	4
PGDIIT	:	1

Minor Courses offered at the department include:

Energy Resource, Environment, and Economics, Energy Management, Introduction to Renewable Energy, Hydrogen Energy, Wind Energy Conversion, Introduction to Solar Photovoltaics, Advanced Solar Technology and Conservation of Energy in Buildings

Scholarships:

Forbes Marshall	:	1
AERB	:	1

R & D Activities**Sponsored Research Projects**

Sponsored Research Projects	:	32
New	:	4
Ongoing	:	27
Completed	:	1

List of sponsored research projects

Project Title	Sponsoring Agency	Status (New/ Ongoing/Completed)
Development of a Producer Gas Engine Module (Cummins Engine) used for village electrification	Cummins India Foundation	New
Electrochemistry of thin film electrolytes	G E India Technology Centre	New
Collision properties in levitated granular material	IRCC Internship	New
Particle size effects on kinetics of dehydrogenation in Magnesium Hydride for fuel cells in automobiles	IRCC Internship	New
Development of a Megawatt-scale National Solar Thermal Power Testing, Simulation and Research Facility	Ministry of New and Renewable Energy (MNRE)	Ongoing
Development of Process Integration Methodologies with Multiple Qualities	IRCC	Ongoing
Pre-proposal Project Preparation of Detailed Project Proposal for Solar Thermal Power Project at IIT Jodhpur, Rajasthan	IRCC	Ongoing
Localization of Solar Energy through Local Assembly, Sale and Usage of 1 Million Solar Study Lamps.	IRCC	Ongoing
Demand side management - capacity building, assessment and networking for successful implementation	Shakti Sustainable Energy Foundation	Ongoing
Development of test loop for hightemperature molten salt for concentrated solar thermal energy evacuation and storage applications	IRCC	Ongoing
SDTT Project- One Million Lights	Sir Dorabji Tata Trust	Ongoing
Students Contribution for SDTT- 1 Million light	Sir Dorabji Tata Trust	Ongoing
Support to team Shunya	Various Sponsoring Agencies	Ongoing
Localisation of Solar Energy Through Local Assembly, Sale & Usage of One Million Solar Study Lamps by IIT Bombay	1 Million Solar Urja Lamp	Ongoing
Energy through Local Assembly, Sale and Usage of 1 Million Solar Study Lamps (Beneficiary Students Contributions)	1 Million Solar Urja Lamp	Ongoing

Project Title	Sponsoring Agency	Status (New/ Ongoing/Completed)
Nanoscale fabrication of aligned nanoarchitected copper current collectors covered with metal phosphides as anode for next generation Lithium-ion battery applications	DST-Nano-mission	Ongoing
Bio inspired nano materials as anode and cathode for new generation lithium-ion battery applications	DST-RFBR (indo-Russia Collaborative project)	Ongoing
Development of Solid State Nanocrystalline Semiconductor Sensitized Solar Cells by Inverted Morphology	DRDO	Ongoing
Development of Low cost nanomaterials for lithium-ion battery electrodes for solar energy Storage	NCPRE	Ongoing
Development of Low cost Li-V-O based cathode and Metal alloys anode for solar energy storage battery	SERIIUS	Ongoing
Reliability assessment of the passive systems and its integration into PSA	AERB	Ongoing
Enhancing the performance of Cuprite as a solar cell absorber material	IRCC	Ongoing
CuZnSnS ₄ Based Material for Photovoltaic Application	SERIIUS	Ongoing
Synthesis and electrochemical characterization of nanomaterial-based architectures for electrocatalysts	Department of Science & Technology (DST)	Ongoing
Saltation of solid particles in pneumatic conveying systems	DST	Ongoing
Simulation Centre for Power Electronics and Power Systems	DIT	Ongoing
Development of Efficient and Cost-Effective Electrocatalysts for Oxygen Reduction Reaction (ORR) in Low Temperature Fuel Cells	DST	Completed

Consultancy Projects

The department undertook 6 consultancy jobs generating Rs. 8,60,992. The total number of faculty members involved was 6.

Patents

Thengane S., Hoadley A.F.A., Bhattacharya S, Mitra S. and Bandyopadhyay S.
 “Production Process”, filed on February 5, 2014, Provisional Patent Number: 2014900341, Australian Patent Office.

Shaligram , A., Mitra , S. and Sarkar S.

“A gel precipitation methodology for synthesis of sub-micron mesoporous mixed oxides for battery application”, File No: 738/MUM/2014.

Extension Activities

Following CEP Courses were organised during the year:

“Energy Management” at IIT Bombay Mumbai, November 18-22, 2013.

“Simulation of Power Electronic Circuits”, March 26-28, 2014.

“Islanding Detection Techniques for Inverters”, Converter Topologies for Grid Connected PV System, Crompton Greaves Limited, Mumbai, January 2014.

“Droop Control in Microgrids”, Converter Topologies for Grid Connected PV System, Crompton Greaves Limited, Mumbai, January 2014.

“Maximum Power Point Tracking in Solar PV Systems”, Converter Topologies for Grid Connected PV System, Crompton Greaves Limited, Mumbai, January 2014.

“PV Power Evacuation and Metering for Rooftops”, Pune, May 16, 2013.

“Maximum Power Point Tracking in Solar PV Systems”, Converter Topologies for Grid Connected PV System, April 25, 2013.

“Grid Connection Issues for Distributed Generation-Review and Standards”, Converter Topologies for Grid Connected PV System, April 26, 2013.

“Converters for Microgrids”, Simulation of Power Electronic Circuits, IIT Bombay, October 8-9, 2013.

“Energy Efficient Lighting”, Energy Management, IIT Bombay, November 2013.

“Solar Thermal Power”, April 29 – May 3, 2013.

“Thermal insulation”, at IIT Bombay, Mumbai, November 18-22, 2013.

“Nuclear Power Generation”, Vidya Pratisthan’s College of Engineering, April 13-14, 2013.

“Grid Connected Rooftop PV Power”, November 28-30, 2014.

“Losses and way to overcome them in c-Si solar cells”, IIT Bombay, September 2013.

Workshops

Ramadesigan, V.

Simon Fraser University - IIT Bombay research workshop: Advanced Materials and Systems for Clean Energy Technology (AMSCET) December 8-9, 2013.

Visitors to the Department

Dr. Vivekanand, Norwegian University of Life Sciences, Norway delivered a lecture on “Biomass to Bioenergy”, April 10, 2013.

Dr. Lakshminarayana Rao, Pyrogenesis Canada Inc., Montreal, Canada, delivered a lecture on “Thermal Plasma Technology for Renewable Energy Production, Waste Destruction and Advanced Materials Production”, July 09, 2013.

Prof. Ajay K. Prasad, Department of Mechanical Engineering and Director, Center for Fuel Cell Research, University of Delaware, delivered a lecture on “Single Cell and System-level Research with PEM Fuel Cells”, July 31, 2013.

Prof. Ajay K. Pandey, University of Queensland, St Lucia, Brisbane, Australia delivered a lecture on “Energy management in organic photovoltaics”, August 5, 2013.

Dr. Prasad Pokkunuri, ABB, Bangalore, delivered a lecture on “Concentrated Solar Power (CSP) for grid-scale electricity generation”, August 19, 2013.

Dr. Jishnu Bhattacharya, Northwestern University, USA, delivered a lecture on “Design and prediction of thermodynamic and kinetic behavior of energy storage materials through atomic and bulk scale computation”, October 7, 2013.

Dr. Vivek M. Wasekar, delivered a lecture on “Introduction to Wind Energy Power Plant”, October 25, 2013.

Dr. Dayadeep Monder, Assistant Professor, Chemical Engineering, IIT Hyderabad, delivered a lecture on “Ab-initio models of sulphur poisoning in solid oxide fuel cell anodes”, December 6, 2013.

Dr. Ajitkumar Sudhakar Gudekar, Post Doctoral research, ICT, Mumbai, delivered a lecture on “Energy Sustainability through Conservation and Renewables”, December 27, 2013.

Conferences/Symposia/Workshops/Seminars (Participated/Papers Presented)

National

Singh, S. and Mitra S.

Presented a paper “Nanocomposite $\text{Li}_2\text{FeSiO}_4/\text{C}$ as cathode material”, *Indo-US Workshop on Engineered Electrodes for Electrochemical Energy Storage*, held during April 3-4, 2014 at Chennai.

Sen, U. K. and Mitra S.

Presented a paper “Nano Structured MoS_2 as High Rate Capable Anode Material for Lithium-ion Batteries”, *1st IITB-NUS Joint Research Workshop (ENERGY 2014)*, held during February 24-25, 2014, at IIT Bombay.

Priolkar J, Doolia S.

“Analysis of PV-Hydro Isolated Power Systems” presented at IEEE INDICON, held in Mumbai, December 13-15, 2013.

Nunna, H.S.V.S.K. and Doolla S.

“Intelligent Demand Side Management in Smart-Microgrids”, presented at 2013 IEEE International Workshop on Intelligent Energy Systems (IWIES 2013) to be held in Vienna, November 14, 2013

International

deSouza, Priyanka, Balasubramaniam, K.R. and Banerjee, R.

Presented a paper “Setting Targets for Photoelectrochemical Cells”, *International Conference on Advances in Energy Research (ICAER 2014)*, held during December 10-12, 2013, at IIT Bombay.

Rai D., Sutar D.S., Solanki C.S. and Balasubramaniam, K.R.

Presented a paper “Ultra Thin SiN_x on a-Si In Situ Hot-Wire CVD by Decomposing NH₃ Gas,” *International Conference on Advances in Materials Research*, held during January 22-23, 2014, at Macau.

Dey T., Singdeo D., Ghosh P.C., Bose M. and Basu R. N.

Presented a paper “CFD Based Design of planar SOFC for improvement in performance”, *AICHE 2013 Annual Meeting*, held during November 3-8, 2013, at San Francisco, USA.

Saini R.K. and Bose M.

Presented a paper “CFD Analysis of flow of two immiscible fluids in a disk and doughnut pulsed column”, *AICHE 2013 Annual Meeting*, held during November 3-8, 2013, at San Francisco, USA.

Presented a paper “Stage hold up of dispersed phase in a Disc and Doughnut Pulsed Column”, *4th International Conference on Advances in Energy Research – ICAER 2013*, held during December 10-12, 2013, at IIT Bombay.

Dey T., Singdeo D., Pophale A., Bose M. and Ghosh P.C.

Presented a paper “SOFC power generation system by bio-gasification”, *4th International Conference on Advances in Energy Research (ICAER-2013)*, held during December 10-12, 2013, at IIT Bombay.

Makwana A. B., Korada, R. and Bose, M.

Presented a paper “Effect of dune formation on pressure drop in horizontal pneumatic conveying system”, *International Conference on Powder Granule and Bulk Solids: Innovations and Applications (PGBSIA-2013)*, held during November 28-30, 2013, at Thapar University, Patiala, India.

Naval V.K., Gopee K. K. and Bose M.

Presented a poster “Stability criterion for transition from homogeneous to bubbling fluidization”,

International Conference on Powder Granule and Bulk Solids: Innovations and Applications (PGBSIA-2013), held during November 28-30, 2013, at Thapar University, Patiala, India.

Tomar V. and Bose M.

Presented a poster “Experimental study on coefficients of restitution for solid particles”, *International Conference on Powder Granule and Bulk Solids: Innovations and Applications (PGBSIA-2013)*, held during November 28-30, 2013, at Thapar University, Patiala, India.

Naval V.K. and Bose M.

Presented a poster “Hydrodynamic Studies of 2D and 3D Fluidized bed”, *4th International Conference on Advances in Energy Research – ICAER 2013*, held during December 10-12, 2013, at IIT Bombay.

Kartheek N.G.R., Yadav D., Banerjee R., Nayak J.K., Bandyopadhyay S. and Kedare S.B.

Presented a paper “Experiences in commissioning of a 1 MW solar thermal power plant in Gurgaon”, *4th International Conference on Advances in Energy Research – ICAER 2013*, held during December 10-12, 2013, at IIT Bombay.

Jilte R.D., Kedare S.B. and Nayak J.K.

Presented a paper “Investigation on convective heat losses from solar cavities under wind conditions”, *The ISES Solar World Congress 2013*, held during November 2013, at Cancun, Mexico.

Desai N. B., Bandyopadhyay S., Kedare S.B., Banerjee R. and Nayak J.K.

Presented a paper “Simulation of 1MWe Solar Thermal Power Plant”, *The ISES Solar World Congress 2013*, held during November 2013, at Cancun, Mexico.

Khanna S., Singh S. and Kedare S.B.

Presented a paper “Effect of Angle of Incidence of Sun Rays on the bending of absorber tube of solar parabolic trough concentrator”, *International Conference on solar heating and cooling for buildings and industry – SHC 2013*, held during September 23-25, 2013, at Freiburg, Germany.

Singh, R. and Banerjee, R.

Presented a paper “Estimation of roof-top photovoltaic potential using satellite imagery and GIS”, *39th IEEE Photovoltaic Specialists Conference*, held during June 16-21, 2013, Tampa, Florida, USA.

Doolla S.

Presented a paper “Energy Management in Microgrids with Distributed Storage and Demand Response- A Multiagent Approach”, *2013 Microgrid Symposium*, held during September 11-13, 2013, Santiago, Chile.

Bhosale A. C., Singdeo D. and Ghosh P. C.

Presented a paper "Hydrogen Production Using Unitized Regenerative Fuel Cell", 223rd *Electrochemical Society meeting*, held during May 12-16, 2013 at Toronto, Canada.

Sarkar S. and Mitra S.

Presented a paper "Carbon coated Submicron sized LiFePO₄: Improved High Rate Performance Lithium Battery Cathode", 4th *International Conference on Advances in Energy Research (ICAER-2013)*, held during December 10-12, 2013, at IIT Bombay.

Presented a paper on "Lithium storage property in Li_xV₃O₈ cathode material", *International Conference on Nanotechnology, Nanomaterials & Thin Films for Energy Applications (NANOENERGY-2014)*, held during February 19-21, 2014, at University College London, London, UK.

Sen U. K. and Mitra S.

Presented a paper "Synthesis of Molybdenum Oxides and their Electrochemical Properties against Lithium", 4th *International Conference on Advances in Energy Research (ICAER-2013)*, held during December 10-12, 2013, at IIT Bombay.

Presented a paper "Role of Current Collector on the Performance of MoO₃ as Cathode Material for Lithium-ion Batteries", 7th *International Conference in Materials for Advanced Technologies (ICMAT-2013)*, held during June 30 - July 7, 2013, at Singapore.

Mitra S., Sen U. K. and Tripathi A. M.

Presented a paper "Oxides to Sulfides- Understanding of Conversion reaction", 12th *International Materials Research Congress (IMRC-2013)*, held during August 11-15, 2013, at Cancun, Mexico.

Tripathi M. and Mitra S.

Presented a paper on "Graphene Tin Nano Composite for Anode of Lithium ion Battery", *International Conference on Nanotechnology, Nanomaterials & Thin Films for Energy Applications (NANOENERGY-2014)*, held during February 19-21, 2014, at University College London, London, UK.

Veluri P. S. and Mitra S.

Presented a paper on "Role of interactive binder on the high rate performance of \pm -FeO₃ nanotubes for lithium-ion batteries", *International Conference on Nanotechnology, Nanomaterials & Thin Films for Energy Applications (NANOENERGY-2014)*, held during February 19-21, 2014, at University College London, London, UK.

Neergat, M.

Participated in 4th *International Conference on Advances in Energy Research (ICAER-2013)*, held during December 10-12, 2013, at IIT Bombay.

Presented a paper "Peroxide generation features: An in-situ diagnostic tool in electrocatalysis of oxygen reduction reaction (ORR)", 223rd *Electrochemical Society meeting*, held during May 12-16, 2013, at Toronto, Canada.

Singh R.K. and Neergat M.

Presented a paper "The factors contributing to oxygen reduction reaction (ORR) activity improvement in Pd-based alloy catalysts", 223rd *Electrochemical Society meeting*, held during May 12-16, 2013, at Toronto, Canada.

Naresh N., Ladewig, B. and Neergat M.

Presented a paper "Shape-Controlled Core (Pd)-Shell (Pt) Catalysts for Electrocatalysis of ORR in Fuel Cells", 223rd *Electrochemical Society meeting*, held during May 12-16, 2013, at Toronto, Canada.

Suthar. B., Ramadesigan. V., De. S., Braatz. R. D. and Subramanian. V. R.

Presented a paper "Optimal Charging Profile for Mechanically Constrained Lithium-Ion Batteries", 224th *Electrochemical Society Meeting*, held during October 27 – November 1, 2013, at San Francisco, USA.

Lawder. M. T., Jagwani. A., Northrop. P. W. C., Ramadesigan. V., Biswas P. and Subramanian. V. R.

Presented a paper "Modeling and Optimal Control of Energy Storage Devices for a Lithium-Ion Battery-Photovoltaic Hybrid System", 224th *Electrochemical Society Meeting*, held during October 27 – November 1, 2013, at San Francisco, USA.

Rathore N. and Sarkar S.K.

Presented a paper "Effect of Different Anions on ZnO Morphology", 4th *International Conference on Advances in Energy Research*, held during December 10-12, 2013, at IIT Bombay, Mumbai.

Sinha S. and Sarkar S.K.

Presented a paper "Development of Zinc Oxide Based Transparent Conducting Oxide Material", 4th *International Conference on Advances in Energy Research*, held during December 10-12, 2013, at IIT Bombay, Mumbai.

Nandi D.K. and Sarkar S.K.

Presented a paper "Atomic Layer Deposition of Tungsten Oxide for Solar Cell Application", 4th *International Conference on Advances in Energy Research*, held during December 10-12, 2013, at IIT Bombay, Mumbai.

Ghosh S. and Sarkar S.K.

Presented a paper "Controlled Morphology of Electrodeposited CuSCN by Variation of Applied Bias Voltage", 4th *International Conference on Advances in Energy Research*, held during December 10-12, 2013, at IIT Bombay, Mumbai.

Sharma P.

Participated in International Conference *on Environment and Humanity*, held during September 29 - October 1, 2013, at Pokhara, Nepal.

Mondal S., Singh H.K., Bajpai V.K., Raval M., Singha B. and Sandeep S.S.

Presented a paper "Advances in c-Si Cell Processes Suitable for Near Future Commercialization", *International Conference on Energy Efficient LED Lighting and Solar Photovoltaic Systems*, held during March 26-29, 2014, at IIT Kanpur, India.

Tejwani R., Sannigrahi D., Chakravarthy B.K., Narayanan N.C. and Solanki C.S.

Presented a paper "Solar Lamp for Study Purposes: Design Perspectives", *4th International Conference on Advances in Energy Research*, held during December 10-12, 2013, at IIT Bombay, Mumbai.

Singh A.K., Bajpai V.K. and Solanki C.S.

Presented a paper "Effect of Light on Electroless Nickel Deposition for Solar Cell Applications", *4th International Conference on Advances in Energy Research*, held during December 10-12, 2013, at IIT Bombay, Mumbai.

Singha B. and Solanki C.S.

Presented a paper "Study of boron precipitates formed during front side emitter formation with boron spin on dopant (BSOD) diffusion in n-type c-Si solar cells", *The ISES Solar World Congress 2013*, held during November 2013, at Cancun, Mexico.

Tejwani R., Kumar G. and Solanki C.S.

Presented a paper "A new technique of using GSM voice channel in remote monitoring of solar photovoltaic systems", *The ISES Solar World Congress 2013*, held during November 2013, at Cancun, Mexico.

John J. J., Raval M. C., Kottantharayil A. and Solanki C. S.

Presented a paper "Novel PV Module Cleaning System using ambient moisture and self-cleaning coating", *39th IEEE PVSC*, Tampa, Florida, USA, 2013

Mondal S., Bajpai V. K. and Solanki C.S.

Presented a paper "Junction Depth Estimation using Wet Chemical Etching for Deep Junction Fabricated by Laser Doping", *39th IEEE PVSC*, Tampa, Florida, USA, 2013

Joshi A.P., Raval M.C., Kottantharayil A. and Solanki C. S.

Presented a paper "Inductively Coupled Plasma Atomic Emission Spectroscopy: A bulk analysis technique for monitoring silicon solar cell fabrication", *39th IEEE PVSC*, Tampa, Florida, USA, 2013.

Raval M. C., Joshi A. and Solanki C.S.

Presented a paper "Analyzing Impact of Background Plating from Alkaline Ni bath for Ni-Cu metallization", *39th IEEE PVSC*, held during 2013, Tampa, Florida, USA, 2013.

Mavilla N. R., Solanki C. S. and Vasi J.

Presented a paper "Structural, Optical and Electrical Properties of Silicon Nanocrystals Fabricated by ICPCVD for Next Generation Photovoltaics," *39th IEEE PVSC*, Tampa, Florida, USA, 2013.

Tatiparti S.S.V. and Ebrahimi F.

Presented a paper "Banded structure of the electrodeposited nanocrystalline Al-Mg alloy dendrites", *223rd Electrochemical Society meeting*, held during May 12-16, 2013, at Toronto, Canada.

Conferences/Symposia/Workshops/ Seminars (Coordinated/Chaired by Faculty)

Banerjee R.

Coordinated (along with Doolla Suryanarayana) the One day Workshop on "Demand Side Management in India" *Status and Future Prospects*, held on December 2, 2013, jointly organized by IIT Bombay & Shakti Sustainable Energy Foundation.

Bose M.

Chaired a session on "Combustion" at the *4th International Conference on Advances in Energy Research*, held during December 10-12, 2013, at IIT Bombay, Mumbai.

Co-Chaired a session on "Energy management" at the *4th International Conference on Advances in Energy Research*, held during December 10-12, 2013, at IIT Bombay, Mumbai.

Chaired a session on "CO₂ sequestration Coal Gasification", *Annual Thematic Symposium 2013 – 'Energy Futures'*, IITB-Monash Research Academy, held during November 29, 2013, at IIT Bombay, Mumbai.

Doolla S.

Chaired the Technical Program "*2013 Annual IEEE India Conference (INDICON)*", held during December, at IIT Bombay.

Chaired Publication session "*2013 Annual IEEE India Conference (INDICON)*", held in December 2013, at IIT Bombay, Mumbai.

Chaired a session "Distributed Generation and Microgrids", *2013 Annual IEEE India Conference (INDICON)*, held in December 2013, at IIT Bombay.

Organized National Level Workshop on "Demand Side Management: Status and Future Prospects", held in December 2, 2013, at IIT Bombay, Mumbai.

Co-Chaired a session “Control Technologies for Power Converter”, *IEEE Industrial Electronics Conference (IECON)*, held in November 2013 at Vienna, Austria.

Neergat M.

Chaired the session on “Fuel cell” at the *4th International Conference on Advances in Energy Research*, held in December 10-12, 2013, at IIT Bombay, Mumbai.

Tatiparti S.S.V.

Chaired a session on “Advanced Materials for Energy Storage and Conversion”, *4th International Conference on Advances in Energy Research*, held during December 10-12, 2013, at IIT Bombay, Mumbai.

Co-Chaired a session on “Fuel cell” *4th International Conference on Advances in Energy Research*, held during December 10-12, 2013, at IIT Bombay, Mumbai.

Chaired a session on “Energy Storage Materials, Fuel cells”, *Annual Thematic Symposium 2013 – ‘Energy Futures’*, IITB-Monash Research Academy, held November 9, 2013, at IIT Bombay, Mumbai.

Invited Lectures

National

Banerjee R.

“Simulation and Energy Analysis of Buildings,” *Innovations in Green Building Technology*, Nagpur, Keynote Lecture, January 18, 2014.

“Securing Cities for Energy Needs,” *IGIDR Silver Jubilee Conference on Cities and Sustainability*, October 30, 2013.

“Renewable Energy Options for Buildings,” Half Day ISTE Workshop on Green Building Awareness, under National Mission on Education through ICT, IIT Bombay, August 24, 2013.

“TIFAC Energy Technology Vision -2035,” IOCL R&D Technology Foresight Programme, August 3, 2013.

Keynote address “Green Energy: Powering Business,” *IEEE Conference Renewable Energy and Energy Efficiency-Paving the Path to Portability*, organised by IEE Bombay Section and Indo-German Chamber of Commerce, May 3, 2013.

“Energy Security for India: Challenges and Opportunities,” Canada India S&T meeting, New Delhi, April 5, 2013.

Bose M.

“Particulate Flow for Energy Applications”, IITB-Monash Research Academy Symposium at IIT Bombay, November 29, 2013.

Doolla S.

“Demand Response and Distributed Storage”, IIT Bombay -NUS Workshop on Energy Storage, February 25-27, 2014.

“Research and Development at DESE, IIT Bombay”, Exchange Program, Mälardalen University, Vasteras, November, 2013.

“Energy Management in Microgrids with Distributed Storage and Demand Response- A Multiagent Approach”, Microgrid Symposium, Santiago, Chile, September 11-13, 2013.

Kedare S. B.

“Integration approaches and issues for CST systems in industrial process heat”, Seminar on Concentrating Solar Thermal Technologies for Industrial and Commercial Applications, by Energy Conservation Mission, The Institution of Engineers (India) AP state centre, Hyderabad, June 28, 2013.

“Solar Dish Concentrators for Industrial Process Heat”, Short term training course on ‘Solar Radiation and Solar Thermal Technologies’, Centre for Energy Studies, IIT Delhi, April 18-24, 2013.

“Experience and results of LFR and PTC demonstration plants at SEC, Gurgaon”, International workshop on Design of Sub-systems for Concentrator Solar Power Technologies, Organized by IIT Jodhpur and Pandit Deendayal Petroleum University Gandhinagar, Hotel Taj Gateway, Jodhpur, December 19-21, 2013.

Mitra S.

Plenary talk on “Conversion Mechanism –An alternative to intercalation reaction of Lithium storage”, 5th National Symposium for Materials Research Scholars, MR-13, IIT Bombay, May 9, 2013.

“Lithium-ion Battery: Advances in New Anode and Cathode Materials”, 1st IIT Bombay NUS joint research workshop (‘ENERGY 2014’), IIT Bombay, Mumbai, February 24-25, 2014.

“Advanced High Energy Lithium and Sodium ion Battery Electrodes for Large Scale Storage”, 1st Series Symposium on Research Directions in Solar Energy - 2014, SERIUS, IISc, Bangalore, April 1-2, 2014.

“Metal oxide to sulphides: Understanding the conversion mechanism”, Indo-US workshop on Engineered Electrodes for Electrochemical Energy Storage, Chennai, India, April 3-4, 2014.

“Lithium and Beyond Lithium Battery Technology: Insights into Electrochemical and Nanostructural Properties”, Workshop on Computational Nanoscience, Center for Informatics, School of Natural Sciences (SoNS), Shiv Nadar University, March 30 – April 5, 2014.

Nayak J. K.

“Solar thermal power in India: IIT Bombay initiative”, IIT Delhi, February 7, 2014.

Neergat M.

“Stability issues of Pd-based catalysts”, IITB-Monash Research Academy symposium at IIT Bombay, November 29, 2013.

Sarkar S. K.

“From Potato Chip Bag to Solar Cells: Need of ultra thin films”, Laxmi Narayan College of Technology, August 2013.

“Atomic Layer Deposition of Ultra Thin Films”, Department of Physics, Bhopal University, August 2013.

Solanki C.S.

“Solar PV Solutions from mW to MW range”, Bhabha Atomic Research Center, BARC, Mumbai, July 2013.

“Introduction to solar PV technologies, Karunya University, Coimbatore, August 2013.

“Basics of Solar PV Technologies & Solar PV System Design”, SolarCon, Bangalore, August 2013.

“Solar PV Solutions from mW to MW range”, (Festival of Engineers, Administrators, Scientists, and Technocrats, FEAST) 2013, SSBT College, Jalgaon, August 2013.

“Futuristic c-Si Solar Cells”, 2nd Technology and Products for Solar energy Utilization through Networking (TAPSUN) Conference of CSIR, Chennai, September 2013.

“Basics and Current status of solar cell technologies”, Chamber of Marathwada Industry and Agriculture (CMIA) Energy Conclave, Aurangabad, September 2013.

“Solar Photovoltaic (PV) Technologies: Introduction and current status”, ASM International-India Chapter Astron Apartment, Mumbai, January 2014.

“Advance in C-Si Solar Cell Technologies”, Pt Ravishankar Shukla University, Raipur, India, March 2014.

International**Mitra S.**

“Conversion reaction and lithium ion battery”, IMRC 2013, Advanced Materials and Technologies for Energy Storage Devices section, Cancun, Mexico, August 11-15, 2013.

“Advanced electrode materials for lithium and eco-friendly post lithium secondary batteries”, Chemical Engineering Department, The City College of New York, NYC, USA, August 16, 2013.

Neergat, M.

“Electrocatalysis with precious and non-precious metal catalysts”, IITB-Monash Research Academy Symposium at Monash University, Melbourne, Australia, March 4, 2014.

“Electrocatalysis and membranes for fuel cell applications”, Chemical Engineering Department at Monash University, Melbourne, Australia, March 6, 2014.

Sarkar S. K.

“ALD grown Organic-Inorganic multilayer heterostructure”, International Workshop on Physics of Semiconductor Devices, Amity University, September 2013.

Sharma P.

Key note address at International Conference on Environment and Humanity, Pokhara, Nepal, September 29 - October 1, 2013.

Invited talk in TechEuphoria, Pillai College, Raigad, Maharashtra, February 14, 2014.

Tatiparti S.S.V.

“Porous carbon confined Mg-Ni-C nanocomposites for on-board vehicular hydrogen storage”, IITB-Monash Research Academy Symposium at IIT Bombay, November 29, 2013.

Significant Awards and Distinctions**Banerjee R.**

“IIT Bombay Review Paper Award 2012,” for the paper on “Comparison of Biohydrogen Production Processes”, *International Journal of Hydrogen Energy*, IIT Bombay, September 5, 2013.

Doolla S.

“Outstanding Volunteer Award”, IEEE Bombay Section for contribution to the activities in the Section, 2013.

First Prize, Portable Power Generation, GlobalTech Alliance Energy Challenge- Student Competition.

Linnaeus-Palme International Exchange Programme, Mälardalen University, Vasteras, Sweden.

Kedare S.B.

“National Award for Excellence in Energy Management 2013”, Confederation of Indian Industries (CII) to solar thermal concentrator Arun under the category of “Innovative Energy Saving Product Award”, August 20, 2013.

“Award for Solar Thermal Technologies category”, Intersolar Europe Munich, 2013.

Singh S.

“Bhaskara Advanced Solar Energy Fellowship”, Indo US Science and Technology Forum.

Sharma P.

“Outstanding Service Award”, International Association of Hydrogen Energy for altruistic contributions to the cause of hydrogen economy, January 2014.

Honorary Work**Banerjee R.**

Adjunct Professor (Honorary) in the Department of Engineering and Public Policy, Carnegie Mellon University, Pittsburgh, USA.

Member of Advisory Board, Energy Next Magazine, Indian Renewable Energy Development Agency Ltd.

Member of the Advisory Committee for ONGC Energy Trust.

Member of the academic Advisory Board of TERI (The Energy and Resources Institute) Higher Education and Professional & Reference Publishing Programme.

Associate Editor - Energy for Sustainable Development, Frontiers in Energy Research Process and Energy Systems Engineering and Member of Board of Editor of International Journal of Thermodynamics, International Journal of Sustainable Energy and International Journal of Sustainable Engineering.

Kavaipatti B.R.

Advisory committee member for National conference on “Recent Advances in New and Renewable energy”.

Kedare S.B.

Reviewed 5 papers for CTEP and Solar Energy

Mitra S.

Reviewed several research proposals for (CSIR) and DST projects Reviewed more than 38 research (international journal) papers

Nayak J.K.

Associate Editor, Solar Energy

Reviewed papers for Solar Energy, Energy for Sustainable Development and International Journal of Thermal Sciences

Member, R & D committee of Ministry of New and Renewable Energy, Government of India.

Neergat M.

Reviewed several international journal papers.

Ramadesigan V.

Reviewed international journal papers for IEEE Transactions on Industrial Informatics, IEEE Transactions on Systems, Man, and Cybernetics: Systems, Proceedings of the American Control Conference (ACC 2014).

Proceedings of the 5th International Symposium on Advanced Control of Industrial Processes.

Sarkar S.K.

Reviewed papers for Journal of Physical Chemistry C, Journal of Physical Chemistry Letters.

Sharma P.

Review committee, International conference on Environment and Humanity held at Pokhara, Nepal, September 31– October 2, 2013.

Review committee, 2. National Conference “Tech Streams”, Pillai’s HOC College of Engineering, Raigad, Maharashtra, February 21-22, 2014.

Review committee, International Conference on Non Conventional Energy (ICONCE 2014), January 16-17, 2014, India.

Reviewer for International Journal of Hydrogen Energy, Vacuum.

Surface and Interface Analysis, Material Science and Engineering.

Thin Films, Materials for Renewable and Sustainable Energy, Australian Journal of Chemistry, International Journal of Energy Technology and Policy, Nanoscience and Nanotechnology Letters, International Journal of Chemical Reactor Engineering, Materials for Renewable and sustainable energy.

Editorial Board Member for International Journal of Bio Sciences and Technology, Journal of Advance Research in Alternative Energy, Environment and Ecology, International Journal of Latest Technology in Engineering, Management & Applied Science.

Singh S.

Reviewed papers for Journal of Heat and Mass Transfer, International Journal of Heat and Mass Transfer, Solar Energy.

Doolla S.

Proposal Reviewer, Department of Science and Technology.

Reviewed papers for IEEE Transactions on Industrial Applications, International Transactions on Electrical Energy Systems, International Journal of Sustainable Energy, IEEE Transactions on Energy Conversion,

IEEE Transactions on Industrial Informatics, IEEE Transactions on Power Delivery, IEEE Transactions on Power Systems, IEEE Transactions on Industrial Electronics, IEEE Transactions on Smartgrid, IET Renewable Power Generation.

Tatiparti S.S.V.

Reviewed papers for Journal of Solid State Electrochemistry, Journal of Applied Electrochemistry, Metallurgical and Materials Transactions A.

Reviewed research proposals for CSIR, MHRD.

Faculty Members and their Specializations

1. Santanu Bandyopadhyay

Pinch analysis and Energy integration, Modelling and analysis.

2. Rangan Banerjee

Energy Efficiency, Energy Modelling, Hydrogen Energy.

3. Manaswita Bose

Complex Fluid Dynamics, Flow of Granular Materials, Multiphase flows, Computational Fluid Dynamics, Molecular Dynamic Simulation of Particulate Flows and Coal Gasification and Combustion.

4. Suryanarayana Doolla

Smart Grid, Micro-Grid and Distributed Generation, Power quality and communication protocols for industrial and commercial power systems.

5. Anuradda Ganesh

Thermo chemical conversion of biomass, Alternate fuels in engine.

6. Prakash Chandra Ghosh

Polymer Electrolyte Fuel Cell, Hydrogen generation and storage.

7. Rajesh Gupta

Characterization, modeling and simulation of solar cells and modules, Performance and Reliability of Photovoltaic, Infrared Thermography.

8. Balasubramaniam Kavaipatti

Materials development for artificial photosynthesis, photovoltaics, transparent conductors.

9. S.B. Kedare

Concentrating Solar Collectors, Industrial thermal hybrid systems.

10. Sagar Mitra

Electrochemical Energy storage, Lithium ion Batteries, Sodium-ion Batteries, Magnesium-ion battery, Nanostructured Materials, and Electrochemistry of Nanomaterials.

11. J.K. Nayak

Passive solar architecture, Solar thermal.

12. Manoj Neergat

Electrocatalysis, Fuel Cells, Electrochemical Energy Conversion, Microbial Fuel Cells, Shape-controlled Nanoparticles for Electrocatalysis.

13. Shaibal K. Sarkar

Sensitized Solar cells, Photoelectrochemistry, Nanocrystalline Materials for Photovoltaic applications, Transparent Conducting Oxides, Atomic Layer Deposition.

14. Pratibha Sharma

Hydrogen Storage, Thin films, Amorphous Semiconductors, Ion Irradiation, Chalcogenides.

15. Suneet Singh

Nuclear reactor thermal hydraulics and safety, Advanced numerical methods for neutron diffusion and fluid flow, Two-phase flow modeling.

16. Chetan Singh Solanki

Solar Photovoltaics, Thin film silicon solar cells, PV solar concentrators, Porous silicon, Carbon nano tubes (CNT's).

17. Sankara Sarma V Tatiparti

Hydrogen Storage, Electrofabrication of nano-structured materials, Polycrystalline nanodendritic growth.

18. Venkatasailanathan Ramadesigan

Modelling & simulation of electrochemical energy storage systems, optimisation of Li-ion batteries, Solar-PV- battery models, large scale energy storage.

Associate Faculty

Mechanical Engineering

19. Atul Sharma

Computational fluid flow and heat transfer.

20. S. Suryanarayanan

Automatic control, Mechatronics.

21. A. Sridharan

Two phase heat transfer, Experimental heat transfer.

22. S.V. Prabhu

Flow metering, Gas turbine blade cooling, Two phase flow and heat transfer.

23. R.P. Vedula

Convective heat transfer for external and internal flows.

24. A.W. Date

Numerical fluid flow and heat transfer, Appropriate technology.

25. J.B. Doshi

Nuclear reactor theory, Nuclear reactor safety, Analytical methods in engineering.

26. U.N. Gaitonde

Thermodynamics, Heat transfer engineering, Power plant engineering.

27. Kannan N. Iyer

Nuclear reactor safety, Thermal hydraulics, Applied numerical methods.

28. M.V. Rane

Waste heat recovery systems, Refrigeration systems, Heat pumps.

29. S.P. Sukhatme

Heat transfer, Energy.

30. Upendra V. Bhandarkar

Low pressure plasmas, Heat transfer and Thermodynamics, Statistical mechanics.

31. Bhalchandra Puranik

Gas dynamics, Shock-wave density interface interactions, Thermal hydraulics.

32. S.L. Bapat

Cryogenics, Refrigeration, Air conditioning.

Electrical Engineering**33. Vivek Agarwal**

Power conversion, Modelling and simulation of power electronic systems.

34. M.C. Chandorkar

Electrical drives, Power electronic converters and control.

35. B.G. Fernandes

Switch mode rectifiers and power supplies, Soft switching methods for SMPS.

36. S.A. Khaparde

Deregulation in power industry: optimal bidding and congestion management.

37. K. Chatterjee

Utility friendly converter topologies, Power factor correction techniques.

38. A.M. Kulkarni

Power system dynamics, Flexible AC transmission systems.

39. S.V. Kulkarni

Transformer design and analysis, Finite element method and computations.

40. S.A. Soman

Power system analysis, Restructuring of power systems.

Chemical Engineering**41. Chandra Venkatraman**

Aerosols and climate, Air pollution, Toxicity/Risk assessment.

42. Sanjay Mahajani

Underground coal gassification, Reaction engineering, Bio-fuels

43. R.K. Malik

Process modeling, Simulation, Energy Integration.

Aerospace Engineering**44. K. Sudhakar**

Multidisciplinary design optimization.

Metallurgical Engineering and Material Science**45. Rajiv O. Dusane**

Synthesis and characterization of amorphous and microcrystalline thin films.

Centre for Environmental Science and Engineering**46. Virendra Sethi**

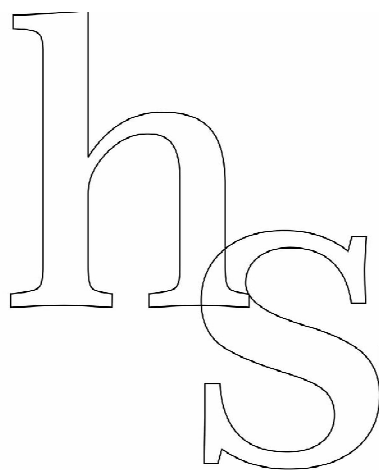
Combustion aerosols, Energy and environment.

Centre for Technology Alternatives in Rural Areas**47. N.G. Shah**

Post Harvest Process Engineering, Small Scale Renewable Energy Applications and Agro-based Industrial Development.

48. Anand B. Rao

Energy and environment, Climate change, Carbon capture and sequestration.



Humanities & Social Sciences

Introduction

The Department of Humanities and Social Sciences (HSS) plays a distinctive and significant role, at IIT Bombay where the ethos of science and technology prevails, the utmost. It is believed that science and engineering are, by their very nature, humanistic and socially derived enterprises, and of late the world is vehemently looking forth for establishing a proper linkage between a technologically progressive and ethically strong society.

By relating the science and technology education to liberal arts and social sciences, IITs in the country, have strived to fulfill the above philosophy of ideal education. The Department of HSS plays a crucial role in fostering awareness and knowledge of the nature of human inquiry, the socio-economic human conditions, and a thoughtful application of science and technology to attain sustainable development. The department pledges itself to help the Institute to become a true world leader in teaching and research by nurturing an atmosphere of creativity, innovation and scholarship in its unending quest for excellence.

The department has 37 faculty members from five disciplines, viz., Economics, English, Philosophy, Psychology, Sociology, and areas touching upon the Cell for Indian Science and Technology in Sanskrit (CISTS).

Important MoUs and Collaborations

Through the Dean (R&D), the Department signed an MoU with Sanskrit Library, USA for the duration of three years (2012- 2015). This MoU aims to facilitate collaboration between international scholars working in the field of Sanskrit Computational Linguistics under the banner of Sanskrit Library and IIT Bombay.

The Department continued its collaboration with Faculty of Asian and Middle Eastern Studies, and University of Cambridge.

Academic Programmes

The Department participates in both the undergraduate and postgraduate teaching programmes of the Institute.

UG Programme

The guiding principles for the teaching programme at the Undergraduate level are:

- To combine technical education with General / Liberal education with a view to provide complete education.
- To sensitize students to broader economic, social and humane issues that affect the professional and personal lives of the engineering and science students.
- To prepare the students not only for a specialized job, but also cultivate good intellectual habits, skills, and understanding that any educated person should have regardless of the kind of profession s/he undertakes.

The Department endeavours for realizing these objectives by offering the following courses at the under-graduate level: One core course in Economics in the first semester, four introductory courses in Humanities and Social Sciences (English Literature, Philosophy, Psychology and Sociology) in the third semester, followed by a number of electives offered by the different constituent disciplines in the seventh and eighth semesters. A compulsory course on environmental studies is also offered to the B.Tech. students. A two-semester course in Remedial English is offered to the students of the Preparatory Course. The department also offers set of courses to be chosen by the undergraduate students interested in getting a Minor in Humanities and Social Sciences.

PG Programme

At the post-graduate level, the Department participates in teaching courses for M.Tech./Ph.D. students (at the Institute level) and offers full-fledged M.Phil. & Ph.D. programmes at the Department level. It also offers communication skills as a compulsory course for both M.Tech. and Ph.D. students.

M.Phil Programme in Planning and Development

A four-semester interdisciplinary M.Phil. programme with specialization in Planning and Development was launched in July 1993. The programme with a theoretical-practical thrust provides the students with a holistic understanding of socio-economic reality and the role of technology. It also acquaints them with the various stages and levels of expertise involved in the formulation and implementation of development policies that can bring about a sustainable, stable, and desirable development. With such training that includes coursework, field visit and dissertation work, it is expected that the students completing this programme will be equipped with the requisite competence to contribute in the national, state and regional planning and developmental processes.

There are 33 students pursuing the M.Phil. Programme presently.

Ph.D. Programme

The Ph.D. programme offered by the Department is generally discipline oriented and runs in five disciplines and areas related to the Cell for Indian Science and Technology in Sanskrit. There is also ample provision to do research in interdisciplinary areas.

In the year under review 13 students of this department will be awarded Ph.D. degree.

Degrees Awarded

M. Phil	:	12
PhD	:	13

R & D Activities

Details about Sponsored projects and Consultancy jobs undertaken by the faculty of the department during the year 2013-2014, are given below :

Sponsored Research Projects :

New	:	4
Ongoing	:	11
Completed	:	5
Faculty Involved	:	8

Consultancy Projects:

No. of Jobs	:	4
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List of Sponsored Research Projects

Sr. No.	Title of the Project	Sponsor	Status
1	Integrated Impact Assessment Study for Mithi River	Mumbai Metropolitan Region Development Authority (MMRDA)	Ongoing
2	Indian Language Corpora Initiative (ILCI)-Phase 2	Department of Information Technology (DIT)	Ongoing
3	Development of Lexical and Syntactic Corpus of Sanskrit	National Endowment for Humanities, USA, through Sanskrit Library, USA.	Ongoing
4	Developing automated text-image alignment of Sanskrit Manuscripts	National Endowment for Humanities, USA, through Sanskrit Library, USA.	Ongoing
5	Development of Dependency Tree Bank for Indian Languages	DIT	Ongoing
6	Towards a critical edition of the Kasikavrtti	British Academy, UK.	Ongoing
7	District Human Development Report for Uttara Kannada	Government of Karnataka	Ongoing

Sr. No.	Title of the Project	Sponsor	Status
8	District Human Development Report for Koppal District	Government of Karnataka	Ongoing
9	Resettlement and Rehabilitation for Upper Krishan Project (Phase III)	Krishna Jal Bhagya Nigam Limited	Ongoing
10	Water Accounts (under Socio-Economic-Cultural Group): Ganga River Basin Management Plan	Ministry of Environment and Forests	Ongoing
11	Total Factor Productivity in India's Manufacturing Sector: Macro and Micro Dimensions	Tata Economic Services	Ongoing
12	The economics of ecosystems and biodiversity for Western ghats	GIZ and MOEF, carried out in collaboration with Indian Institute of Sciences, Bangalore	Ongoing
13	Climate Financing in different States of India	Shakti Foundation and DFID project jointly carried out with Institute for Financial Management Research	Ongoing
14	Goal-directed future cognition: Neural and cognitive mechanisms underpinning the successful completion of planned and intended behaviour and actions	UGC-UKIERI Thematic Partnership	Ongoing
15	Identification and Assessment of Factors Responsible for Low Participation of Muslim Girls in Kasturba Gandhi Balika Vidyalaya (KGBV) in Uttar Pradesh and Bihar	Indian Council of Social Science Research, New Delhi	Ongoing
16	Solid Waste Management in Mumbai: An Alternative Paradigm	CLEAN-Sweep Forum	Completed
17	Development Policy Loan to support feasibility of greensustainable development in Himachal Pradesh	World Bank	Completed
18	Bidirectional Scriptal Dexterity and Developmental Dyslexia: An Eyetracker Study	IRCC, IITB	Completed

Visitors to the Departments

Dr. Sebastian Velassery, Professor, Department of Philosophy, Panjab University, Chandigarh, delivered a lecture on "Socratism" on March 27, 2014.

Dr. Anne Cheng, Professor, Chair of Intellectual History of China at Collège de France, Paris, delivered a lecture on "Is there a 'Chinese Way' to Democracy?" on February 27, 2014.

Dr. William Edelglass, Professor of Philosophy and Environmental Studies, Marlboro College, Vermont, USA, delivered a lecture on "The Dharma of Mountains and Waters: Buddhism, Ecology and Nature," on March 26, 2014.

Prof. Brendan Gillon, University of McGill, Canada visited the Department as Visiting Professor during January 1- April 30, 2014.

Conferences/Symposia/Workshops/ Seminars (Participated/Papers Presented)

International

Bhattacharyya Surajit, Bagchi, S. and Narayanan, K.
Presented a paper on “Is anti-dumping a form of retaliation threat in world trade?” at the *VI National Graduate Students in Economics Conference (CNEPE)*, in Bahía Blanca, Argentina, May 23- 24, 2013.

Deb, K.

Presented a paper on “Postcolonial Urban Theory: A critical appraisal,” in International Conference on *The Social Dynamics of the Urban conducted by the Indian Institute of Advanced Study (IIAS)*, along with School of Advanced Studies, University of London and South Asian Studies Council, MacMillan Centre, Yale University, on June 10-11, 2013.

Haripriya G. S.

Presented a paper on “Integrating national accounts into environment,” at *Asia Region workshop on Valuing and Accounting for the environment*, held during October 8-10, 2013.

Khan, Azizuddin

Presented a poster on “Time estimation deficit in developmental dyslexia,” at the International Workshop on *Reading and Developmental Dyslexia* at Basque Center on Cognition, Brain and Language, Donostia San Sebastian, from May 30- June 1, 2013, Spain.

Made an oral presentation on “Impulsivity & Task Condition in Prospective Memory Performanc: Converging evidence from experimental and questionnaire study,” at *5th International Conference in Cognitive Sciences (ICCS 2013)*, Tehran, from May 7-9, 2013, Iran.

Kulkarni, Malhar

Presented a paper on “Adaptive use of the descriptive technique of Pāṇini by non-pāṇinian grammatical traditions with a special reference to the derivation of the declension of 1st and 2nd personal pronouns of Sanskrit,” at *32nd Deutscher Orientalisten Tag (DOT)*, University of Muenster, Muenster, during September 24-28, 2013, Germany.

Kulkarni Malhar, Bhingardiwe Sudha, Ajotikar, T., Kulkarni, I. and Bhattacharyya, P.

Presented a paper on “Semi-automatic population of Sanskrit Wordnet”, at the *7th Global Wordnet Conference*, University of Tartu, Estonia, during January 24-29, 2014.

Kulkarni Malhar, Ajotikar Anuja and Ajotikar Tanuja

Presented a paper on “Complementary application of traditional systems of Śābdabodha” at a Conference

on *Sanskrit syntax and discourse structures*, at Université Paris Diderot, during June 13-15, 2013, Paris.

Kulkarni Malhar, and Katira Dipesh

Presented a paper on “Parse trees for erroneous sentences” at a Conference on *Sanskrit Syntax and Discourse Structures*, at Université Paris Diderot, during June 13-15, 2013, Paris.

Kulkarni, Mrinmoyi

Presented a paper on “Mental Health of Slum Residents in Mumbai,” at the *Asian Association of Social Psychology at Yogyakarta*, Indonesia, in August 2013.

Narayanan, K. and Thomas, R.

Presented a paper on “Outward FDI, Exports and Technological Efforts: A Study of Indian Manufacturing Firms,” at the *Eighth Annual: Empirical investigations in Trade and Investment Conference*, in Phuket, during March 20-22, 2014, Thailand.

Narayanan, K. and Sahu, S.K.

Presented a paper on “Exports and Participation in Clean Development Mechanism (CDM) in Technology Intensive Industries in India,” at the *VIII Annual International Conference of Knowledge Forum on “Emerging Technologies and Development*, at IIT Bombay, during October 25-27, 2013, Mumbai.

Parthasarathy, D.

Presented a paper on “Informality, Resilience, and the Political Implications of Disaster Governance,” at the International Conference on *Disaster Governance: The Urban Transition in Asia*, Asia Research Institute, National University of Singapore, November 7-8, 2013, Singapore.

Presented a paper on “The Poverty of (Marxist) Theory: Peasant Classes, Provincial Capital, and the Critique of Globalization in India”, at a Conference on *The Global E. P. Thompson: Reflections on the Making of the English Working Class after Fifty Years*, Harvard University, October 3-5, 2013.

Presented a paper on “The Eccentricity of Global - Regional Linkages: Provincial Capital and Divergent Urban Growth Patterns in Coastal Andhra,” at an International Conference on *Regional Towns and Migration: Interrogating Transnationalism and Development in South Asia*, University of Amsterdam, October 10-11, 2013.

Presented a paper on “Global Flows Or Rural-Urban Connections? Temporality, Public Spaces and Heterotopias In Globalizing Mumbai”, at the Conference on *The Social Dynamics of the Urban*, Indian Institute of Advanced Study, Shimla, June 10-11, 2013.

Baghel Deepmala and Parthasarathy, D.

Presented a paper on “Pursuing body beautiful: Men’s beauty aesthetics within the space of the beauty parlor”,

3rd Global Conference on Beauty: Exploring Critical Issues, Harris Manchester College, Oxford, United Kingdom, September 13-15, 2013.

Sharma Sneha and Parthasarathy, D.

Presented a paper on "Solid Waste Management in Developing Countries: Challenges in Governance and Policy Making", at *Global Urbanisation: Challenges and Prospects - The International Conference of the Regional Studies Association*, University of California, during December 16-18, 2013, Los Angeles.

Pal, Rama

Presented a paper on "Health Care Utilization, Inequalities and Public Policy in India," at *Faculty Alumni Meet - 2013* at Washington University at St. Louis, St. Louis, in October 2013, USA.

Radhakrishnan Ratheesh

Presented a paper on "A Letter to Kim Ki Duk: World Cinema, Film Festival and Regional Culture," at the Conference on *Beyond Culture Industries: Inter-Asia Cultural Studies*, organized at the National University of Singapore, July 2013.

Kochi: In Three Parts presented at The Many Lives of Indian Cinema: 1913-2013 and beyond: Disciplines, Histories, Technologies, Futures organized by the Centre for the Study of Developing Societies (CSDS) in New Delhi, January 2014.

Sebastian, C. D.

Presented a paper on "Language, Meta-language in the Madhyamika Buddhist Thought," at *Third International Conference on the Eastern Thought*, (theme of the third Conference: 'Word in the Cultures of the East: Sound – Language – Book'), organized by Eastern Philosophy Section of the Institute of Philosophy, Jagiellonian University, Krakow, held during November 28-30, 2013, Poland.

Presented a paper on "The Semiotics of Caityas, Stupas and Pilgrimages: A Buddhist Philosophical Appraisal," at the International Seminar on *Shrines and Pilgrimages: Philosophical Perspectives*, organized by Satya Nilayam Research Institute, University of Madras, held on January 16-17, 2014, Chennai.

Shastri, Sudha

Presented a paper on "Literary Migrations, Cultural Transformations: From A Midsummer Night's Dream to Kamdev ka Apna, Vasant Ritu ka Sapna," at the *International Multidisciplinary Conference Transcultural Imaginaries* organised by the Centre for Liberal Arts and Social Sciences, and Division of English, Nanyang Technological University, during June 14-17, 2013, Singapore.

National

Bairy Ramesh, T. S.

Presented a paper on "Limits of secularizing caste: Ambedkar and the Caste Question," in the *National Conference on Caste, religion and reservation, with special focus on Dalit Muslims and Dalit Christians*, at Jamia Millia Islamia, held on November 19-20, 2013, New Delhi.

Bhat, P.R

Presented a paper on "Daya on Alternative Perspective on Indian Philosophy," in *ICPR National Seminar on Philosophical Reasoning*, at Department of Philosophy, Rajasthan University, January 13-15, 2014, Jaipur.

Delivered a keynote address on "The Importance of Buddhist Applied Philosophy," in *UGC National Seminar on Buddhist Applied Philosophy*, Centre for Mahayana Buddhist Studies, Acharya Nagarjuna University, during January 30-31, 2014, Guntur.

Presented a paper on "Buddhism and Corporate Social Responsibility," in *UGC National Seminar on Buddhist Applied Philosophy*, Centre for Mahayana Buddhist Studies, Acharya Nagarjuna University, during January 30-31, 2014, Guntur.

Presented a paper on "A Theory about Modernism and Post-Modernism," in the Seminar on *Postmodern Paradigm*, Organized by Department of Philosophy under Special Assistance Programme, North Bengal University, from March 13-14, 2014, Silligudi.

Presented a paper on "Philosophical Significance of Personal Identity," in *National Seminar on Personal Identity*, organized by Department of Philosophy, during March 23-24, 2014.

Deb, K.

Presented paper on "The Right to the City Debate: A Critical Appraisal," in Interdisciplinary National Seminar on *Contradictions in Development in the Globalising South: A Spatio-Social Perspective*, organized by Department of Geography, University of Mumbai, on February 25-26, 2014.

Invited as Resource Urban Studies' Person for IEG-ICSSR sponsored workshop on *Social Science Approaches*, held at The International Centre Goa, on December 20-23, 2013.

Invited to speak on the occasion of release of the special issue of Sociological Bulletin on "The Bombay School of Sociology: The Stalwarts and their Legacies," organized by the Department of Sociology, University of Mumbai and Indian Council of Social Science Research, Western Regional Centre, on September 16, 2013, Mumbai.

Kulkarni, Malhar

Presented a paper on “Rule conflict issues in the derivation of bhavyeH,” at *Brihan Maharashtra Oriental Conference*, November 2013, Pune.

Presented a paper on “Sources of Intellectual History: Sanskrit Grammatical Thought during 1400-1700 CE” at a *National Seminar* organized by Tilak Maharashtra Vidyapeeth, February 20-21, 2014, Pune.

Presented a paper on “Process of Speech Production,” in a *National Seminar* organized by Rashtriya Sanskrit Sansthan, on March 5-6, 2014, Mumbai.

Nath Rajakishore

Presented a paper on “The Science of Phenomenal Consciousness: Insights from Buddhist Perspective,” at the UGC National Seminar on *Buddhist Applied Philosophy* organized by Centre for Mahayana Buddhist Studies, Acharya Nagarjuna University, Guntur, on January 30-31, 2014, Andhra Pradesh.

Presented a paper on “The Mind-Brain Problem in Artificial Intelligence,” in the *Brain Awareness Seminar on Brain, Behavior and Neuroimaging*, organized by the Psychophysiology Laboratory, Department of Humanities and Social Sciences, IIT Bombay, November 15-16, 2013, Mumbai.

Presented a paper on “Swami Vivekananda’s Idealism as Philosophy of Education,” in the UGC National Seminar on *Incorporation of Swami Vivekananda’s Thoughts in the Curriculum of Contemporary Education System*, held at The M. S. University of Baroda, October 21, 2013, Vadodara.

Pal, Rama

Presented a paper on “Inequality in Maternal Health Care Utilization in India: A Shapley Decomposition Analysis,” at the *Indian Econometric Society Conference* at IGIDR, held in December 2013, Mumbai.

Baghel Deepmala and Parthasarathy, D.

Presented a paper on “Harnessing Tacit knowledge for Innovation: Study of Ayurvedic Cosmetics MSMEs in Mumbai”, at the *VIII Annual Conference, Forum for Global Knowledge Sharing*, at IIT Bombay, in October 2013, Mumbai.

Panda, R. K.

Presented a paper on “Language, Institution and Ontology: Remnants of Builder’s Language-Game and Performatives,” in the *UGC-SAP National Seminar on Language and Mind: 20th Century Perspective*, Department of Philosophy, Jadavpur University, from January 29-30, 2014.

Presented a paper on “Question of Environmental Concern: A Buddhist Contemplation,” (co-authored) *UGC National Seminar on Buddhist Applied*

Philosophy, Department of Buddhist Studies, Acharya Nagarjuna University, from January 30-31, 2014.

Presented a paper on “The Other Aspects of Ashram Activities: Ecological Harmony and Resource Management from the Gandhian Perspective,” (co-authored) in UGC-SAP National seminar on *Sustainable Management of Natural Resources: Challenges and Responses*, Department of Rural Development and Social Work, S. K. University, Ananthapur, from March 24-25, 2014.

Pattanaik Sarmistha

Presented paper on “Displaced by Development: Does Compensation bring them justice?”, at the National Seminar on *Frontiers of Development Practices in India: Reconfiguring the Development of Underdevelopment*, at Department of Sociology, Ravenshaw University, Cuttack, held during April 13-14, 2013, Odisha.

Sebastian, C. D.

Presented a paper on “Buddhist Preceptor Tradition and Social Transformation: The Hermeneutics of a Historical Legacy,” in the ICPR National Seminar on *Guru Tradition, Cultural Creativity and Social Change*, at Santhigiri Institute for Culture and Human Development (SICHD), on November 21-22, 2013, Thiruvananthapuram.

Presented a paper on “Daya Krishna on Apoha: A Critique on his Way to Comparative Philosophy,” in the ICPR National Seminar on *Philosophical Reasoning* held at the Department of Philosophy, University of Rajasthan, during January 13-15, 2014, Jaipur.

Trivedi Pushpa

Presented a paper on “Media Economics,” at the Seminar on *Media, Economy and Politics in India*, Department of Political Science, Karnatak University, April 1, 2013, Dharwad.

Conferences/Symposia/Workshops/ Seminars (Coordinated/Chaired by Faculty)

International**Narayanan, K.**

Organised an International Conference on *Emerging Technologies and Development* in collaboration with Knowledge Forum and KU Lueven University, Antwerp, Belgium, at IIT Bombay, in October 2013, Mumbai.

Khan, Azizuddin

Conducted a seminar on *Brain, Behaviour and Neuroimaging* by psychophysiology laboratory, Department of Humanities and Social Sciences, IIT Bombay from November 15-16, 2013, Mumbai.

Working Papers

Narayanan, K. and Sahu, S.K.

“Carbon Dioxide Emissions from Indian Manufacturing Industries: Role of Energy and Technology Intensity,” MSE Working Paper No. 82, Madras School of Economics, Chennai, India.

Narayanan, K. and Singh, A.P.

“Issues in Modelling Agriculture Response to Climate Change,” MPRA, 2013, paper 51410.

“Determinants of Agricultural Land Expansion: Evidence from Indian States,” SSRN 2202053, 2013.

Parthasarathy, D.

“Theorizing Provincial Capital: Peasants, State, and Economic Transitions in India”, Workshop on *Rethinking Economic History: Circulation, exchange and enterprise in India*, Nehru Memorial Museum and Library, New Delhi, March 14-15, 2013, NMML Working Paper series, (Peer Reviewed)

Invited Lectures

International

Haripriya G. S.

Delivered a keynote address on “Ecoproductive Cities,” at the *Auroville Green Practices Conference*, in Auroville, from September 6-7, 2013, Pondicherry.

Delivered an invited talk on “Urban Biodiversity, Ecosystem services and Design-How to go forward in India,” at the workshop on *Global Research Agenda for Urban Biodiversity, Ecosystem Services and Design*, during July 19-22, 2013, Erfurt.

Delivered a plenary address on “Environmental Justice,” at the Second South Asian Judges Round Table, at Taj Tashi Hotel, Thimpu, August 29-30, 2013, Bhutan.

Presented “Human Capital Estimation,” Engagement workshop on *Inclusive wealth report*, at UNESCO Headquarters, during August 29-30, 2013, Paris.

Delivered a key note speech on “The valuation of ecosystems and biodiversity for climate change mitigation and adaptation,” in *2013 International Biodiversity Conference*, City of Joondalup, Perth, during September 9-11, 2013, Australia.

Khan, Azizuddin

Delivered a lecture on “Realization of Consumer Intention: Prospective and Retrospective Memory Approach,” at Institute of Management Studies (IMS), Ghaziabad, on February 4, 2014, Uttar Pradesh.

Kulkarni, Malhar

Delivered a lecture on “Features of transmission of Sanskrit grammatical texts”, University of Cambridge, Cambridge, on June 21, 2013, UK.

Delivered a lecture on “Sabdakaustubha: It’s importance in the commentatorial literature of Sanskrit Grammar”, University of Cambridge, Cambridge, on May 25, 2013, UK.

Narayanan, K.

Coordinated the Faculty Alumni Network meeting on the theme Public Policy held at Washington University, St. Louis, USA, on October 19, 2013.

Attended a workshop and deliver a talk as a resource person on ASIA-Pacific Regional Initiative on Energy, Environment and Ecosystems (3E) NEXUS for Sustainable Development, organized by the University of Tokyo at Maldives during February 2014.

Parthasarathy, D.

Delivered ICCR Public Lecture on “Inequality, Secularisation, and Democratisation of Religion: Recast(e)ing the Secularism Debate in India”, by the High Commission of India, Singapore, and the National University of Singapore, January 24, 2014.

Delivered a Colloquium lecture on “Aspirations for Religion, Caste, Secularization and the Cacophony of Religious Performance in Mumbai”, Religious Diversity Colloquium, Max Planck Institute for the Study of Religious and Ethnic Diversity, Gottingen, Germany, May 14, 2013.

Delivered a lecture on “Translocal Urbanism and the Performance of Religion: Faith, Ritual, and Labour in Mumbai, Singapore, and Bangkok”, Zentrum Moderner Orient, Berlin, April 16, 2013.

National

Bairi Ramesh, T. S.

Delivered a lecture on “Studying Brahmins” for the Master’s Course titled Caste, State and Politics in South Asia at the Tata Institute of Social Sciences, Mumbai, in February 2014.

Delivered four lectures on “Sociology in India and caste studies,” at the Tata Institute of Social Sciences, Tuljapur, in February 2014.

Bhat, P. R.

Delivered a lecture on “Engineering Ethics,” at IIT Hyderabad, on February 3, 2014.

Chakraborty Paulomi.

Delivered a lecture on “Women of the Partition: Gender and the Political,” Interrogations: Gender, Sexuality, and the Political, School of Language, Literature, and

Cultural Studies, Central University of Gujarat, during March 18-19, 2014.

Deb, K.

Delivered an invited lecture on “Impact of neo-liberalism on Urban India,” at the Krantijyoti Savitribai Phule Women’s Studies Centre, University of Pune, on March 22, 2014.

Kulkarni, Malhar

Delivered a lecture on “Sarada script” by Center for Extra Mural Studies, University of Mumbai, on February 10, 2014.

Panda, R. K.

Delivered a lecture on “Philosophical Approaches to Social Research,” ICSSR Research Methodology Course, conducted by Centre for Rural Development, Annamalai University, Annamalai Nagar, on (Pre-Lunch Session I & II) January 24, 2014, Tamil Nadu.

Delivered a lecture on “Environmental Ethics” in series of Ethics and Value at Department of Liberal Arts, Indian Institute of Technology Hyderabad, February 17, 2014.

Radhakrishnan Ratheesh

Writing to Kim Ki Duk, Talking with Zanussi: World Cinema, Film Festival and the Subject of the Region at School of Arts and Aesthetics, Jawaharlal Nehru University (JNU, New Delhi), March 2014.

Ramanathan, A.

Delivered two sessions of special invited key lectures on “Research Methodology,” for the PG students of Rajasthan Central University, during January-March, 2014.

Trivedi Pushpa

Delivered a lecture on “Types and Research Designs: Exploratory, Diagnostic and Descriptive: Research Methodology in Social Sciences,” organized by Bharati Vidyapeeth Deemed University, YCISSSR, Pune, on December 10, 2013.

Delivered a lecture on “Sustainable Socio-Economic Development,” at the Conference on *Sustainable Development & Planning-2013*, organized by & held at Central University of Karnataka, Gulbarga, September 6-7, 2013, Karnataka.

Delivered a lecture on “Health Problems of Elderly in India,” at the National Conference on *Health and Nutrition Among Elderly*, organized by: Department of Studies and Research in Sociology, Karnataka University Dharwad, Dharwad, May 22, 2013.

Delivered a presentation on “Productivity, Growth & Employment in the Indian Manufacturing Sector,” at the *National Conclave on Growth, Distribution &*

Redistribution, organized by Department of Economics (Autonomous), University of Mumbai & Centre for Budget & Governance Accountability (CBGA), RBI Unit in Monetary Economics, Walchand Hirachand Chair in Transport Economics & D.T. Lakdawala Chair in Planning and Development, at University of Mumbai, on March 5, 2014, Mumbai.

Significant Awards/Distinctions

Bairy Ramesh, T. S.

Awarded the Charles Wallace India Trust Fellowship for 2013-14 to spend three months at the School of Oriental and African Studies (SOAS), University of London by SOAS.

Deb, K.

Invited as Visiting scholar by the Centre for Advanced Studies (CAS) of the Centre for the Study of Social Systems (CSSS), Jawaharlal Nehru University from January 19-28, 2014.

Partner applicant in the Shastri research grant awarded by the Shastri Indo- Canadian Institute for 2013-14. The grant is to work in collaboration with Dr. Nick Dyer-Witherford (lead applicant) of the University of Western Ontario, Canada.

Khan Azizuddin

Awarded Visiting Researcher by Erasmus Mundus India To Europe (EMINTE) scholarship to visit University of Warsaw, Poland, 2014-15.

Awarded Visiting Scientists by Indian National Science Academy under International Collaboration / Bilateral Exchange Programme, at Erciyes University, Turkey, 2014-2015.

Kulkarni, Malhar

Latkar Shastri Award carrying a shawl, an asanad and a cash award of Rs. 50,000/- by the Maharashtra Seva Sangha, Mulund, Mumbai, November 23, 2013.

Member of a National Committee to review the recommendations of the 1st Sanskrit Commission, MHRD, Govt. of India.

Parthasarathy, D.

ICCR Visiting Chair Professorship, National University of Singapore (Chair Professorships Instituted by Ministry of External Affairs, Government of India)

Member, Editorial Board, Aceh International Journal of Social Sciences (2009-present)

Advisor, Editorial Board, Development Review (2011-present)

Associate Editor, ARI-Springer Asia Series (Cities), 2009-present

Commission on Legal Pluralism, International Union of Ethnological and Anthropological Sciences (Elected Board Member, 2013-15)

Sebastian, C.D.

Editor, Journal of Sacred Scriptures (ISSN 0974-0090)

Erasmus Mundus EMINTE Scholarship 2014-2017

Honorary Work**Deb, K.**

Reviewed papers for Sociological Bulletin in 2014

Reviewed manuscript for Oxford University Press in 2013

Khan Azizuddin

Reviewer of Journals Interscience

Reviewer of Journals Psychological Studies

Kulkarni, Malhar

Review of Journal articles for the Annals of the Bhandarkar Oriental Research Institute, Pune.

Member of Programme Committee, International Conference on Natural Language Processing, CDAC-Noida, 2013.

Member of Programme Committee, Linguistic Resource and Evaluation Conference, Rikjevic, 2014.

Kulkarni, Mrinmoyi

Reviewed papers for Psychological Studies.

Nath, Rajakishore

Reviewed article for Philosophy Study and Philosophical Papers & Reviews

Parthasarathy, D.

Reviewed papers for Asian Journal of Social Science, Asian Perspective, and Singapore Journal of Tropical Geography; Reviewed Research Proposals for Austrian Climate Research Program; Reviewer for IPCC 5th Assessment Report; Reviewed book proposals for Springer and Routledge (Taylor and Francis) Publishers.

Examiner of M.Phil dissertation from Tata Institute of Social Sciences, and Ph.D dissertations from Jawaharlal Nehru University and National University of Singapore.

Member, Selection Committee, IIT Delhi.

Member, Urban Aspirations Committee, Urban Aspirations in Asia Project, (Tata Institute of Social Sciences, and Max Planck Institute for Religious and Ethnic Diversity, Gottingen); review and mentoring of proposals, and research fellows.

Pal Rama

Reviewed papers for international peer-reviewed journals including International Journal of Health Care Finance and Economics, Bulletin of World Health Organization, and Journal of International Development.

Ramanathan, A.

Guest Professor at Indian Institute of Technology Gandhinagar for two years since December, 2012.

Designated by Government of India as Visitor's Nominee for 20 Old NITs in the country [for the stream of Humanities and Management] for three years from June, 2013.

Sebastian, C.D.

Reviewed the Manuscripts of the Book for Oxford University Press.

Trivedi, Pushpa

Member of the Court, Manipur University

Member on the Subject Board of the Autonomous Department of Economics, University of Mumbai.

Faculty Members and their Specialisations**Economics****1. A. Ramanathan**

Managerial Economics, Applied Econometrics, Monetary Economics.

2. P.L. Trivedi

Open Economy Macroeconomics, International Trade and Finance, Indian Economy, Environmental Economics.

3. K. Narayanan

Industrial Economics, Multinationals and Technology Transfer, Industry-Environment Linkages, International Trade, and Socio Economic Impacts of Climate Change.

4. Haripriya G.S.

Development economics, environmental economics, climate change, Green Accounting.

5. Puja Padhi

Financial Economics, Monetary Economics.

6. Surajit Bhattacharyya

Macro Economics, Industrial Economics, and Corporate Investment.

7. Rama Pal

Applied Econometrics, Development Economics, Health Economics.

8. Tara Shankar Shaw

Applied Microeconomics, Development Economics, Corporate Governance, Labor and Demographic Economics, Econometrics.

9. Conan Mukherjee

Mechanism design, Bargaining and Group formation and Auction theory.

English**1. M.S. Malshe**

Modern Critical Theory, Aesthetics, Linguistics and English Language Teaching.

2. Neelima Talwar

Creativity and Creative Writing discourses, Science as a Cultural Construct in Literary/Performative Genres with special focus on Science-Drama.

3. Sudha Shastri

Novel, Victorian Studies, Postmodern Literature and Intertextual theory.

4. Vijayanthi Sarma

Syntactic theory, First language acquisition, Linguistic deficits, Language processing, Conservation of endangered languages (especially Dravidian minority languages).

5. Sharmila

Women's Studies, Autobiography Studies, "Crisis" in English Studies, African American Writing.

6. Paulomi Chakraborty

Partition Literature, South Asian Fiction in English, Women's Studies

7. Ratheesh Radhakrishnan

Cultural Studies, Feminist Theory, Literary Theory, Film Studies, Regional Literatures and Cultures in India.

Philosophy

1. P.R. Bhat

Philosophy of Language, Contemporary Western Philosophy, Meta-Ethics.

2. C.D. Sebastian

Indian Philosophy and Comparative Philosophy.

3. Vikram Singh Sirola

Analytic Philosophy, Contemporary Western Philosophy.

4. Ranjan K. Panda

Philosophy of Mind, Analytic Philosophy.

5. Ratikanta Panda

Analytic Philosophy, Philosophy of Language and Contemporary Indian Philosophy.

6. Siby K. George

Twentieth Century Continental Philosophy; Philosophy of Development.

7. Rajakishore Nath

Philosophy of Artificial Intelligence, Philosophy of Mind, Cognitive Science

8. Jung P.G.

Wittgenstein, Alfred Korzybski, Philosophy and Popular Culture, Contemporary Western Philosophy, Moral Philosophy.

Psychology

1. Meenakshi Gupta

Social Psychology, Organizational Behaviour, Human Resource Development.

2. T. Bhattacharya

Health and Clinical Psychology, Psychosomatic disorders, Stress & Coping, subjective well-being, ergonomics, cross-cultural personality.

3. Pooja Purang

Organizational Psychology, Organizational Behavior, Human resource management, personality.

4. Azizuddin Khan

Cognitive Psychology, Clinical Psychology, Neuro Psychology, Ergonomics, Event Related Potential.

5. Mrinmoyi Kulkarni

Social Psychology, Fertility, Health Behaviours, Role of Psychology in Development.

Sociology

1. Subuddhi K.

Technology and Development; Political Sociology; Environmental Sociology; Rural Sociology; International and Global Sociology.

2. R. Robinson

Sociology of religion, kinship and family; Indian society.

3. D. Parthasarathy

Development Studies, Law and Governance, Urban Studies, Risk, Vulnerability and Adaptation to Climate Change and Disasters, Research Ethics.

4. Kushal Deb

Urban Sociology, Ethnicity and Multiculturalism Sociological Theory, Sociology of Development.

5. Sarmistha Pattanaik

Development Studies, Social and Environmental Movements, Environmental Politics with a focus on Social inequality and Natural Resource Conflicts, Issues of livelihoods and problems of marginalized class and Political Ecology.

6. Ramesh Bairy

Social Stratification; Contemporary Caste; Religious Institution.

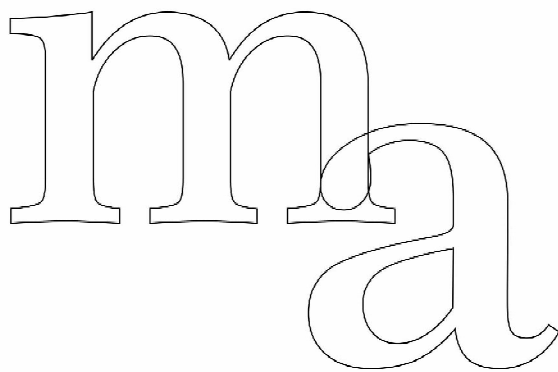
Cell for Indian Science and Technology in Sanskrit (CISTS):

1. Malhar, Kulkarni

Sanskrit language, Paninian Grammar, Philosophy of language, Aesthetics in Sanskrit Texts.

2. K. Ramasubramanian

Indian Mathematics and Astronomy, Metaphysics and Advaita Vedanta Non-linear Dynamics and Chaos.



Mathematics

Introduction

From its inception to the present, the Department of Mathematics has evolved and grown in several directions. There are 42 faculty members in the Department and this includes an Emeritus Fellow and four long-term visiting faculty members. During April 1, 2013 to March 31, 2014, three faculty members joined the Department namely, Prof. Prachi Mahajan, Prof. Radhendushka Srivastava and Prof. Koushik Saha. In addition, the Department has been able to attract several eminent short-term visitors from institutions in India and abroad.

The year 2013-2014 witnessed excellent contributions and achievements of faculty and students in research, interaction with industry and noted national and international institutes, organizations, and outreach activities. A comprehensive review of the Department and its academic activities during the five year period 2008-2012 was conducted by a panel of distinguished experts: Prof. R. Bhatia, (ISI, Delhi), Prof. A. Bose (ISI, Kolkata), Prof. C. Carstensen, (Humboldt Univ., Berlin), Dr. R. Kannan (Microsoft Research Labs, Bangalore), Prof. O. Pironneau (Univ. Pierre et Marie Curie, Paris), and Prof. V. Srinivas (TIFR, Mumbai). The panelists visited the Department during January 2014 and interacted with faculty and students. The reviewers have complimented the Department on some of its achievements and also provided pointers and suggestions to facilitate further growth. The report and the suggestions together with an action plan have been discussed with the Board of Governors of the Institute.

Academic Programmes

The Department offers two Master's programmes, one in Mathematics and the other in Applied Statistics and Informatics, and also a Ph.D. programme. There are also Minor programmes for undergraduates offered in both Mathematics and Statistics, in addition to commitments to the core undergraduate curriculum.

Degree Awarded

Ph. D.	-	05
M. Sc. (MA)	-	16
M. Sc. (ASI)	-	25

R & D Activities

The research pursued in the department includes a wide spectrum of interests in both Mathematics and Statistics.

Outreach activities encompass consultancy, organisation of workshops and conferences, training of doctoral students from all over India, training of both school and university teachers, and efforts to popularise mathematics at all levels. Members of the Department have also taken active leadership roles in mathematical organisations and programmes at the national level. Notable among these are the following:

National Centre for Mathematics (NCM): This is a collaborative venture of IIT Bombay with the Tata Institute of Fundamental Research designed to promote research and instructional activity for doctoral students and researchers throughout the country. Its apex committee includes three members of the department's faculty.

National Programme for Differential Equations: Theory, Computation & Applications (NPDE): This has been initiated by faculty members of the Department with an aim to create human resource and generate knowledge source for academia and industry in the area of Differential Equations for real life problem solving.

Technology and Innovation in Mathematics Education (TIME): The TIME Conferences for mathematics teachers and math educators are held once every two years. These conferences are a meeting place for teachers from all over the country to discuss and to probe major issues associated with mathematics teaching and learning.

The **Mathematics Association** of the Department is a student-run organization. Its enthusiastic members conduct the annual IIT Bombay Mathematics Olympiad, which attracts a large number of school and college students to the campus.

Sponsored Research Project

Sponsored Project	-	22
Ongoing	-	15
New	-	05
Completed	-	02

List of Sponsored research projects is following:

Sr. No.	Project Title	Sponsoring by	Status (New/Ongoing/ Completed)
1	DST/Inspire- Analysis of the Wu metric on Thullen domains in C^n	Department of Science & Technology (DST)	Ongoing
2	Statistical Modelling and Inference for Time Series and High-Dimensional Data.	DST	Ongoing
3	Risk Sensitive Stochastic Control.	DST	Ongoing
4	Advanced Instructional School (AIS) - “Lie Groups”	National Centre for Mathematics (NCM) / Tata Institute of Fundamental Research (TIFR) Project	Ongoing
5	Workshops for Undergraduate Teacher’s Enrichment Programme (TEP) & Research-In-Pairs (RiP)	NCM and Advancement of Arts and Sciences from India (AASI)	Ongoing
6	Some Measures of Association and their A-Collapsibility	DST	Ongoing
7	Characteristic fast marching method for fronts propagating in an inhomogeneous moving fluid.	DST	Ongoing
8	Robust parameter designs for quality and safety critical processes	DST	Ongoing
9	The 54th Meeting of the PAC on Mathematical Sciences (PAC-MS) on November 22-23, 2012 at IIT Bombay	DST	Completed
10	Indo-Russian Project: Algebraic Varieties over Fields & Linear Error Correcting Codes	DST	Ongoing
11	INSPIRE Faculty award research grant	DST	Ongoing
12	Post Doctorate Fellowship to Dr.Stuti Borgohain	National Board For Higher Mathematics (NBHM)	Ongoing
13	Contactless Tags	National Payments Corporation of India (NPCI)	Ongoing
14	National Centre for Mathematics (NCM) IITB - TIFR Joint project	TIFR	Ongoing

Sr. No.	Project Title	Sponsoring by	Status (New/Ongoing/ Completed)
15	National Program on Differential Equations: Theory, Computation & Applications	DST	Ongoing
16	Discontinuous Galerkin Method for Nonlinear Acoustics	Indo-French Centre for the Promotion of Advanced Research	Ongoing
17	Study of RUTF: Processing, Shelf-Life and Exploring Alternative Formulations.	Compatible Technologies International, USA	Ongoing
18	Numerical treatment of integral operators with non-smooth kernels	Indo-French Centre for the Promotion of Advanced Research	Completed
19	Theories, Constructions and Applications of Some Factorial Design	DST	Ongoing
20	Lifting of operator tuples and structure theory of operator algebras	IRCC, IIT Bombay	Ongoing

Conferences/Seminars/Workshops (Organised/Coordinated)

Baskar, S.

Organized a National level training program on Advanced Level Workshop on *Theoretical and Computational Aspects of Nonlinear Waves*, funded by NPDE-TCA (DST) from May 28-31, 2013.

Dani, S.G.

Organized a Symposium as a part of the 28th Annual Conference of the Ramanujan Mathematical Society, held at the Reva Institute of Technology and Management, Bangalore, June 27-30, 2013, consisting of five lectures held on June 29-30, 2013, on “Dynamical Systems”.

Organized a Workshop and Conference on “Ergodic Theory and its Applications”, jointly with Prof. M.G. Nadkarni and Mr. Vivek Wagh, at Sevagram, under the aegis of the Society for Action Research in Education and Livelihood (SAREL), at Nagpur, during July 9-14, 2013.

Served as Chair of the Organizing Committee for the *International Conference on History and Development of Mathematics* organized by the JECRC University, Jaipur, during November 29 - December 1, 2013, jointly with the Indian Society for History of Mathematics.

Ghorpade, S.R.

Organized *NCM-NBHM Advanced Instructional School on Algebraic Combinatorics*, at Indian Statistical Institute, Bangalore, during June 24-July 13, 2013.

Organized DST and NBHM sponsored *International Conference on Algebraic Geometry and Coding Theory* (AGCT-India-2013), at IIT Bombay, during December 2-6, 2013.

Participated in the Workshop on *Computational Algebraic Geometry*, Indian Institute of Space Science and Technology, Trivandrum, February 9-13, 2014.

Limaye Balmohan, V.

Member of the International Organizing Committee of *International Conference on Semigroups, Algebras and Operator Theory*, held at Cochin University of Science and Technology, February 26-28, 2014.

Nataraj Neela

One of the organizers of *Advanced level training programme of National Programme for Differential Equations and CIMPA* workshop in July 2013 at IISc Bangalore.

One of the organizers of a workshop on *Mathematical Foundation of Advanced Finite Element Methods*, at BITS, in December 2013 in Goa.

Delivered lectures in the *MHRD program Quality Enhancement in Engineering Education*, 2014.

Sabnis Sanjeev

Organized and delivered lectures in an eight-day in-house workshop on *Statistical Modelling* for Karvy Capital Ltd., Mumbai, during November 22-29, 2013, and December 6-26, 2013.

Sane, S.S.

Academic Coordinator of a workshop (*ATMW*) on *Algebraic Graph Theory* at the Centre for Excellence in Mathematical Sciences, Almora, October 2013.

Academic Coordinator of a workshop (*ATMW*) on *Algebraic Graph Theory* at Kerala School of Mathematics, Calicut, March 2014.

Santhanam Rekha

Part of the Scientific committee for Topology Discussion Meeting at Institute of Mathematical Sciences, Chennai, May 2-4, 2013.

Shastri Anant R.

Coordinator of *Annual Foundation Schools* of the *National Center for Mathematics* (NCM).

Academic organizer of Annual Foundation School III (under NCM) a four-week training programme for Ph.D. students, held at the Department of Mathematics, University of Pune, in June 2013.

Academic organizer of NCM Instructional School for Lecturers in Topology, held at Centre for Excellence in Mathematical Sciences, Almora, Uttarakhand during October 2013.

Verma Jugal K.

Participated in the 28th Annual Conference of the Ramanujan Mathematical Society, Reva Institute of Technology, Bangalore, during June 27-30, 2013.

Conference/Workshops/Seminars (Participated/Paper Presented)

National**Anandavardhanan, U. K.**

Participated in workshop on *Number Theory and Cryptology*, held at National Institute of Technology Karnataka, Surathkal, September 13-14, 2013.

Participated in *INSPIRE Science Internship Camp*, G.N. Khalsa College, Mumbai, September 25-29, 2013.

Baskar, S.

Participated in Workshop and delivered five lectures on Numerical Analysis in the UG level training program organized by NPDE-TCA in Birla Institute of Applied Sciences, Bhimtal, June 2013.

Gave an talk on “A Stable Higher Order Numerical Method for a Static Hamilton-Jacobi Equation”, 28th

Annual Conference of the Ramanujan Mathematical Society, Bangalore, 2013.

Dey Santanu

Participated in the International Workshop on *Operator Theory and Applications (IWOTA)*, December 16 -20, 2013 at IISc Bangalore.

Ghorpade, S.R.

Delivered a series of six invited lectures on “Aspects of coding theory”, *NCM-NBHM Advanced Instructional School on Algebraic Combinatorics*, Indian Statistical Institute, Bangalore, July 2013.

Delivered a series of six invited lectures on “Differentiation of vector valued functions of several real variables”, *Teachers Enrichment Workshop on Multivariable Calculus*, Bhaskaracharya Pratishthana, Pune, November 2013.

Delivered a plenary talk on “Consecutive integers, perfect powers, and arithmetic progressions”, *National Conference on Pure and Applied Mathematics*, College of Engineering, Pune, December 2013.

Delivered a talk on “Excerpts from the work of S. S. Pillai and some recent developments”, *UGC Sponsored Two day State Seminar on Impact of Indian Mathematicians on The World of Mathematics*, Patkar-Varde College, Goregaon, Mumbai, January 2014.

Delivered Dr. G.R. Shendge Memorial Lecture (of the Marathwada Mathematical Society) on “Linear Codes associated to some higher dimensional algebraic varieties”, *National Conference on Recent Trends in Pure and Applied Mathematics and Statistics*, N.E.S. Science College, Nanded, January 2014.

Delivered a series of six invited lectures on “Matrices, linear maps, and canonical forms”, *NCM Instructional School for Lecturers (ISL) on Linear Algebra*, Centre for Excellence in Mathematical Sciences, Kumaun University, Almora, Uttarakhand, March 2014.

Mahajan Prachi

Taught a mini course on “One variable Complex Analysis” in Annual Foundation School in June 2013 at the University of Pune, Pune.

Nataraj Neela

Participated at National Conference on *Recent Advances in Numerical Methods and its Applications (RANMA 2014)* held in Pondicherry, January 2014.

Sabnis Sanjeev V.

Gave a talk on “k-out-of-n:G systems under stress and strength models with Positively Quadrant Dependent Stresses” in an *International Conference* held at

Department of Statistics, University of Pune, during December 16-18, 2013.

Gave a talk on “Testing Reliability and Redundancy of Questionnaires meant for studying Co-scholastic Traits in School Kids” in a National Workshop on *Applications of Statistics* held at Nashik during January 27-29, 2014.

Gave a talk on “Applications of Statistics to Geological Data” in the National Conference on *Applied Statistics and Related Working Practices* held at Department of Statistics, North Maharashtra University during January 30-31, 2014.

Shorey, T.N

Advanced Instructional School (AIS) on Analytic Number Theory at Bhuvaneshwar

Srinivasan Srikanth

Presented a paper on “Lower bounds for depth 4 formulas computing iterated matrix multiplication,” co-authored with Herve Fournier, Nutan Limaye, and Guillaume Malod, at TIFR workshop on *Recent Progress in Arithmetic Complexity*.

Verma Jugal K.

Presented a paper on “Normal Hilbert Polynomials”, *National Conference on Mathematics*, Hansraj College, Delhi, March 7, 2014.

International

Anandavardhan, U.K.

Delivered a talk on “Modular Representation Theory of Finite and p -adic Groups”, National University of Singapore, April 1-26, 2013.

Participated in Workshop and International Conference on *Automorphic Forms and Number Theory*, Kerala School of Mathematics, Calicut, August 30 – September 3, 2013.

“Analytic Theory of Automorphic Forms”, Institute of Mathematical Sciences, Chennai, December 9-13, 2013.

“Automorphic Periods and Spherical Varieties”, Tsinghua Sanya International Mathematics Forum, Sanya City, December 18-23, 2013.

“Local Langlands Correspondence”, Tata Institute of Fundamental Research, Mumbai, December 15, 2013 – January 3, 2014.

Baskar S.

Delivered a talk on “A fast method for an anisotropic eikonal equation with application to sonic boom propagation in atmosphere”, *Indo-French Conference*

on Acoustics 2013, at the CSIR-NPL, New Delhi, India, November 10-15, 2013.

Das Ashish

Participated in International Conference on *Statistical Distributions and Applications (ICOSDA)*, Soaring Eagle Casino & Resort, Mount Pleasant, Michigan, USA, October 10-12, 2013.

Delivered a talk on “Frontiers of Statistics and Forecasting,” in Celebration of the *80th Birthday of George C. Tiao* Institute of Statistical Science, Academia Sinica, Taipei, Taiwan, December 17-18, 2013.

Ghorpade S.R.

Delivered a plenary talk on “Linear codes related to Grassmann varieties”, *14th International Conference on Arithmetic, Geometry, Cryptography and Coding Theory (AGCT-14)*, Centre International de Rencontres Mathematiques (CIRM), Luminy, France, June 2013.

Delivered a talk on “Arithmetic progressions in rings of integers of number fields of class number one”, at a *Conference on Global Fields*, French-Russian Poncelet Laboratory, Moscow, Russia, September 2013.

Kulkarni Rekha P.

Participated in *8th International Conference on Mathematical Modelling and Analysis (MMA 2013)*, Tartu, Estonia, May 27-30, 2013.

Paper presented: Modified projection method for nonlinear integral equations.

Limaye Balmohan V.

Delivered a lecture on “Operator Approximation,” at the International Conference on *Semigroups, Algebras and Operator Theory (ICSAOT-2014)*, at Cochin University of Science and Technology, Kochi, Kerala on February 27, 2014.

Mukhopadhyay Siuli

Delivered a lecture on “A Convex Algorithm for Robust Parameter Design,” in the *Quality & Productivity Research Conference*, Niskayuna, USA, June 2013.

Nataraj Neela

Presented a talk entitled “An interior penalty method for distributed optimal control problems governed by the biharmonic operator” in the *14th Conference on the Mathematics of Finite Elements and Applications (MAFELAP)* held in London, June 2013.

Participated in a Workshop on *Advances in PDE Modeling and Computation* held at IIT Madras, October 2013.

Raghunathan Ravi

Delivered a lecture on “Advances in the theory of automorphic forms and their L-functions”, Erwin Schrodinger Institute, Vienna, Austria, October 16 - 25, 2013.

Delivered a lecture on “Certain L -functions associated to $GL(n)$ ”, at the International Conference on *Geometry, Number Theory and Representation Theory*, National Institute of Mathematical Sciences, Daejeon, South Korea, December 4 - 6, 2013.

Delivered a lecture on “The poles of L -functions associated to automorphic representations”, at *Analytic Theory of Automorphic forms*, Institute of Mathematical Sciences, Chennai, December 9 - 13, 2013.

Sane, S.S.

Participated in International Conference on *Algebraic Geometry and Coding Theory* at IIT Bombay, December 2013.

Sharma Vishnu D.

Participated in International Conference on *Computational Analysis of Inverse Problems and Partial Differential Equations*, held at the University of Central Florida, Orlando (USA), on May 11, 2013.

Attended International Conference on the *History and Development of Mathematics (ICHDM)* held at JECRC University, Jaipur, December 1, 2013.

Shorey, T.N.

Participated in *Thue Conference* at University of Bordeaux, during September-October 2013.

Verma Jugal K.

Presented a paper on “Polynomial Equations, Hilbert’s Nullstellensatz and Newton Polytopes”, *International Conference on History and Development of Mathematics*, Jaipur, November 29 – December 1, 2013.

Presented a paper on “Theorem of Rees”, *Commutative Algebra and its Interactions with Algebraic Geometry*, CIRM, Luminy, France, July 8-12, 2013.

Invited Lectures**National****Anandavardhan, U.K.**

Delivered two lectures on “Congruent Numbers”, at a Workshop on *Number Theory and Cryptology*, National Institute of Technology Surathkal, Karnataka, September 13-14, 2013.

Delivered a lecture on “Congruent Numbers,” at the *INSPIRE Science Internship Camp*, G.N. Khalsa College, Mumbai, September 25-29, 2013.

Balachandran Niranjana

Delivered a lecture at Research Promotion Workshop on *Graphs and Geometric Algorithms*, BESU, Shibpur, March 2013.

Dani, S.G.

Gave two invited talks on “Dynamics and Diophantine Approximation” and “Dynamics and Hyperbolic Geometry” at a Workshop on *Complex Analysis*, at the University of Central Rajasthan, Kishangarh, on June 24, 2013.

Gave an invited talk on “Curiosities about Numbers - From Ancient to Modern Times” at the JECRC University, Jaipur, on June 25, 2013.

Gave a Plenary talk on “Roots, Factors and Embeddings of Measures on Groups,” at the *28th Annual Conference* of the Ramanujan Mathematical Society, held at the Reva Institute of Technology and Management, Bangalore on June 29, 2014.

Gave a course of four lectures on “Dynamical systems associated with hyperbolic geometry” in the Workshop on *Ergodic Theory and Applications*, organized by the Society for Action Research in Education and Livelihood (SAREL), Nagpur, at Sevagram, July 9- 14, 2013.

Delivered an invited talk on “Some large subsets of zero measure in geometry and dynamics” in the Conference, on July 15, 2013.

Gave an invited talk on “Continued fractions and values of binary quadratic forms,” in the Students’ seminar at the Tata Institute of Fundamental Research, Mumbai, on September 23, 2013.

Gave an invited talk on “Ergodic theory, Lie groups and probability measures,” in the DST Inspire programme held at Elphinstone College, Mumbai, on September 26, 2013.

Gave a mini-course of four lectures on “Flows on homogeneous spaces of $SL(2, \mathbb{R})$ and Ratner’s theorem,” in the workshop on *Teichmüller Theory and Interfaces with Ergodic Theory and Group Actions* held at the Jawaharlal Nehru University, Delhi, during October 28-31, 2013.

Gave an invited talk on “Primitive solutions for Khintchine - Groshev type metric Diophantine problems,” in the *National Seminar on Number Theory and Discrete Mathematics* in honour of Professor R.J. Hans-Gill, at Panjab University, Chandigarh, during November 12-13, 2013.

Gave an invited talk on “Growth of Resources for Advanced Mathematical Learning in 20th Century India”, in the *International Seminar on History of*

Mathematics, at Ramjas College, University of Delhi, during November 27-28, 2013.

Gave an invited talk on “Tracing the development of understanding of the circle in ancient and medieval India” in the *International Conference on History and Development of Mathematics* at JECRC University, during November 29 - December 1, 2013, Jaipur.

Gave a Keynote Address on “Ancient Indian Mathematics,” at the Two Day State Level Seminar on *Impact of Indian Mathematics on the World of Mathematics*, organized by the Department of Mathematics, Patkar-Varde College, Goregaon, during January 10-11, 2014, Mumbai.

Gave an invited talk on “Bhaskaracharya’s Lilavati” in a *lecture series on the life and work of Bhaskaracharya*, organized by the Vidya Prasarak Mandal, Thane, at the Thorale Bajirao Peshave Sabhagruha, Thane College, on January 18, 2014, Thane.

Gave an invited talk on “The exponential map and dynamics” in the National Conference on *Differential Equations and Applications* at University of Mumbai, during February 14-15, 2014.

Gave an invited talk on “Some curious subsets of the number line” in the *National Conference on Algebra, Analysis and Fuzzy Mathematics*, held at the North Maharashtra University, Jalgaon, Maharashtra, during February 21-22, 2014.

Dey Santanu

Delivered a lecture on “Characteristic functions for liftings (with solution to the converse problem)”, at *IWOTA*, Bangalore on December 2013.

Delivered a lecture on “Functional models for contractive multi-analytic operators” in *IWOTA*, Bangalore on December 17, 2013.

Ghorpade S.R.

Delivered a lecture on “Elements of algebra”, *DST INSPIRE Internship Science Camp*, Loyola Degree College, Pulivendula, Andhra Pradesh, April 6, 2013.

Delivered a lecture on “Matrices and linear recurrences over finite fields”, Birla Institute of Technology and Science Pilani - Goa Campus, Goa, September 14, 2013.

Delivered a lecture on “Perfect powers and a problem of Waring”, *DST INSPIRE Internship Science Camp*, Loyola Degree College, Pulivendula, AP, January 25, 2014.

“Determinants and binomials in algebra, combinatorics and geometry”, *Prof. S. C. Bhattacharya Award Lecture*, Indian Institute of Technology Bombay, Mumbai, March 13, 2014.

Joshi Rajani R.

Delivered a lecture on “Some Innovative Contributions of Statistical Data Mining,” at *National Conference on Emerging Trends in Computational Research Development* at D.S. University, Haridwar, September 6-7, 2013.

Delivered a lecture on “Computational Analysis and Characterization of Radial Pulse & Cardiac Risks,” at National Workshop/Symposium on *Mathematical Models and Methods in Engineering*, held at Maulana Azad National Institute of Technology, Bhopal, December 16-18, 2013.

Delivered a lecture on “Pharmaco-Kinetic Modeling & Analysis of Pulmonary Drug Administration,” at a National Workshop/Symposium on *Mathematical Models and Methods in Engineering* at Maulana Azad National Institute of Technology, December 16-18, 2013, Bhopal.

Limaye Balmohan V.

Delivered a lecture on “Uniformly Conditioned Bases of Spectral Subspaces” on April 1, 2013, at IIT Hyderabad.

Delivered a lecture on “Reliability of Computations Involving a Basis” on June 21, 2013, at Anna University, Chennai.

Delivered two lectures on “Reliability of Computations Involving a Basis” and “Uniformly Conditioned Bases of Spectral Subspaces” on October 11-12, 2013, at Sardar Patel University, Vallabh Vidyanagar, Gujarat.

Delivered a lecture on “Conditioning of Bases of Finite-Dimensional Normed Spaces” on March 11, 2014 at IIT Gandhinagar, Gujarat.

Delivered a lecture on “Zabreiko’s Result and its Consequences”, on March 21, 2014, at University of Pune.

Mukhopadhyay Siuli

Delivered a lecture on “Contingency Tables: A Review”, *3rd Annual Conference of Indian Association for Statistics in Clinical Trials*, April 2013.

Raghunathan M.S.

Participated in Workshop on *Chevalley Groups*, IISER Pune, in November 2013.

Sabnis Sanjeev V.

Delivered a lecture on “Basics of Probability Theory” in a pilot study of MHRD entitled *Quality Enhancement in Engineering Education (QEEE)*. Students and teachers from close to 30 engineering colleges across India participated in this “live lectures” environment.

Sane S.S.

Delivered a lecture on “Mathematics: Finite versus Infinite” at the Institute of Science, Mumbai, in August 2013.

Delivered a Mentoring lecture for the “DST INSPIRE program: Fairness, Marriage Stability, Voting and Social Choice” at M.S. University Baroda, August 2013.

Delivered a lecture on “Mathematical Olympiad” at the Kendriya Vidyalaya, IIT Bombay, in August 2013, and at the DPS School, Nerul, Navi Mumbai, in September 2013.

Gave a course of five lectures on “Symplectic Graphs and Equiangular lines in R^n ,” at the Workshop on *Algebraic Graph Theory, Centre for Excellence in Mathematical Sciences*, Almora, October 2013.

Gave a talk on “Fibonacci Number and the Golden Ratio,” at the DST INSPIRE program at Gulbarga, in October 2013.

Delivered a talk on “Combinatorics of block designs and finite geometries” at the 79th Annual Meeting of the Indian Academy of Sciences at Chandigarh on November 10, 2013.

Delivered a Colloquium lecture on “Maximal Clique Problem” at the ISI Bangalore, January 2014.

Santhanam Rekha

Gave lectures for Mini Course on “Borsuk Ulam theorem (and its applications to Graph Theory), at the Teachers Training Workshop in Topology, during December 23-28, 2013.

Sharma Vishnu D.

Delivered a talk on “PDEs modelling wave phenomena,” at the School of Mathematics and Computer Applications, Thapar University, Patiala, on November 11, 2013.

Delivered a talk on “Development of conservation laws during the last six decades,” at the International Conference on the *History and Development of Mathematics (ICHDM)* held at JECRC University, on December 1, 2013, Jaipur.

Delivered a talk on “Quasilinear PDEs,” at the faculty and research scholars at the Department of Mathematics, Osmania University, January 9, 2014, Hyderabad.

Delivered a lectures on “Numerical methods and stability theory for ODEs,” at Cluster Innovation Center, University of Delhi, during March 7-8, 2014.

Shorey T.N.

Delivered a lecture on “Diophantine equations involving product of factorials,” at JNU, Delhi in July 2013.

VSRP lecture on “Analytic Number Theory (Irreducibility of generalised Hermite-Laguerre polynomials),” at TIFR, Mumbai.

Verma Jugal K.

Delivered a lecture on “Euclid’s Last Proposition,” Inspire Camp at the Pravara Rural College of Pharmacy, December 28, 2013, Nasik.

Delivered six lectures on “Local Cohomology Modules,” at IIT Bombay, 2013.

Delivered a lecture on “Constructible regular polygons,” at the Inspire Science Camp at Dr. Radhakrishna Institute of Technology, September 21, 2013, Jaipur, and at the G. N. Khalsa College, September 28, 2013, Mumbai.

Delivered Colloquium lecture on “Eigenvalues and polynomial equations,” at BITS, Pilani, March 10, 2014.

International**Anandavardhanan U.K.**

Delivered a lecture on “Iwahori-Hecke model for supersingular representations of $GL(2, \mathbb{Q}_p)$, Modular Representation Theory of Finite and p -adic Groups,” at the National University of Singapore, during April 1-26, 2013.

Delivered a lecture on “The degree of certain local L -functions,” at a Workshop and an International Conference on *Automorphic Forms and Number Theory*, Kerala School of Mathematics, during August 30-September 3, 2013, Calicut.

Delivered a lecture on “The degree of certain local L -functions, Analytic Theory of Automorphic Forms,” at the Institute of Mathematical Sciences, December 9-13, 2013, Chennai.

Delivered a lecture on “Local global question in automorphic forms, Automorphic Periods and Spherical Varieties,” at *Tsinghua Sanya International Mathematics Forum*, Sanya City, December 18-23, 2013.

Delivered a lecture on “Self-extensions of supersingular representations of $GL(2, \mathbb{Q}_p)$, Local Langlands correspondence,” at the *Tata Institute of Fundamental Research*, December 15, 2013 – January 3, 2014, Mumbai.

Athavale Ameer

Delivered a talk titled “On certain multivariable subnormal weighted shifts and their duals”, at the *Sz.-Nagy Centennial Conference* in Szeged, during June 24-28, 2013, Hungary.

Dani S.G.

Gave an invited talk entitled “Geometry in the Vedic Period,” as a part of a special series on the History of Indian Sciences, on *Storia della matematica indiana*, organized by the Scuola Superiore dell’Università di Udine, in collaboration with Progetto Lauree Scientifiche - Matematica e Statistica, Università di Udine, Udine, May 15, 2013, Italy.

Gave invited talks on “Dynamics of the Geodesic Flow on the Modular Surface and Applications in Number Theory” at the *Conference on Statistical Physics and Dynamical Systems*, held at the University of Strasbourg, during May 30 - June 1, 2013, France.

Gave a talk on “Continued fractions and values of binary quadratic forms”, in the conference on *Homogeneous Dynamics, Unipotent Flows, and Applications*, on October 14, 2013, at Hebrew University, Jerusalem, during October 13-17, 2013, in honour of Professor Marina Ratner, in Israel.

Ghorpade S.R.

Delivered a lecture on “Grassmann varieties and linear codes”, at *Coding and Cryptography Research Group (CCRG) Seminar*, Nanyang Technological University, April 24, 2013, Singapore.

Delivered a Colloquium lecture on “Vector spaces, matrices, and linear recurrences over finite fields”, at Brigham Young University, Provo, Utah, May 23, 2013, USA.

Delivered Informatik-Kolloquium lecture on “Recent developments in splitting subspaces and linear recurrences”, Christian-Alberchts Universität Kiel, Kiel, May 31, 2013, Germany.

Delivered a lecture on “Word oriented LFSRs and splitting subspaces over finite fields”, at the Technical University of Denmark, Lyngby, June 11, 2013, Denmark.

Raghunathan M.S.

Delivered a lecture on “Algebraic groups and Arithmetic”, at a *Conference*, Banff, April 15-20, 2013.

Delivered a lecture on “Homogeneous Dynamics & Unipotent Flows”, at a Conference held in Jerusalem, during October 13 -17, 2013.

Sane Sharad S.

Delivered a talk on “Symmetric, Quasi Symmetric Designs and Strongly Regular Graphs,” in the

conference organised in honour of Professor R.J. Hans-Gill at Centre of Advanced Study in Mathematics, Panjab University, on November 12, 2013, Chandigarh.

Sharma Vishnu D

Delivered a lecture on “Euler equations, weak discontinuities and their interaction with elementary waves,” at the Courant Institute of Mathematical Sciences (CIMS), New York University on May 14, 2013.

Shorey T.N.

Delivered a lecture on “Product of factorials,” at University of Bordeaux in October 2013

Significant Awards and Distinctions

Ghorpade S.R.

Prof. S.C. Bhattacharya Award for Excellence in Pure Sciences, IIT Bombay, March 2014.

Mahajan Prachi

INSPIRE Faculty Award 2012, Department of Science & Technology, Government of India.

Pani Amiya K.

Included in the editorial Board of the Wiley Journal : Numer. Meth. PDE

Sharma Vishnu D.

Chairman of the National Committee for the International Union of Theoretical and Applied Mechanics (IUTAM) for its April 2013 meeting held in Delhi.

Member of the Sectional Committee – I (Mathematical Sciences: Applied Mathematics, Pure Mathematics and Statistics) for INSA -2013.

Member of the S.S. Bhatnagar Award Committee in Mathematical Sciences for 2013.

Honorary Work

Dani S.G.

Editor, *Ganita Bharati*, the Bulletin of the Indian Society for History of Mathematics.

Member of the following Editorial Boards: *Journal of Theoretical Probability*; *Monatshefte fuer Mathematik*; *Proceedings of the Indian Academy of Sciences (Math.Sci.)*; and President, Indian Society for History of Mathematics.

Member of: National Board for Higher Mathematics; Advisory Board, *Indian Journal of Pure and Applied Mathematics*; Governing Board, C.R. Rao Advanced Institute for Mathematics, Statistics and Computer

Science, Hyderabad; Governing Board, Indian Institute of Science Education and Research (IISER), Thiruvananthapuram; and Academic Council, Chennai Mathematical Institute, Chennai.

Edited the manuscript of the Marathi translation of Kanigel's book "The Man Who Knew Infinity", sponsored by the Ramanujan Mathematical Society, prepared by Mrs. Neela Chandorkar, published by the National Book Trust.

Ghorpade S.R.

Member, Apex Committee, National Centre for Mathematics, India.

Member, Visiting Advisory Committee for Mathematics, Birla Institute of Science and Technology (BITS) Pilani, September 2013.

Member, Faculty Selection Committee in Mathematics, IIT Gandhinagar (November 2013), Walchand College of Engineering, Sangli (January 2014), BITS Pilani, Goa Campus (February 2014).

Referee, *Discrete Mathematics*, *IEEE Transactions of Information Theory*.

Joshi Rajani R.

Reviewer for some international journals in Computational Biology /Bioinformatics.

Statistics expert for review of projects submitted to CSIR, DST and DBT.

Member, BoS in Bioinformatics/Computational Biology, Central University of Pondichery.

Kulkarni Rekha P.

Referee for Ph. D. theses

Limaye Balmohan V.

Member, Advisory Committee of Department of Mathematics at IIT Hyderabad.

Member of the Selection Committee at DAIIT, Ahmedabad

Mukhopadhyay Siuli

Reviewer for Technometrics, Statistical Methodology, Psychological Methods.

Reviewer for BRNS-DAE funded project proposals

Raghunathan Ravi

Reviewer for Mathematical Reviews

Sabnis Sanjeev

Reviewed one research article for the Journal of Applied Statistics.

Member of Faculty Selection Committees for one of the IITs, one University in Gujrat and one in Maharashtra.

Sane Sharad S.

Reviewed 6 papers for Zentralblatt fur Mathematic

Sharma Vishnu D.

Member, CSIR-NET

Member, Faculty Selection Committee at IIT Indore.

Shastri Anant R.

Member of the Syllabus formation committee at Shri Guru Govind Singhji Engineering College Nanded, Maharashtra.

Reviewer for Mathematical Reviews.

Verma Jugal K.

Member, Academic Council of Chennai Mathematical Institute, 2011-(2)

Member, Board of Studies of Central University of Rajasthan, Kishangarh, Rajasthan, 2012.

Member, Board of Studies of Kumaun University, Almora, Uttarakhand, 2011

Secretary, Apex Committee of the National Centre for Mathematics, a joint centre of IIT Bombay and TIFR, 2010

Faculty Members and their specialization

1. Anandavardhanan U.K.

Number Theory

2. Athavale Ameer

Functional Analysis

3. Baskar S.

Hyperbolic Conservation Laws: Theory, Numeric and Application

4. Das Ashish

Design of Experiments

5. Dey Santanu

Operator Algebras

6. Garge Shripad M.

Number Theory, Linear Algebraic Groups

7. Ghorpade Sudhir R.

Algebraic Geometry, Coding Theory, Combinatorics

8. Hariharan Ananthnarayan

Commutative Algebra

9. Joshi Rajani R.

Computational Biology, Biostatistics and Bioinformatics

10. Keshari Manoj Kumar

Commutative Algebra (Projective Modules)

- 11. Kulkarni Rekha P.**
Numerical Functional Analysis, Spline Theory
- 12. Mahajan Prachi**
Several Complex Variables
- 13. Mahajan Swapneel**
Geometry and Topology
- 14. Mukhopadhyay Siuli**
Statistics
- 15. Nataraj Neela**
Finite Element Methods
- 16. Niranjana Balachandran**
Combinatorics
- 17. Pani Amiya K. (Institute Chair Professor)**
Numerical Analysis, Partial Differential Equations, Industrial Mathematics.
- 18. Puthenpurakal Tony J.**
Commutative Algebra
- 19. Raghunathan Ravi**
Automorphic forms, Number Theory
- 20. Raman Preeti**
Number Theory
- 21. Rana Inder K.**
Harmonic Analysis, Mathematics Education
- 22. Ranjan Akhil**
Differential Geometry
- 23. Sabnis Sanjeev**
Reliability Theory, Industrial Statistics
- 24. Saha Koushik**
Probability
- 25. Santhanam Rekha**
Algebraic Topology
- 26. Sharma Vishnu D. (Institute Chair Professor)**
Quasilinear Hyperbolic Systems of PDEs/Nonlinear Waves
- 27. Shastri Anant R.**
Algebraic Geometry, Algebraic Topology
- 28. Sista Sivaji Ganesh**
Partial Differential Equations
- 29. Sivasubramanian S.**
Combinatorics
- 30. Srinivasan Gopal K.**
Partial Differential Equations
- 31. Srinivasan Murali K.**
Combinatorics
- 32. Srinivasan Srikanth**
Theoretical Computer Science
- 33. Srivastava Radhendushka**
Statistics
- 34. Subramanyam A.**
Statistical Inference, Geostatistics
- 35. Sureshkumar K.**
Stochastic Differential Game Theory, Mathematical Finance
- 36. Vellaisamy P.**
Statistics and Probability
- 37. Verma Jugal K.**
Commutative Algebra
- Emeritus Fellow**
- 38. Limaye Balmohan V.**
Functional Analysis, Approximation Theory, Setvalued Analysis
- Visiting Faculty**
- 39. Sane Sharad S.**
Probability and Statistics
- Distinguished Visiting Professor and NASI Platinum Jubilee Chair**
- 40. Raghunathan M.S.**
Lie Groups
- Distinguished Visiting Professor**
- 41. Dani S. G.**
Ergodic Theory and Lie Groups
- 42. Shorey Tarlok Nath**
Theory of Numbers
- Professor Emeritus**
- 43. D.V. Pai**
Functional Analysis

me Mechanical Engineering

Introduction

The Department of Mechanical Engineering at IIT Bombay is one of the largest Department of the Institute and is known for research and projects in robotics, fluid dynamics, heat pumps, cryogenics, nuclear engineering, fracture mechanics, I. C. Engines, Combustion, CFD, CAD-CAM and other areas. Experimental and computational facilities in the Department are being continuously upgraded.

The Department has 46 faculty members, around 1000 undergraduate and postgraduate students and 45 permanent supporting staff on its roll. The Department offers academic programmes leading to B.Tech., Dual Degree (B.Tech & M.Tech.), M.Tech. and Ph.D. degrees.

The faculty members are grouped under three broad specializations - Design, Manufacturing and Thermal & Fluids Engineering. The academic activities are supported by 20 laboratories. Suman Mashruwala MEMS laboratory and Mechatronics Measurement and Instrumentation laboratory, were inaugurated in

the recent past. The Department has now decided to focus on research efforts in following five areas: Computational Mechanics, Nuclear Thermal Hydraulics; CIM; Refrigeration, A/C and Cryogenics; and MEMS, NEMS and Mechatronics.

The faculty has been active in offering consultancy services to industries and conduct courses regularly to facilitate the continuing education of practicing engineers.

Industry interaction has increased with several postgraduate courses being offered to industry participants and many students working in industry-sponsored projects.

R & D Activities

Sponsored Research Projects

Sponsored Research Projects	:	96
New	:	11
Ongoing	:	85

List of sponsored research projects as given below:

Sr. No.	Project Title	Sponsoring Agency	Status
1	Cell For Applied Research In Entrepreneurship (Care) (ASB)	Private Organisation	Ongoing
2	Webcnc - Internet Based Virtual CNC Laboratory (SSP)	Ministry of Human Resource Development (MHRD)	Ongoing
3	Recondensation Studies of Boil off from a Liquid Helium Cryostat using a Gm type Pulse Tube Cryocooler (SLB)	Board of Research in Nuclear Sciences (BRNS)	Ongoing
4	Liquid Helium Plant (Mechanical Engg) (SLB)	IRCC	Ongoing
5	Recondensation Studies of Boil off from a Liquid Helium Cryostat using a Gm type Pulse Tube Cryocooler (MDA)	BRNS	New

Sr. No.	Project Title	Sponsoring Agency	Status
6	Formula Electric Car by IITB Racing Team (RKS)	Tata Consultancy Services - IITB Research Cell	New
7	Fellowship Support from Project 12IRCCG012	IRCC Support	Ongoing
8	A Parallelized Immersed Boundary Solver to Compute Flows with Moving Fluid-Solid and Fluid-Fluid Interfaces-Fast Track (RNB)	Department of Science & Technology (DST)	New
9	High-Resolution Diagnostics Development for Study of Fluid Instabilities and Mixing (SRB)	IRCC	Ongoing
10	Experimental Study of Flow Dynamics and Turbulent Entertainment of Jets/Plumes in Stratified Environment (SRB)	DST	New
11	Ignition Delay Studies of Fuels Using a Shock Tube (BPP)	Indian Space Research Organisation (ISRO)	Ongoing
12	Numerical & Experimental Investigation in SLOSH Phenomenon Under Microgravity (BPP)	ISRO	Ongoing
13	Numerical Investigation of 3-D Unsteady Fluid Flow and Conjugate Heat Transfer Characteristics in a Wavy Channel Based Pche Model	Board of Research in Fusion Science & Technology (BRFST)	Ongoing
14	Carbon Dioxide Capture and Conversion (KNI)	Washington University in St. Louis	Ongoing
15	Analysis of Containment Spray System Nozzle Characterization and Spray Effect on Containment Environment Post Accident Conditions (KNI)	Nuclear Power Corporation of India Ltd.	Ongoing
16	Numerical Investigations on Melting and Solidification of Low Prandtl Number Fluids (KNI)	BARC	Ongoing
17	Experimental and Numerical Investigations on Open Pool (KNI) Fires	BARC	Ongoing
18	Local Heat Transfer and Pressure Distribution on a Curved Concave Surface Impinged by a Row of Jets (RPV)	Defence Research & Development Organisation (DRDO)	New
19	Experimental and Numerical Investigations on Thermal Radiation in Furnaces (RPV)	BARC	Ongoing
20	Experimental and Numerical Investigations on Open Pool Fires	BARC	Ongoing
21	Measurement of Heat Transfer Characteristics of Ribbed Rotating Channels Similar to Those Used in Gas Turbine Cooling Passages (RPV)	DRDO	Ongoing
22	Heat Transfer Investigations for Impinging Pre-Mixed Flame Jet (RPV)	Aeronautical Research & Development Board (ARDB)	Ongoing

Sr. No.	Project Title	Sponsoring Agency	Status
23	Study of Heat Transfer from an Impinging Synthetic Jet with Application to Electronic Cooling (AA)	Council of Scientific and Industrial Research (CSIR)	Ongoing
24	Analysis, Modeling and Simulation of Electrochemical Buffing (Ecb) Process	CSIR	Ongoing
25	Financial Support for Purchase of Lens, Lens Mount and Base, Traversing Stand, Slider Bench for Camera, Laser Table, Tripods and Expenses for Fabrication & Misc. Cost	IRCC	Ongoing
26	Design, Development and Testing of Novel Vortex Flowmeters.	DST	Ongoing
27	Study of Pulsatile Blood Flow in Microchannels.	IRCC Awards	Ongoing
28	Ignition Delay Studies of Fuels using a Shock Tube	ISRO	Ongoing
29	Numerical & Experimental Investigation in SLOSH Phenomenon under Microgravity	ISRO	Ongoing
30	Influence of Stiffness of the System and Heat Input Waveform on Transient CHF in Horizontal Channels under LPLF Conditions.(AKS)	Atomic Energy Regulatory Board (AERB)	Ongoing
31	Sg/An Experimental Investigation for Interfacial Area Transport in Gas-Liquid Two-Phase Flows	IRCC	Ongoing
32	Sg / Development of Parallel Model Reduction Techniques for Applications in Solid and Fluid Mechanics (SSK)	IRCC	Ongoing
33	Thermo-Mechanical Failure in C/Tubes Under Severe Accident Conditions (KNJ)	AERB	Ongoing
34	Sg/Fracture Toughness Measurement of Nanocrystalline Thin Films (KNJ)	IRCC	Ongoing
35	High Strain Rate Deformation of Aerospace Al Alloys: Experimental Studies and Development of Constitutive Relationships (KNJ)	ISRO	Ongoing
36	High Strain Rate Deformation of Pseudoelastic Shape Memory Alloys (KNJ)	DRDO	Ongoing
37	Infrared Emission and Absorption Monitoring of Rocket Plumes (AC)	DST	Ongoing
38	Dst/Inspire Faculty Research Award (AC)	DST	Ongoing
39	Performance Evaluation of Caged Polycyclic High Energy Density Fuels (AC)	ARDB	Ongoing
40	HCCI Mode of Operation to Reduce Emissions in Internal Combustion Engines: Experimental and Numerical Investigation (AC)	DST	Ongoing

Sr. No.	Project Title	Sponsoring Agency	Status
41	Rapid Thermolysis Studies on Pulverized Coal and High Energy Density Energetic Materials (AC)	IRCC	Ongoing
42	Synthesis and Combustion of Methylcubane (AC)	ISRO	Ongoing
43	Development of Experimental Set-Up to Optimize Engine-Efficiency/Fuel-Consumption in an Internal Combustion Engine With Lower Emissions.(SS)	IRCC	Ongoing
44	Hcci Mode of Operation to Reduce Emissions in Internal Combustion Engines: Experimental and Numerical Investigation (SS)	DST	Ongoing
45	Study of Gas Turbine Combustion and Emission Reduction Technologies using Advanced Models (SS)	ARDB	Ongoing
46	Study of Heat Transfer from an Impinging Synthetic Jet with Application to Electronic Cooling (ASR)	CSIR	Ongoing
47	Development of Optimization-Based Tomographic Code for Three-Dimensional Reconstruction of Plasma Characteristics of Aditya Tokamak and SST-1 (ASR)	BRFST	Ongoing
48	Numerical Investigation of 3-D Unsteady Fluid Flow and Conjugate Heat Transfer Characteristics in a Wavy Channel Based Pche Model (ASR)	BRFST	Ongoing
49	Investigation of Three-Dimensional Transport Phenomena and Surface Kinetics of a Growing Protein Crystal (ASR)	DST	New
50	Reliability Assessment of the Passive Systems and its Integration into PSA (ASR)	AERB	Ongoing
51	Investigation of Heat Transfer Mechanisms in Micro/Mini Channels (ASR)	IRCC internship	Ongoing
52	Dual-Wavelength Interferometry and Rainbow Schlieren for Characterization of Buoyancy-Induced Convection during Aqueous Solution-Based Crystal Growth Processes (ASR)	IRCC	Ongoing
53	Dynamics and Control of Mechanical Systems (AGT)	MHRD	Ongoing
54	Development of a Haptic Surgical Simulator (AGT)	IRCC	Ongoing
55	Study of Three Dimensional Crack Tip Fields and Constraint Effects on the Mechanics of Fracture of Bulk Metallic Glasses (PUT)	IRCC	Ongoing
56	Cuda Centre of Excellence (SGK)	Nvidia Corporation, USA	New
57	Development of Efficient Galerkin Methods Applied to Compressible Flows for Modern Computer Architectures (SGK)	Intel Technology India Pvt. Ltd.	Ongoing

Sr. No.	Project Title	Sponsoring Agency	Status
58	Development of Efficient Galerkin Methods for Modern Computer Architectures (SGK)	IRCC	Ongoing
59	Fossee: Free/Open Source Software in Science and Engineering Education (Assimilation of Open Source Software in Science and Engineering)	MHRD	Ongoing
60	Energy Efficiency in Buildings using Doas and Mchx (MVR)	Indo-Us Science & Technology Forum, New Delhi	Ongoing
61	Value Addition of Agro Produce Through Multi-Disciplinary Science & Technology Inputs in Nagaland (MVR)	DST	Ongoing
62	Investigation on Ratcheting and Fatigue Crack Growth Behavior of Carbon Steel Pipes and Stainless Steel Pipes (AD)	BRNS	Ongoing
63	An Experimental and Theoretical Investigation on Pulsed Current Gas Metal Arc Welding Process with Short Circuit Metal Transfer of Similar and Dissimilar Materials (AD)	DRDO	Ongoing
64	Investigation on Ratcheting and Fatigue Crack Growth Behavior of Carbon Steel Pipes and Stainless Steel Pipes (DNP)	BRNS	Ongoing
65	Underwater Solar Powered (Tethered) Platform (Usola) for Application as an Offshore Portable Power Source (AGH)	DRDO	Ongoing
66	Analysis of Containment Spray System Nozzle Characterization and Spray Effect on Containment Environment Post Accident Conditions (SVP)	Nuclear Power Corporation of India Ltd.	Ongoing
67	Influence of Stiffness of the System and Heat Input Waveform on Transient Chf in Horizontal Channels under Lplf Conditions (SVP)	AERB	Ongoing
68	Numerical Investigation of 3-D Unsteady Fluid Flow and Conjugate Heat Transfer Characteristics in a Wavy Channel Based Pche Model (SVP)	BRFST	Ongoing
69	Design, Development and Testing of Novel Vortex Flowmeters. (SVP)	DST	Ongoing
70	Local Heat Transfer and Pressure Distribution on a Curved Concave Surface Impinged by a Row of Jets (SVP)	DRDO	Ongoing
71	Heat Transfer Investigations for Impinging Pre-Mixed Flame Jet (SVP)	ARDB	Ongoing
72	Diffusion Induced Stresses in Patterned Lithium Ion Electrodes and Fracture Studies in Thick Curved Plates (TKB)	IRCC	Ongoing

Sr. No.	Project Title	Sponsoring Agency	Status
73	IITB Stc/ Rapid Development & Manufacturing of Machined Aerospace Components (KPK)	ISRO	Ongoing
74	Repair and Maintenance of Fdm 1650 Rapid Prototyping Machine (KPK)	Income From Instrument/ Services	Ongoing
75	Biomedical Engineering and Technology Centre (Betc) Incubation (KPK)	Rajiv Gandhi Science and Technology Commission	Ongoing
76	Additive Manufacturing of Aerospace Components using Variable-Axis Deposition (KPK)	ARDB	Ongoing
77	Thermal Management of Micro-Electronics using Microchannel Based Cooling (SK)	IRCC	New
78	Thermal Management of High Heat Flux Micro-Electronics using Single Phase Microchannel Based Cooling (SK)	CSIR	Ongoing
79	Study of Critical Heat Flux During Two-Phase Flow Boiling in Multiple Parallel Microchannels (SK)	DST	Ongoing
80	Cuda Centre of Excellence (SGK)	Nvidia Corporation, USA	New
81	Development of Efficient Galerkin Methods for Modern Computer Architectures (SGK)	IRCC	Ongoing
82	Fossee: Free/Open Source Software in Science and Engineering Education (Assimilation of Open SourceSoftware in Science and Engineering) (SGK)	MHRD	Ongoing
83	Investigation on Ratcheting and Fatigue Crack Growth Behavior of Carbon Steel Pipes and Stainless Steel Pipes (DNP)	BRNS	Ongoing
84	Design and Applications of Focused Ion Beam (Fib), Fabricated Optical Micro/Nanostructures (RM)	IRCC	Ongoing
85	High-Speed Dynamic Micro-/ Nano-Scale Precision Positioning: Applications to Nano-Metrology, Micro-Machiningand Atomic Force Microscopy (VK)	IRCC	Ongoing
86	Doppler Velocity Log (Dvl) Based Autonomous UnderwaterVehicle (Auv) Localization and Navigation for Detecting Underwater Acoustic Sources (VK)	Naval Research Board	New
87	Analysis of Deformation Behaviour of Aluminum Bar at Micron Scale	IRCC internship	New
88	Micro-Forming Of Ultra Thin Sheets of FCC Metals	IRCC	Ongoing
89	Analysis, Modeling and Simulation of Electrochemical Buffing (Ecb) Process(SSJ)	Council of Scientific and Industrial Research	Ongoing
90	Study and Development of Technology for Nano-Polishing of Single Crystal Semi-Spherical Cavity and Fabrication of Micrometallic Fluidic Structures (SSJ)	BARC	Ongoing

Sr. No.	Project Title	Sponsoring Agency	Status
91	Wire-Edm Slicing of Silicon Wafers from Ingots with Reduced Kerf Loss and High Material Removal Rate (Mrr) (SSJ)	Applied Materials Inc.,	Ongoing
92	Design and Fabrication of 3d Micro-Textured Hydrophobic Geometries on Metallic Surface – Part II (SSJ)	ISRO	Ongoing
93	Establishment of The National Centre for Aerospace Innovation and Research (Ncair) at IIT Bombay Along with DST, Govt of India, New Delhi. (SSJ)	DST	Ongoing
94	National Centre for Aerospace Innovation and Research (SSJ)	Hindustan Aeronautics Limited	Ongoing
95	National Centre for Aerospace Innovation and Research (Connected To DST and Bong Project)(SSJ)	Internal Project For Testing	Ongoing
96	Establishment of a Technology Business Incubator (National Centre for Aerospace Innovation & Research) at IIT Bombay. (SSJ)	DST	Ongoing

Consultancy Projects

Sponsored Consultancy Projects : 07

Sr. No.	Project Title	Sponsoring Agency	Status
1	Strain distribution based failure prediction and intelligent process specifications (PPD)	ME	Ongoing
2	Review of plasmaphysics and CFD aspects of Vacuum arc modeling	Aeronautical Engineering	Ongoing
3	Design of 1500 Cubic Feet Ethylene Oxide steriliser.(KNJ)	ME	Ongoing
4	Investigation and Analysis of Error-Reduction and Throughput-Enhancement Measures for Tablet Packaging Machine (AGT)	ME	Ongoing
5	Thermoelectric Instant Water Heater, TeiWH (MVR)	ME	Ongoing
6	Design and Simulation of Payload Recovery Device for Tethered Aerostat (AGH)	AE	Ongoing
7	Investigation and Analysis of Error-Reduction and Throughput-Enhancement Measures for Tablet Packaging Machine	ME	Ongoing

Patents

Sr. No.	Title of the patent	Inventor	National/ International	Status filed/granted	Date of patent filed/granted
1.	Slicing of ultra-thin wafers using WEDM process	Dongre, Ganesh, Joshi, S.S., Singh, R.	Indian	Filed	2013
2	Compliant mechanism to generate flexure based remote center motion for use in minimally invasive vitreoretinal surgery (PSG)	Bobade R., Gandhi P.S., and Chen C	Indian	Granted	2013
3	Micro device for separating blood plasma from whole human blood and method for making the same	Prabhakar, A., Kumar, B., and Agrawal, A.	Indian	Filed	July 12, 2013
4	Vortex Cross Correlation Flowmeter	Venugopal, A., Agrawal, A., and Prabhu, S.V.	Indian	Filed	May 17, 2013
5	Heat & Mass Exchanger	Rane M.V., Chauhan S A	Indian	Filed	April 10, 2013
6	Design of a Probe for Measuring Radiative Heat Flux of Combustion Systems	Vanteru Mahendra Reddy, Sudheer. S., Sudarshan.S. and S.V. Prabhu	Indian	Filed	2013

Extension Activities

Babu Subhash A.

Delivered an invited lecture on “TQM for organizational excellence,” *Cooperative Institute of Technology, Vatagara*, Near Calicut, September 28, 2013, Kerala

Delivered Colloquium lecture on “World Class Manufacturing, Perspectives and Practices,” at *Amrita School of Management, Coimbatore*, November 14, 2013.

Delivered an invited lecture on “Technology Management,” for the AICTE sponsored program, at KLN College of Engineering, on November 16, 2013, Madurai.

Seshu, P.

NPTEL Reviewed IIT Kharagpur NPTEL Video Course on Vibrations of Structures by Prof. Anirvan Dasgupta

Manik, D.N.

“Designing Quiet Machines (TEQIP),” VJTI, May 12, 2013, Mumbai.

Ballamudi, R.

“Teacher training programmes on Casting Design and Simulation,” as part of E-Foundry project, conducted at Changa, Indore, Pandharpur, Ichalkaranji, Rajkot, Chennai, Mumbai, Nagpur and Nanded

Atrey M.D

NPTEL Cryogenic Engineering Course under NPTEL banner with 42 lectures is completed.

“Research and Development of Cryocoolers at IIT Bombay,” COEP Pune, COEP Pune, Mechanical Department, September 20, 2013.

“Cryocooler Development at IIT Bombay,” VNIT, Mechanical Department, August 29, 2013.

Balasubramanian, S.

Delivered a lecture on “The role of computational fluid dynamics in transport phenomena,” Satara University, Thanjavur, November 17, 2013, Tamil Nadu.

Delivered short term courses on : Analysis of Modern Manufacturing Processes; Metal Forming Technologies; Sheet Metal Technology and Deep Drawing of Sheet Metal.

Gandhi, P.

Conducted Short Term Courses- Two 3-day courses on “Mechatronics and Automation: Fundamentals and Hands”, during May 2013.

Conducted Short Term Courses on “Faculty development program on Mechtronics,” at VJTI under TEQUIP, during, September 30-October 4, 2013.

Chowdhury, A.

Conducted lecture on “Combustion in Internal Combustion Engines,” *Vehicle Research and Development Establishment, DRDO, Ahmednagar*, November 4, 2013

Rane, M.

“Energy Conservation Technology for Energy saving and Environment Protection,” Don Bosco Institute of Technology, Kurla, Mumbai, April 4, 2013.

“Energy Conservation in HVAC & R including Renewable Energy Options,” Dr. Jivraj Mehta Institute of Technology, Mogar, Anand, October 20, 2013.

“Advance HVAC Solutions for Net - Zero Energy Buildings,” US PACE-D, *Grand Hyatt Regency, New Delhi*, May 17, 2013.

“Energy Conservation using Heat Pump Technologies,” Department of Energy Science and Engineering, IIT, Bombay, November 22, 2013.

De, A.

NPTEL developed a course on “Design for Manufacturing”.

Delivered a lecture on “Recent advances in the quantitative understanding of friction stir welding,” at Paton Welding Institute, Kiev, November 26, 2013, Ukraine.

Delivered a lecture on “Computational modeling of fusion welding processes,” at National Institute of Technology (NIT), August 10, 2013, Shilchar.

Delivered a lecture on “Recent trends in joining of high strength aluminum alloys,” at College of Engineering, Andhra University, April 30, 2013, Vishakhapatnam.

Karunakaran, K.

Delivered short term courses on “3D Printing,” at *CEP Workshop*, IIT Bombay, May 20-22, 2013

Delivered short term courses on “Rapid Product Development & Manufacturing,” at *FDP Workshop*, at VJTI Bombay, November 26-30, 2013.

Conferences/Symposia/Workshops/Seminars (Participated/Papers Presented)

Karunakaran, K.P.

Delivered a keynote lecture on “Additive Manufacturing - An Overview,” at *International Conference on Powder Metallurgy 2013 (PM-13)*, 2013, Pune.

Hascoet, J.Y., Karunakaran, K.P. and Marya, S.

Delivered a keynote lecture on “Additive Manufacturing Viewed from Material Science: State of the Art & Fundamentals,” at *THERMAC 2013: 8th International Conference on Processing & Manufacturing of Advanced Materials*, 2013, Las Vegas,

Karunakaran, K.P. and Lavanya, K.

Delivered invited lecture on “Applications of 3D Printing in Medicine,” at *International Humboldt Kolleg on Bench to Bedside Translational research: Potential Benefits of International Collaborations*, 2013, Manipal.

Karunakaran, K.P., Alain Bernard and Joshi Prathamesh

Delivered a keynote lecture on “Variable Axis Additive Manufacturing of Metallic Objects,” at the *18th European Forum on Additive Manufacturing*, Paris, 2013.

Conferences/Symposia/Workshops/Seminars (Coordinated/Chaired by Faculty)

Babu Subhash A.

Chaired a session at an International Conference on *Advances in Industrial Engineering Applications (ICAIEA2014)*, at Anna University, Chennai, India, organized during January 6-8, 2014.

Participated in the Workshop on World Bank sponsored by QEEE and organized by MHRD at New Delhi, on January 11, 2014.

Seshu, P.

Participated as Head of the Organization in National Symposium on *Recent Advances in Cyber Security*, June 6-7, 2013, *Bangalore*.

Participated as Head of the Organisation in International Conference on *Computational and Data Intensive Science*, August 26-28, 2013, *Bangalore*.

Attended *8th Asia Pacific Conference on Wind Engineering*, as Member of International Scientific Advisory Board, Chennai.

Ravi B

Participated in *Taiwan-India Symposium on Medical Device Innovation*, December 9, 2013, Taiwan.

Participated in the *Western India Regional Orthopedic Conference*, December 23, 2013, Mumbai.

Participated in the *2nd Annual National Knowledge Network Workshop*, held at Indian Institute of Science Bangalore, on October 17, 2013.

Bhardwaj R

Chaired a session at National Conference on *Fluid Mechanics and Fluid Power*, at NIT Hamirpur.

Participated at the *22nd National and 11th International ISHMT-ASME Conference on Heat and Mass Transfer*, December 28-31, 2013, IIT Khargpur, India

Participated in *40th National Conference on Fluid Mechanics and Fluid Power (NCFMFP)*, held at NIT Hamirpur, 2013.

Participated in the *ASME 2013 Summer Bio-engineering Conference*, Sunriver, Oregon, WA, USA.

Participated in Workshop on *Multiphase Flows: Fundamentals and Application*, December 26- 27, 2013, held at Mechanical Engineering Department, IIT Bombay

Participated in IRCC Annual Poster presentation on *A CFD Solver for Blast Wave Loading on Human Eye*, during May 2013, IIT Bombay.

Balasubramanian, S.

Organizer of *National Symposium on Shock Waves (NSSW 14)*, IIT Bombay.

Facilitator and Organizer for the *1st Climate Science and Policy Workshop*, IIT Bombay

Facilitator and Organizer for *1st Mechanical Engineering Graduate Research Symposium*, IIT Bombay

Sharma A

TEQIP (Phase 2) Sponsored FDP on CFD in Engineering Domain using Computing Software, VJTI, Mumbai, July 8, 2013.

Introduction to CFD (organized by Applied Mechanics Society), *MNNIT, Allahabad*, September 26, 2013.

National Workshop on Research Methodology in Fluid Mechanics (jointly organized by National Society of Fluid Mechanics and Fluid Power, India and MNNIT) *MNNIT, Allahabad*, September 27, 2013.

Participated in the 2-Days Workshop on “CFD”, at Finolex Academy of Management & Technology, Ratnagiri, October 4-5, 2013.

Participated in National Workshop on *CFD: From Basics to Industrial Applications*, held at Pimpri Chinchwad College of Engineering, on October 10, 2013, Pune.

Delivered a short term AICTE Sponsored QIP Course on CFD Application and Engineering Analysis Using Computing Software, at VJTI, Mumbai.

Delivered a Second Level Course on “Heat Transfer,” at TEQIP Sponsored STTP at S. V. National Institute of Technology, Surat, July 3, 2013, Gujarat.

Sheshadri, S.

Chaired a session at the *9th Asia-Pacific Conference on Combustion*, at Geongju, South Korea.

Chaired a session at the *23rd National Conference on IC Engines and Combustion*, at SVNIT, Surat, Gujarat, India.

Chaired a session at the *4th International Conference on Advances in Energy Research*, IIT Bombay, India.

Track chair at the *4th International FMFP Conference*, IIT Kanpur.

Date, A.

Delivered a key note address on “Something About Energy - random reflections of a Teacher,” at *RuDICON*, Indian Merchants Chamber, Churchgate, Mumbai.

Prabhu, S.

Convened *Two-day National Workshop on Research Methodology in Fluid Mechanics*, at MNNIT Allahabad.

Pawaskar, D.

Chaired a session at the International Conference of *Mechanical Engineering, World Congress on Engineering*, at London, 2013, UK.

Invited Lectures**National****Prabhu S**

Delivered research talks on “Characterization of the full cone pressure swirl spray nozzles for the nuclear reactor containment spray System,” at a *Workshop on multiphase flows: Fundamentals and application*, IIT Bombay, on December 27, 2013.

Delivered a lecture on “Design of simple fluid dynamic experiments and other measurement techniques,” at *Two-day National Workshop on Research Methodology in Fluid Mechanics*, at Motilal Nehru National Institute of Technology, on October 27, 2013, Allahabad.

Gopalakrishnan, S.

Delivered a lecture on “Advanced Numerical Methods for Modern Computer Architectures,” at *Intel Academic Forum*, held in Goa, on August 19, 2013.

Significant Awards/Distinctions

Balasubramanian, S.

Best presenter for the paper titled Experimental study of Rayleigh-Benard convection in the presence of rotation IACSIT, affiliated to FDTT 2013 conference Istanbul, Turkey, March 2013.

Maiti, S.

OSKAR AWARD to PhD student, Nilesh R Raykar Best Paper Award, IITB-Monash Academy Mumbai, August 2013.

Agrawal, A.

Prof. K.N. Seetharamu Medal and Award Indian Society of Heat and Mass Transfer, IIT Kharagpur December 2013.

Chowdhury, A.

INSA Inspire Faculty Award INSA, New Delhi, February, 2013.

Tandaiya, P.

Young Faculty Award IIT Bombay, Mumbai, July 2013.

Prabhu, S.

Professor A. Jaganmohan Award for professional development, Department of Mechanical engineering, IIT Bombay, Mumbai, May 2013.

Honorary Work

Babu Subhash A.

Member of Jury : To evaluate the companies under AV BIRLA group for WCM Award on October 14, 2013.
Mentor -TEQIP II SGSITS Indore and SGGSITE Nanded.
Performance Auditor- TEQIP II BMS College of Engineering Bangalore and NIT Kurukshetra.

Pande S.S

Expert, Faculty Selection Committee Indian Institute of Technology, Madras, June 23-24, 2013.
Member, Board of Examinations, Indian Institute of Industrial Engineering (IIIE), India.

Bapat.S.L

Independent Director on the Board of Directors for Mazagon Dock Ltd. Term for three years on request from Defence Ministry.
Chairman Indian Cryogenics Council (West Zone).
Senate Member College of Engineering Amravati.
Expert Promotion interviews of ISRO (SF, SG scientists and engineeris).
Expert Faculty selection of NITs and IITs.

Manik D.N

Reviewed the PhD thesis and conducted the viva-voce exam Sri. PRASANTA KUMAR PRADHAN (ME5123-10ME90Q01), IIT Khargpur on February 18, 2014. Thesis

Ravi B

Member, Program Advisory Committee, Sciences & Engineering Research Board, Department of Science & Technology, New Delhi.

Fast Track Scheme for Young Scientist Projects, Department of Science & Technology, New Delhi.

Member, All India Board of Undergraduate Studies in Engineering & Technology, All India Council for Technical Education, New Delhi.

Member, Monitoring and Steering Committee, Rural technology projects, Rajiv Gandhi S & T Commission, Mumbai.

Member, Sectional Committee on orthopedic instruments, implants and accessories, Bureau of Indian Standards, New Delhi.

Vice-President, Board of Governors, Central Manufacturing Technology Institute, Bangalore.

Atrey M.D

Member of the DST Expert Committee on Fast Track For Young Scientists (Start-Up Grant) - Meeting almost once in 2 months to fund new proposals and review

Senate Member For VNIT Nagpur - Senate Member for 3 years.

Bhardwaj R

Visited Johns Hopkins University, Baltimore, USA in Summer 2013 for research collaboration on Computational Model of Blast Loading on Human Eye

Bhattacharya A

Coordinated PhD entrance examination for Climate Center.

Maiti S

Appointed as Senior Research Adviser at S P College of Engineering, Mumbai, from December 2013 to date.

Served as a faculty selection committee member at Mechanical Engg. Department of IIT Hyderabad from November 22, 2013.

Served as a faculty selection committee member at S.P. College of Engineering, Mumbai (January 8, 2013).

Member of the Board Mahatma Gandhi Mission (MGM) College of Engineering and Technology, Navi Mumbai, from May 2012 to date.

Bhandarkar U

Member of Board of Studies of M.Tech program at Indian Institute of Space Science and Technology (IIST) Thiruvananthapuram.

PhD Progress Committee member, HBNI.

PhD Progress Committee Member, IIST, Thiruvananthapuram.

Rane M

DST - IDP Committee Member

Member of the Buildings Sub-Committee of the Reserve Bank of India from June 2009 to 2015 (currently serving the third term)

Date, A.

Member, faculty Selection Committee, IIT Indore, Mechanical Engg faculty, October 2013.

Chairman, Review Committee, Center for Energy Studies, IIT Delhi, February 2014.

Chairman, Review Committee, Center for Rural Development and Appropriate Technology, IIT Delhi, February 2014.

Member, Review Committee, Fast Reactor Technology Group - IGCAR, Kalpakam, March 2014.

Guha, A.

Member of committee for selection of TMMA R&D Award

Reviewed R&D of multiple textile machinery manufacturers and selected award winners.

Gaitonde, U.

Member, Advisory Committee for Project Safety Review of Light-Water Reactors, the Atomic Energy Regulatory Board (AERB), Govt. of India.

Member Expert Committee for Environmental Appraisal of Nuclear Power Plants, Ministry of Environment and Forests, Govt. of India.

Member Expert Committee for Environmental Appraisal of Strategic Facilities, Ministry of Environment and Forests, Govt. of India.

Member Board of Governors, Visvesvaraya National Institute of Technology, Nagpur (VNIT).

Bhandakkar, T.

Member of the interview committee: Represented Design group, Mechanical Engineering Department as an interview committee member to recruit DRDO employees for MTech at ME department, IITB.

Pawaskar, D.

Reviewer Design Review of Structural System at Defence Research and Development Laboratory (DRDL) Hyderabad

Faculty Members and their Specializations

1. Amit Agrawal

Microfluidics, Turbulent Flows, Bluff-body wakes.

2. M.D. Atrey

Main areas of R&D activity: Cryogenics Engineering, Refrigeration and Air Conditioning, Heat Exchangers, Compressors, NMR and MRI Systems.

3. U. Bhandarkar

Thermodynamics, Statistical Thermodynamics, Heat Transfer, Particle growth in combustion and plasmas, Molecular Simulation.

4. R. Bhardwaj

Computational fluid dynamics, Interfacial transport phenomena, Fluid-structure interaction, Immersed boundary method, Finite-element method.

5. P.P. Date

Manufacturing Engineering, Sheet metal forming & formability.

6. U.N. Gaitonde

Thermodynamics, Heat Transfer, Energy Conversion.

7. A. Guha

Kinematics, dynamics, mechanism synthesis, Design of machines with focus on textile machines., Application of machine learning (artificial neural networks, support vector machines) to industrial problems. Impact simulation with finite element analysis.

8. K.N. Jonalagadda

Experimental Solid Mechanics, MEMS.

9. S.K. Maiti

Finite and Boundary Element Methods, Meshless Methods, Fracture Mechanics, Structural Health Monitoring, Stress Corrosion Cracking.

10. B.P. Puranik

Gas dynamics, Electronics Cooling, Heat Transfer Enhancement.

11. S.V. Prabhu

Fluid Mechanics and Heat Transfer.

12. M.V. Rane

Energy Conservation and Alternate Energy Resources
Heat Recovery and Sorption Refrigeration Systems
Heat Pumps, Compact Milk Pasteurizers.

13. B. Ravi

Casting Design and Simulation; Medical Device Innovation.

14. Ramesh K. Singh

Laser Micromanufacturing, Hybrid Micromachining, Engineered and Precision Finished Surfaces, Composites, Process Modeling and Simulation

15. Sreedhara Sheshadri

Numerical simulations of reactive flows, Performance and emission characteristics of IC engines. Combustion and Emissions characteristics of Gas Turbine.

16. Subash Babu A

Design and management of enterprise solutions and decision support systems for production, project, supply chain and service sectors.

17. Sridhar Balasubramanian

Fluid & thermal instabilities; Turbulence & mixing under extreme conditions; Sediment transport in ocean; Pollution in ocean & atmosphere; Experimental diagnostics & imaging.

18. S.L. Bapat

Multi-layer cryogenic insulation, Stirling cycle miniature cryocoolers & liquefiers. Use of gas mixtures in Stirling Coolers, Food Freezing, Vapour Absorption Refrigeration System, Sterling engine.

19. Amitabh Bhattacharya

Computational Fluid Dynamics; Turbulent wall-bounded flows; Modeling of bio-mimetic systems; Multiphase flows (binary fluids, particulate flow)

20. Arindrajit Chowdhury

Ignition and combustion of energetic materials and alternate fuels.

21. A.W. Date

Numeric Fluid Flow and heat transfer, Appropriate Technology

22. Shivasubramanian Gopalakrishnan

Fluid Mechanics; Numerical Methods; Computational Fluid Dynamics; Geophysical Fluid Dynamics; Multiphase Flows; Interface Tracking Schemes; Adaptive Mesh Refinement Techniques; Parallel Algorithms for CFD; High Performance Computing.

23. K.N. Iyer

Nuclear Reactor Safety, Thermal-Hydraulics, Applied Numerical Methods

24. Sandip Kumar Saha

Heat transfer, Computational Fluid Dynamics (CFD) Cooling technologies (microchannel, phase change materials, nanofluid) Thermal technologies (energy storage, green buildings).

25. Atul Sharma

Computational Fluid Flow & Heat Transfer.

26. A.K. Sridharan

Two Phase Heat Transfer & Fluid Mechanics.

27. A. Srivastava

Laser-based measurements for fluid flow and heat and mass transfer, Optical Tomography, Experimental Heat and Mass Transfer, Heat Transfer in Mini and Micro Channels, Bio-Engineering and Bio-Heat Transfer, Biomedical Applications of Lasers.

28. R. P. Vedula

Convective Heat Transfer for External and Internal Flows.

29. T. Bhandakkar

Fracture Mechanics, Micromechanics, Continuum mechanics, Analytical and numerical methods.

30. P.S. Gandhi

Non-linear Dynamical Systems and Control, Micro Electro Mechanical Systems.

31. A. Gupta

Haptics, robotics and controls.

32. S. D. Jog

Political economy, General Management, Finance, Engineering Basic Practice and Communications.

33. V. Karthik

Dynamics & Control, Vibrations of Continuous Structures, Nonlinear Dynamics & Chaos, Nanoscale Device Physics & Fabrication.

34. S. S. Kulkarni

Computational Mechanics.

35. D. N. Manik

Vibration, Noise Control and Mechatronics.

36. D. N. Pawaskar

Solid Mechanics, MEMS, Fatigue, Fracture in Solids, Optimization & Design.

37. P. Seshu

Stress and Vibration Analysis, FEM, Computer-Aided Simulation, Smart Structures, Active Vibration Control.

38. S. Suryanarayanan

Automatic Control, Mechatronics, Wind Energy, Intelligent Transportation Systems, Active Flow Control.

39. Parag U. Tandaiya

Computational inelasticity; Finite Element Methods; Elastic-plastic fracture mechanics; Mechanical behavior of materials

Multi-scale modeling and simulation of deformation and failure of solids

Mechanics of materials

Constitutive modeling of advanced materials such as, bulk metallic glasses (BMGs), shape memory alloys (SMAs), shape memory polymers (SMPs), FCC, BCC, HCP Single crystals, nanocrystalline materials, nanotwinned materials, etc.

Biomechanics

Experimental mechanics.

40. A. De

Welding and other joining processes, Finite Element Method, Numerical Modelling of Manufacturing Processes, CAD/CAM.

41. S. S. Joshi

Machining of Composite Materials, Computer-aided Modelling Machining and Nanomachining, Surface integrity and mechanical characterization.

42. K. P. Karunakaran

CNC, Computer Graphics, Genetic Algorithms, Manufacturing Automation, Rapid Prototyping and Tooling.

43. Rakesh G. Mote

Focused Ion Beam (FIB) micro/nano-fabrication and characterization; Design and optimization of micro/nano- structures for nano-lithography and nano-metrology; Plasmonics for sensing and beam manipulation; Non-conventional machining processes; CNC Machining of complex surfaces.

44. S. S. Pande

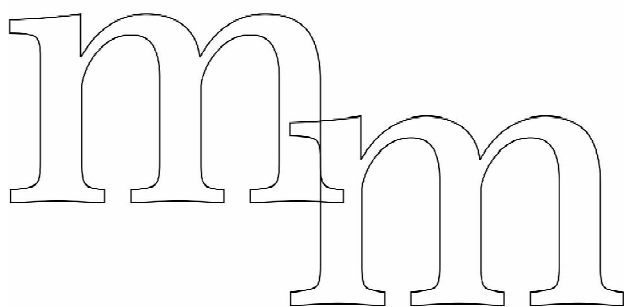
Intelligent CAD/CAM, Computer Graphics, CNC, Computer Aided Process Planning, Tool Design.

45. Sushil Mishra

Micro forming; Sheet metal forming; Thermo-mechanical processing; Structure property relation; Micro texture.

46. A. Tewari

Microstructural-mechanics.



Metallurgical Engineering & Materials Science

Introduction

The Department is steadily achieving its mission of creating an ambience that will inspire one to seek and address the scientific and technological challenges. The research output of the Department has increased significantly due to substantial funding received from several sponsoring agencies both government and non-government. With greater emphasis on intellectual property rights, the number of patents filed have also increased. The number of researchers visiting the Department have also increased and more faculty members are involved in collaborative research. Increased funding from the Institute has led to Department augmenting the existing infrastructure for the UG teaching labs. These facilities will help the students get hands-on experience and will also add to the quality of instructional training.

Academic Programmes

Degrees Awarded	
B.Tech.	: 49
M.Tech.	: 57
Ph.D.	: 14
Dual Degree	: 33

R & D Activities

Sponsored Research Projects

New	: 13
Ongoing	: 54
Completed	: 9
Faculty involved	: 24

List of the projects is as following:

Sr. No.	Project Title	Sponsoring Agency	Project Status
1.	Improvement on Impulse Fatigue Life of Ti-Half Alloy for LCA Application	Aeronautical Development Agency	New
2.	Synthesis & Characterization of LLZO Powder, Surface Engineering of LLZO and to Make Dense Composite Electrodes with Low Interface Resistance Films for Solid State Lithium Ion Batteries	Applied Materials Inc.	Ongoing
3.	Evaluation of Fireside Corrosion Behaviour of Disimilar Welds of IN617 and Super 304H in Simulated Environment for Advanced Ultra Super Critical Power Plant Boiler Applications	Bharat Heavy Electricals Limited	Ongoing
4.	Fabrication, Electrochemical Behaviour and In-Situ Monitoring of Stress Development in Oxide/PEDOT Composite Thin Film Electrodes for Li-Ion Batteries	Council of Scientific and Industrial Research	New
5.	Studies of Tensile and Forming Behaviour of Nickel Base and Titanium Base Alloy Thin Foils	Defence Research & Development Organisation (DRDO)	Ongoing

Sr. No.	Project Title	Sponsoring Agency	Project Status
6.	Inkjet Printed Flexible Thin Film Transistors	Department of Science & Technology (DST)	Ongoing
7.	Fabrication of All-Inkjet Printed Organic Solar Cells in an Inverted Geometry	DST	Ongoing
8.	Nature of Extraordinary High and Low Elongations in Severely Deformed Ultrafine-Grained Al-Mg-Sc-Zr Alloy	DST	Ongoing
9.	Portable Multi-Analyte Sensor for Detection of Renal Disease	DST	New
10.	High Strain Rate Deformation of Aerospace Al Alloys: Experimental Studies and Development of Constitutive Relationships	Indian Space Research Organisation (ISRO)	Ongoing
11.	Materials for Thermoelectric Power Generation in Space	ISRO	New
12.	Centre of Excellence (CoE) in Steel Technology	Ministry of Steel	Ongoing
13.	FDTD Simulations for Plasmonic Nanoantenna	The Institution of Engineers (India)	Completed
14.	Support for the Operation, Maintenance and Upgradation of the National Facility of Texture & OIM	Board of Research in Nuclear Sciences (BRNS)	Ongoing
15.	Thermohydrogen Processing of Zr and Ti-alloys	BRNS	Ongoing
16.	Studies on Evaporation Reactions from Nb and Alloys in RBM and VAR	DRDO	Ongoing

Consultancy Projects

The department undertook 31 jobs generating Rs.5362723/-. Four faculty members were involved.

Patent

No. of Patents filed	:	3
No. of Patents granted	:	2

Sr. No.	Title of the Patent	Inventor	National/ International	Status/Filed/ Granted	Date of patent Filed/Granted
1	“Storage Device with Dendrimer Functionalized Nanoparticles and Fabrication Method Thereof”	Bahadur, D.	National	Filed	January 2014
2.	“Defect Propagation in Variable Size ZnO QDs Grown from Defect Rich Seed: A Generalized Route for Highly Luminescent ZnO Qds”	Kulkarni, A.R., Adesh Asok and Gandhi, M.N.	National	Filed	November 2013
3.	“Achromatic Metallic Lens”	Shukla, S., Saxena, S., and Singh, A.	National	Provisional filed	August 2013

Sr. No.	Title of the Patent	Inventor	National/ International	Status/Failed/ Granted	Date of patent Failed/Granted
4.	"Polyurethane Gel Electrolytes with Improved Conductance and /or Solvent Retention"	Balaji, R., Kulkarni, A.R. and Srinivasa, R.S.	International	Granted	March 2014
5.	"An improved protective coating composition for hot dip galvanization of steel"	Raja, V.S. and Vagge, S.T.	National	Granted	2013.

Visitors to Department

Dr. Pritha Ray, Tata Memorial Centre, Kharghar, Navi Mumbai, delivered a talk on "Noninvasive Molecular Imaging: Live Cells to Living Subjects".

Dr. M.A. Arunagirinathan, delivered a talk on "Dynamic Interfaces and Colloidal Micro/Nanostructures".

Dr. Sankara Papavinasam, CorrMagnet Consulting Inc., Canada, delivered a talk on "Recent Advancements in the Internal Corrosion Control of Oil Transmission Pipelines".

Dr. Arghya Dey, Tata Steel Europe, delivered a talk on "Development of Mathematical Model for Property Estimation of Mould Powder Used in Continuous Casting".

Prof. Peter Hodgson, Deakin University, Australia, delivered a talk on "The Characterisation of Advanced High Strength Steels".

Prof. Ramana G. Reddy, University of Alabama, U.S.A., delivered a talk on "Nanotechnology for Energy Applications".

Dr. K. Eswar Prasad, Johns Hopkins Univ., Baltimore, delivered a talk on "Influence of Strain Rate and Specimen Size on the Deformation Behavior of Crystalline Materials".

Dr. S.R.P. Prabakaran, VIT University, Chennai, delivered a talk on "Battery-Supercapacitor Hybrids: Understanding and Applications in Modern Electronics".

Prof. Ashok K. Ganguli, Institute of Nano Science & Technology, Mohali Punjab, delivered a talk on "Design of Nanostructures for Energy and Environmental Applications".

Prof. L. Ramdas Ram-Mohan, Worcester Polytechnic Institute, Worcester, delivered a talk on "A New

Approach to Diffusion Analysis for Metallic Multicomponent Systems – Local Averages of Diffusion Coefficients and the Transfer Matrix Method".

Dr. Ashok Kr. Vaish, CSIR-NML Jamshedpur, delivered a talk on "Highlights of some pertinent technologies developed at CSIR-NML".

Prof. Michael Markushev, Head of laboratory of the Institute for Metals Superplasticity Problems Russian Academy of Sciences (IMSP RAS), Ufa, Russia, delivered a talk on "Investigations of Processing and Properties of Superplastic Aluminum Alloys at IMSP RAS".

Dr. Akio Fujibayashi, Dr. Toru Inazumi and Dr. Naoki Kikuchi, JFE Steel Corporation, Japan, delivered a talk on "Recent Development in Process Metallurgy & Latest Trends in Advanced High-Strength Steel (AHSS) Development and Applications".

Werner Conrads, Bose Corporation GmDH, delivered a talk on "Mechanical Testing of Orthopedic Implants, Biomaterials, Tissues, Stents etc".

Dr. Nico Langerak, Tata Steel R&D, delivered a talk on "Steel Development for Automotive Applications".

Prof. Walter Richtering, Aachen University, Germany, delivered a talk on "Smart Microgels in Bulk and at Interfaces".

Prof. Philippe Marcus, Director, CNRS-ENSCP, delivered a talk on "France Recent Progress in Surface Analytical Techniques for Corrosion Research".

Dr. Alok Jha, RBI Consultant, Saudi Arabia Petrochemical Company, delivered a talk on "Career Prospects in Oil & Gas Sector".

Prof. Michael V. Markushev and Dr. Elena V. Avtokratova, Ufa, Russia, visited the Department for Indo-Russia (DST-RFBR) Exchange Program.

Conferences/Symposia/Workshops/ Seminars (Participated/Papers presented)

National

Rahul Kumar and Bhargava, P.

“Insitu Growth of Silica Nonowires in Alumina-clay-carbon Composites”, 77th Annual Session of the Indian Ceramic Society, Jamshedpur, December 2013.

More, V. and Bhargava, P.

Presented a paper on “Processing of High Density Magnesium Oxide Ceramics”, 77th Annual Session of the Indian Ceramic Society, Jamshedpur, December 2013.

Adake, C., Gandhi, P. and Bhargava, P.

Presented a paper on “Microstereolithography of Ceramic Suspensions using Constrained Surface Technique”, 77th Annual Session of the Indian Ceramic Society, Jamshedpur, December 2013.

Badjatya, B., Yadav, S., and Bhargava, P.

Presented a paper on “Synthesis and Characterization of Silica Nanoparticles”, 77th Annual Session of the Indian Ceramic Society, Jamshedpur, December 2013.

Mohanty, S.P., More, V. and Bhargava, P.

Presented a paper on “Processing and Characterization of Dye Sensitized Solar Cells”, 77th Annual Session of the Indian Ceramic Society, Jamshedpur, December 2013.

Tembhekar, A., Mohanty, S.P. and Bhargava, P.

Presented a paper on “Effect of Different Conditions Aging on the Performance of Dye Sensitized Solar Cells”, International Conference on Advances in Energy Research 2013, IIT Bombay.

Shukla, S.

Presented a paper “Bottom-up Photochemical Approaches for Fabricating 2D & 3D Metamaterials”, ADNAM 2013, IIT Madras, 2013.

Chaudhary, R.P., Saxena, S., and Shukla, S.

Presented a paper “Terahertz Response of a Split Ring Based Metamaterials”, National Conference on Advanced Materials, 2014.

Shukla, S.

Presented “Metallic Nano/Micro-structures for Controlling Electromagnetic Wave”, IIT Bombay-National University of Singapore Joint Workshop, 2014.

International

Pandey, V., Gururajan, M.P., and Dusane, R.O.

Presented a paper “Low Temperature Aluminum Induced Crystallization of HWCVD Deposited a-Si:H”,

International Conference on “Advanced Nanomaterials and Emerging Engineering Technologies”, ICANMEET, July 2013, Chennai.

Agarwal, M., Singh, U. and Dusane, R.O.

Presented a paper “Isotropic Etching of Polycrystalline Silicon Wafer by Acidic Solution”, International Conference on “Advanced Nanomaterials and Emerging Engineering Technologies”, ICANMEET, July 2013, Chennai

Soam, A. and Dusane, R.O.

Presented a paper “Charge Storage Properties of SiNWs Grown by Hot-Wire Chemical Vapor Process Technique as Electrodes in Electrochemical Capacitors”, International Conference on “Advanced Nanomaterials and Emerging Engineering Technologies”, ICANMEET, July 2013, Chennai.

Presented a paper “Dense Silicon Nanowires for Electrochemical Capacitor Application” APEnergy 2014, Conference, February 2014, Brisbane, Australia.

Bishnoi, A., Saxena, S., and Shukla, S.

Presented a paper on “Synthesis and Characterization of PZT Nanowires and Thin Films for Nanogenerator Applications”, International Conference on Advances in Energy Research (ICAER), 2013, Mumbai, India.

Patil, N.N., and Saxena, S.

Presented papers on “First principles Investigation of Ru Based dyes for DSSC”, Materials Research Society Fall Meeting, 2013, Boston, MA, USA.

Singh, A., Prasoon Meena, Shukla, S., and Saxena, S.

Presented a paper on “Plasmonic Nanoantenna for Wireless Communications”, Materials Research Society Fall Meeting, 2013, Boston, MA, USA.

Singh, A., Saxena, S., and Shukla, S.

Presented a paper on “Plasmonic Electromagnetic Lens: A Highly Achromatic and Tunable Superconcentrator”, Materials Research Society Fall Meeting, 2013, Boston, MA, USA.

Amit Kumar, and Shukla, S.

Presented a paper on “Synthesis & Characterization of PZT Thin Films and Nanowire based Nanogenerators”, MRS Fall Meeting, 2013, Boston, USA.

Soam, A., Meshram, N.P., Kumbhar, A.A. and Dusane, R.O.

Presented a paper “Growth of High Density Silicon Nanowires Using Tin as a Catalyst”, International Conference on Emerging Materials and Processes, ICEMP 2014, Bhubaneswar.

Conference/Symposia/Workshops/ Seminars (Coordinated/Chaired by Faculty)

National

Gururajan, M.P., Pant Prita, and Panwar, A.S.

Coordinated the MR 13 Materials Modelling Workshop, held in May 2013, at IIT Bombay.

Khanna, A.S.

Chaired the Organizing Committee Surface Science & Engineered Surface, 5th National Kolleg, Lavasa, February 14-16, 2014.

Mukhopadhyay, A.

Convener, 1st Joint IITB-NUS Workshop on Energy (ENERGY 2014), held during February 24-25, 2014, at IIT Bombay.

Raja, V.S.

Convener, Hands on Experience on DC & AC Techniques for Corrosion Research, held on February 18-19, 2014 at IIT Bombay.

Recent Progress in Experimental Techniques for Corrosion Research, held on September 29-30, 2013, at IIT Delhi.

International

Kashyap, B.P.

Chaired, International Corrosion Prevention Symposium for Research Scholars (CORSYM-2014), IIT Bombay, India, 2014.

Khanna, A.S.

Chaired, Organizing Committee International Symposium on Surface Protective Coatings, Hotel Shiva, Ahmedabad, January 19-21, 2014.

Raja, V.S.

Coordinated, Workshop on Experimental Techniques for Corrosion Research, Student Chapter NACE International Gateway India Section, held on September 29-30, 2013 at IIT Delhi.

Coordinated, National Workshop on Electrochemical Experimentation and Data Analysis and Student Chapter NACE International Gateway India, during February 17-18, 2014, at IIT Bombay.

Coordinated, International Corrosion Prevention Symposium for Research Scholars (CORSYM-2014), By Department of Metallurgical Engineering and Materials Science IIT Bombay, & Student Chapter NACE International Gateway India Section, February 19-20, 2014 at IIT Bombay.

Coordinated, CORSYM'2014; International Corrosion Prevention Symposium for Research Scholars, held during February 20-21, 2014.

Invited Lectures

National

D. Bahadur

"Hybrids at Nanoscale for Cancer Theranostics", National Conference on Recent Trends & Technology of Nanomaterials & Smart devices (RTT-NSD-2013), Solapur University, Maharashtra, April 18-20, 2013.

"Controlling Magnetic Properties of Graphitic Systems through Innovating Processing", JNCASR Research Conference "Chemistry of Materials", Trivandrum, October, 2013.

"Nanohybrids for Cancer Theragnostics", Narsee Moonjee Institute of Management Studies School of Science on the National Education Day, November 11-12, 2013.

"Multifunctional Nanohybrids for Cancer Theragnostics", AOCCMF Advanced Seminar on Tissue Engineering and Research Methodology, Mazumdar-Shaw Cancer Centre, Bangalore, November 14-16, 2013.

"Magnetic Nanohybrids for Thermo Chemo Therapy", International Conference on Magnetic Materials and Applications, IIT Guwahati, December 5-7, 2013.

"Polymeric Nanohybrids for Thermo Chemo Therapy", Polymer Processing Society Asia/Australia Conference, at Mumbai (PPS2013), December 4-7, 2013.

Bhargava, P.

"Applications, Synthesis and Characterization of Nanozirconia Ceramics", Workshop on Nanomaterials-Science and Technology, ICT Matunga, June 2013.

Gururajan, M.P.

"Integrated Computational Materials Engineering", NRC-M Winter Workshop, I.I.Sc., Bangalore, December 23-27, 2013.

"Materials Modeling and Simulations Across Length Scales", Hand on Session, SERB School, Mumbai University, Kalina, December 18-20, 2013.

"Spectral Implementation of Phase Field Models", Indo-European Winter Academy, IIT Guwahati, December 9-15, 2013.

Prasad, M.J.N.V.

"Microstructural Evolution in Electrodeposited Nanocrystalline Ni", Microstructure-2013 (Microstructure and Diffraction) Workshop organized by

Indian Institute of Technology Bombay & Bhabha Atomic Research Centre, Mumbai, India, April 19-20, 2013.

“Superplastic Forming”, Advanced Course in Sheet Metal Forming Technology, IMTMA, Pune, India, September 20-21, 2013.

Raja, V.S., Padekar, B. and Kannan M.B.

“Importance of Study of Precursor Events for Corrosion Prevention of Corrosion Failures”, 67th ATM, Indian Institute of Metals, Banaras Hindu University, Varanasi, November 12-15, 2013.

Raja, V.S.

“Proactive Management of Assets: Need for Studying Corrosion Mechanisms”, Central Electrochemical Research Institute, Karaikudi, December 3, 2013.

“Corrosion Control Measures for Heat Exchangers”, Manufacture, Maintenance and Management of Heat Exchangers, Navi Mumbai, September 23, 2013.

Sumit, S.

“Density Functional Theory: An Introduction”, Staff Development Programme on Recent Advances in Computational Techniques for Materials Engineering Practices (RACTMEP-2013), August 5–9, 2013.

Bhargava, P., Jena, A.K., Lekha P., Shivade, V., Mohanty, S.P., Agnihotri, S., Naduvath, J. and Mallick, S.

“Processing of Photoanode, Electrolytes and Counterelectrode for Dye Sensitized Solar Cells”, NCEMA2014, COEP, Pune, 2014.

Khanna, A.S.

“Effect of Nano-particles on the Corrosion and Protective Coatings”, GITAM University, February 23, 2014.

Prasad, M.J.N.V.

“Grain Growth and Superplasticity in Electrodeposited Nanocrystalline Ni”, International Conference on Nano, Bio & Material Sciences (ICNBMS)-2014, Nizam College, Osmania University, Hyderabad, India, January 8-10, 2014.

Raja, V.S.

“Effective Corrosion Control Management”, Manipal Institute of Technology, Jaipur, January 30, 2014.

“Challenges in Designing Stress Corrosion Cracking Resistant Alloys”, Symposium on Frontier Research in Materials, MNIT, Jaipur, January 30, 2014.

“Metallurgical Challenges in Developing Corrosion Resistant Materials”, Workshop on Select Topics in Metallurgical and Materials Engineering, NITK, Surathkal, January 22-24, 2014.

“Materials Selection for Corrosion Prevention Advances in Corrosion Engineering”, Science Academies Workshop, Pune, January 6-8, 2014.

“Cathodic Protection”, Advances in Corrosion Engineering, Science Academies Workshop, Pune, January 6-8, 2014.

“Integral Approach to Corrosion Control”, Advances in Corrosion Engineering, Science Academies Workshop, Pune, January 6-8, 2014.

“Failure Analysis, Advances in Corrosion Engineering”, Science Academies Workshop, Pune, January 6-8, 2014.

Shukla, S.

Planar Metallic Nano/Microstructures for EM Wave Manipulations, 1st National Conference on Energy & Environment (NC2E-2014), University of Pune, 2014.

International

Bahadur, D.

“Therapeutic Performance of PEG-PAMAM Dendrimers Functionalized Magnetic Nanoparticles towards Cervical Cancer”, European Materials Research Society Conference (E-MRS 2013), Strasbourg, France, May 27-31, 2013.

Bhargava, P.

“From Powders to Shapes, Components and Devices through Powder Synthesis, Shape Forming and Assembly”, POSTECH Korea.

Bhargava, P., Jena, A.K., Gondane, V, Shivade, V., Mohanty, S.P., Agnihotri, S., Naduvath, J. and Mallick, S.

“Advances in Processing of Photoanode, Electrolytes and Counterelectrode for Dye Sensitized Solar Cells”, 5th Asia-Oceania Ceramic Federation Conference, Jeju Island, Korea, October 2013.

Dusane, R.O.

“Hot-Wire CVD - a Potential Tool for Silicon Based Thin Films and Nanostructures”, Materials Engineering Department, Brown University, USA, 2013.

“Realizing Si Nano Wires using the Hot Wire Chemical Vapor Process”, Department of Physics, Moscow University, October 2013.

“Super Capacitors from Si Nanowires”, International Union of Materials Research MRS International Conference in Asia (IUMRS-ICA 2013) December, Bangalore, 2013.

Mukhopadhyay, A., Kali, R, Tokranov, A, Sheldon, B.W. and Xiao, X.

“Stress Associated with Surface Phenomenon in Electrode Materials for Li-ion Batteries”, Materials

Challenges in Alternative & Renewable Energy (MCARE 2014), The American Ceramic Society, Clearwater, Florida, USA, February 2014.

Mukhopadhyay, A., Tokranov, A., Kali, R., Guo, F., Hurt, R., Xiao, X. and Sheldon, B.W.

“In-situ Investigation of Stress Development in Electrode Materials for Li-ion Batteries”, 10th Pacific Rim Conference on Ceramic and Glass Technology (Pacrim 10; primary organizer: The American Ceramic Society), Coronado, San Diego, CA, USA, June 2013.

Pant, P.

“SES 50th Annual Technical Meeting and ASME-AMD Annual Summer Meeting”, Brown University, USA, July 28 - 31, 2013.

Shukla, S.

“Solar Energy Concentration using Planar Metallic Nanostructures for Efficient Photodevices”, International Union of Material Research Society ICA-2013, IISc Bangalore, December 2013.

“Femto-second Laser Induced Photochemical Methods for Fabricating Nanostructures”, Pulsed Laser Deposition Meet-2013, IIT Kharagpur, India, 2013.

Prasad, M.J.N.V.

“High Strain Rate Superplastic Forming”, International Seminar on Forming Technology -Shaping the Future of Manufacturing, BIEC, Bangalore, India, January 22, 2014.

Significant Awards/Distinctions

Dusane, R.O.

Prof. V. G. Bhide Memorial Lecture, Nagpur, August 2013.

Gururajan, M.P.

Elected as Young Associate Member of Maharashtra Academy of Sciences, 2013.

Narasimhan, K.

Awarded the Distinguished Alumnus Award, IIT BHU.

Mukhopadhyay, A.

Awarded the Dr. R.L. Thakur Memorial Award (a National Award as Young Scientist), Indian Ceramic Society, 2013.

Prasad, M.J.N.V.

Awarded the INAE Young Engineer Award, 2013.

Raja, V.S.

Member, Research Council, CSIR-Central Electrochemical Research Institute, 2013.

Member, Research Council, DRDO-Naval Materials Research Laboratory, 2013.

Best Poster Award for Electrochemical Impedance Study of High Nitrogen, Nickel and Manganese Free Austenitic Stainless Steel in Artificial Physiological Solutions”, Proc. Int. CORCON-13, New Delhi, 2013.

Best Oral Presentation Award (Ferrous Group) for EIS Study and Role of Surface Finish on the Electrochemical Corrosion Behavior of High Nitrogen, High Mn and Ni Free Austenitic Stainless Steels in 3.5 wt.% NaCl Solution”, NMD-ATM 2013, Varanasi, 2013.

Best Poster Award for Evolution of Hot Corrosion Resistance of Duplex and Functionally Graded Thermal Barrier Coatings, International Corrosion Prevention Symposium for Research Scholars (CORSYM-2014), IIT Bombay, India, 2014.

Honorary Work

Bahadur, D.

Member of the Scientific Advisory Board (SAB) of Mazumdar Shaw Centre for Translational Research (MSCTR), the research wing of Mazumdar Shaw Medical Foundation, Bangalore, 2013.

Member of Programme Advisory Committee (PAC) on Technology Systems Development Programme (TSDP) of DST, Govt. of India, 2013.

Member of Technical Advisory Group of ARCI's Centre for Nonmaterial's and Centre for Carbon Materials, 2013.

Review Committee Member of Materials Science Engineering Department, IIT, Hyderabad.

Member of Review Panel for Scientific Assessment of Research Proposals of Graphene Flagship of European Science foundation, January, 2014.

Bhargava, P.

Member of Editorial Board for Transactions of the Indian Ceramic Society Co-Editor, Special Issue on Glass and Ceramics.

Saxena, S.

Peer Review for Journal of Materials Chemistry A RSC, 2013.

Peer Review for RSC, 2013.

Peer Review for RSC Advances, 2013.

Peer Review for Journal of Materials Chemistry C.

Evaluated the posters at the IITB-NUS Workshop, 2013.

Shukla, S.

Peer Review for Physical Chemistry Chemical Physics, Royal Society of Chemistry.

Peer Review for Journal of Optical Society of America-B, Optical Society of America.

Gururajan, M.P.

Review of Papers for Computational Materials Science and Defence Science Journal.

Mukhopadhyay, A.

Editorial Board, International Peer-reviewed Journals related to Materials & Metallurgical Engineering and Surface & Hybrid Coating Technology.

Peer Reviewing of Research Articles submitted to International Journals.

Raja, V.S.

Honorary Member, 19th International Corrosion Congress.

Dusane, R.O.

Member, Expert Group on Solar Energy Enabling R&D (SEER), DST, GOI, 2014.

Member, India-Singapore Joint Proposals: Screening Committee, 2014.\

Organizing Member, National Conference on Energy and Environment, NC2E-2014, Pune, 2014.

Faculty Members and their Specializations

1. D. Bahadur

Magnetic materials, Electronic ceramics, Nano structured materials for magnetic, Bio and optical applications, Cancer theranostics, Water purification, nano hybrids.

2. N.B. Ballal

Process analysis, iron & steel making, Process modelling, Transport phenomena, Thermodynamics.

3. S. Basu

Thermodynamics of metal refining, slag-metal interactions, continuous casting.

4. P. Bhargava

Powder processing, Near net shape forming of advanced ceramics, Indentation fracture of ceramics, Gel casting, Rheology of ceramic suspensions, Fabrication and properties of ceramic foams, Synthesis of oxide nanoparticles, Consolidation of nanoparticles, Fabrication of ceramics for prosthodontic applications, Plastic forming of ceramics, Materials for dye sensitized solar cells.

5. Arup R. Bhattacharyya

Polymer blends, Carbon nano tubes/polymer composites, Polymer crystallization, Polymer processing, Nanocomposites.

6. R.O. Dusane

Thin films and devices of elemental semiconductors and their alloys, Surface nano-engineering, Photovoltaic devices, MEMS materials and technology, Devices for health care monitoring and radiation detection, Nano wires and nano layers for different applications, Energy storage and functional materials.

7. P. Gopalan

Ferroelectric materials and films, SOFC systems, Oxygen ion conductors for SOFC.

8. Dipti Gupta

Plastic/flexible electronics based on organic semiconductors, Metal oxides and graphene, key devices and solar cells, Thin film transistors, Memories, Device Physics & simulation.

9. M.P. Gururajan

Phase transformations, modeling of micro structural evolution, Phase field modeling materials mechanics, materials thermodynamics.

10. B.P. Kashyap

Deformation behaviour and microstructural evolution.

11. N.K. Khosla

Process Instrumentation and control, Mineral processing, Extractive metallurgy, Materials preparation and characterization.

12. A.R. Kulkarni

Ionically conducting materials, Lithium batteries, Sensors, Glass and glass ceramics, Impedance spectroscopy, Nanophosphers, Lead free piezoelectrics.

13. A.S. Khanna

High temperature corrosion, High temperature coatings, Paint coatings, Rebar & concrete coatings, Oil & gas corrosion, Surface engineering.

14. S. Mallick

Dielectrics, Powder metallurgy, Dye sensitized solar cells.

15. A. Mukhopadhyay

Nanomaterials for energy storage & conversion, Stress in thin films, Carbon nanotube reinforced composite, Ceramic nanocomposites.

16. K. Narasimhan

Metal forming, Mechanical behavior, Simulation and validation.

17. Prita Pant

Mechanical behavior of thin films, Dislocation dynamics simulation, Shape memory materials, Nanoindentation, Twinning.

18. A.S. Panwar

Computational materials science, Molecular Simulations, Soft nano-structure materials.

19. S. Parida

Electrochemical nanostructuring, Nanoporous materials, Functional application of nano materials, Corrosion.

20. N. Prabhu

Physical metallurgy, Phase transformations, Electron microscopy, Structure-property relationships.

21. M.J.N.V. Prasad

Electrodeposition, Nanocrystalline and amorphous materials, Medical implants, Indentation, Fatigue, creep and Superplasticity, Microstructural investigation.

22. R.C. Prasad

Fatigue, Fracture, Fractography and failure analysis, Environment assisted cracking, Composites, NDE Heat treatment, Fracture mechanics and integrity assessment.

23. T.R.S. Prasanna

Materials for energy generation and storage, Oxide ion and cation solid electrolytes.

24. Raja V.S.

Corrosion, Structure property correlation on corrosion, Failure analysis, Protective coatings, Metallurgy of corrosion.

25. I. Samajdar

Thermomechanical processing, Texture analysis Microscopy.

26. S. Saxena

Computational materials science, Ab-initio calculations.

27. Shobha Shukla

Nanophotonics, Nanomaterials, Metamaterials, Plasmonics, Photonic crystals.

28. R.S. Srinivasa

Nanostructured materials, Thin films.

29. N. Venkataramani

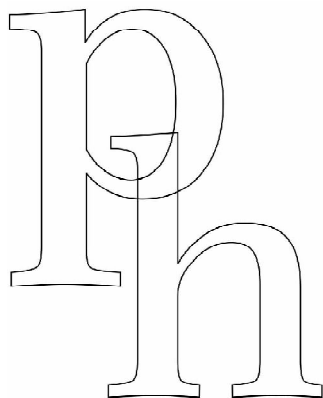
Magnetic materials, thin films, structure property correlations in nanocrystalline systems, magneto electric composites.

30. N.N. Viswanathan

Transport phenomena, Modelling of materials processing, Iron and steel making.

31. S. Vitta

Nanomaterials, Magnetic and electrical properties of metals, Alloys & oxides, Thermoelectric materials.



Physics

Introduction

The Department of Physics offers a four-year B. Tech. program in Engineering Physics, a two-year Master's degree in Physics, a five-year dual degree, B.Tech + M.Tech in Engineering Physics with specialization in nanotechnology and nanomaterials and a post B.Sc dual degree program leading to a Master of Science degree in Physics as well as a Ph.D. The Department along with the Department of Material Science and Metallurgy has also started a dual degree programme of M.Sc. in Physics and M.Tech. in Material Science.

The Department organized a one-day research symposium, where eminent physicists from TIFR Hyderabad, TIFR Mumbai, IISc Bangalore and University of Hyderabad, gave insight on exciting developments in the field of statistical physics, novel materials and high energy physics.

At present the Department has 34 permanent faculty members, two faculty members on reappointment, two Emeritus scientists and three Adjunct faculty members. During 2013-14, two new faculty members, Dr. Mithun K. Mitra (from S.N. Bose National Center for Basic Sciences, Kolkata), and Dr. Aftab Alam (from Ames Laboratory, USA) joined the Department.

MOUs and collaborations:

The Department signed an MoU with Osaka University in 2012 to facilitate exchange of up to three graduate/ undergraduate students and one faculty between the two Departments for work on research projects of mutual interest. This is an ongoing program and two B.Tech. students of the Department are currently visiting Osaka University under the scheme.

Major activities proposed:

A facility for basic photolithographic processing was funded by Research Infrastructure Funding Committee (RIFC) and the funds were released in early 2013. This project involves the construction of a class 10,000 clean-room and housing equipment for photolithography, metallisation, thermal annealing and chip bonding on a small scale. The cleanroom construction

is in progress and some of the equipments like the chip bonders, microscopes are already available to users. The rest of the equipments have been purchased and are awaiting installation in a clean room. The Department has allocated a 2-bay (600 sq ft) area for this facility and expects the facility to be fully functional within this year.

Infrastructural development:

The Department hosts the Central facility for Hall effect measurements on highly conducting to highly resistive materials. The Department also plans to host the High Resolution XRD facility (a central facility), which has been funded by RIFC. The Department has also revamped and modernised the First year Physics laboratories, which are now housed in the prefabricated transit laboratories in a separate complex.

Academic Programmes

The Department for all its programmes offers a wide range of courses (from Bio Physics to Theoretical Physics) thereby helping the students to find their aptitude. This is a boon especially for a young student who after qualifying JEE is unsure as to where to go. In addition, the Department has a vibrant research program comparable to the best in the world. Annually, the Department offers admissions to about 35 students in B. Tech. (Engineering Physics) program, 10 dual degree B.Tech-M.Tech. and 40 students for Masters Degree. In the dual degree M.Sc.-Ph.D. program admission is offered to about 10 students and stipend is paid from the first semester onwards. There are about 100 Ph.D students and Post-doctoral fellows pursuing research in various areas in the Department.

Degrees awarded

B. Tech (Engineering Physics)	:	12
B.Tech+M. Tech (Dual degree)	:	2
M.Sc.	:	25
M.Sc + PhD (Dual degree programme)	:	4
Ph.D	:	4

Student exchange programmes:

The Institute has memorandum of understanding with NUS Singapore, ETH Zurich and Monash Academy Australia. The students from these institutions often come to the Department. In their feedback they have often praised the rigor and the depth of our courses. It also helps them to interact with the students who are best in the nation.

- Photonics
- Experimental Nuclear Physics
- Theoretical Condensed Matter Physics
- Statistical Physics and Non-linear Dynamics
- Theoretical High Energy Physics

R&D Activities

The main areas of R&D activity are:

- Experimental Condensed Matter Physics and Material Science

Sponsored Research Projects

New	:	9
Ongoing	:	26
Completed	:	10

List of Sponsored projects initiated in 2013-14

Sr. No.	Project Title	Sponsored by	Status
1	Ultra fast optical interactions in metal and semiconductor nanostructures	Council of Scientific and Industrial Research (CSIR)	New
2	Control of the optical and magnetic properties of (Ga,In)N nanoparticles by surface engineering through rare-earth doping	CSIR	New
3	Investigating plasmonic field enhancement in random metallic nanostructures	Department of Science & Technology (DST)	New
4	JSPS-DST Exploratory Exchange Visit of Programme	DST	New
5	Defect band engineering of GaN and ZnO layers through large ion incorporation: Magneto-optic and magneto-transport studies.	DST	New
6	Ramanujan Fellowship	DST	New
7	R&D Efforts by University Groups for INO Project.	DST	New
8	GCET-2014	Government of Goa	New
9	Materials for thermoelectric power generation in space	Indian Space Research Organisation (ISRO)	New

Sponsored projects initiated before 2013-14

Sr. No.	Project Title	Sponsored by	Status
1	Multicloric effects in certain systems with magnetocrystal transitions	Board of Research in Nuclear Sciences (BRNS)	Ongoing
2	Search for novel multi-functional materials from Heusler family	CSIR	Ongoing

Sr. No.	Project Title	Sponsored by	Status
3	Some studies in spin-dependent scattering processes at high energies	DST	Ongoing
4	FIST Program- Physics Dept - SERC	DST	Ongoing
5	Development and study of UHF ferrite & composites for high-speed information processing system (DST-RFBR)	DST	Ongoing
6	New Generation of Molecular Nanomagnet	DST	Ongoing
7	Nonlinear analysis of the ion transport through a single channel in the lipidic membrane.	DST	Ongoing
8	Investigation on novel multi functional materials from the full Heusler family	ISRO	Ongoing
9	A new route to ultra-high quality hole based nanoelectronic Devices.	DST	Ongoing
10	Synchronization of coupled nonlinear oscillators: Simulations and Experiments	DST	Ongoing
11	Exotic magnetic and electronic properties in novel 4d and 5d transition metal oxides	DST	Ongoing
12	Nano structured Ni based full Heusler alloys for magnetic refrigeration applications	DST	Ongoing
13	Development of magnetic nanocomposite films and a prototype magneto-optical sensor.	ISRO	Ongoing
14	Localized Surface Plasmon Resonance (LSPR) Based Optoelectronic Biosensors.	Naval Materials Research Laboratory	Ongoing
15	Systematic studies on Localized Surface Plasmon Resonance (LSPR) based biosensor using ATR technique and its potential for DNA/antibody detection	Naval Materials Research Laboratory	Ongoing
16	High density tape cast ferrite thick films for microwave applications	Defence Research & Development Organisation (DRDO)	Ongoing
17	Enhancement of Regional World wide Computing Grid (WLCG)	DST	Ongoing
18	Electronics design using DSP, FPGA, CPLD and Micro controllers through simulation and direct access of the hardware	Ministry of Human Resource Development (MHRD)	Ongoing
19	Proposal for 10Mbps dedicated leased line to IIT Bombay for ALICE WORK	Tata Institute of Fundamental Research (TIFR)	Ongoing
20	Functional polymeric semiconductor and metallic nanostructures for nano-photonics	DST	Ongoing

Sr. No.	Project Title	Sponsored by	Status
21	A lab on chip of Cardiac Diagnostics	Aeronautical Development Agency	Ongoing
22	A large Ion Collider Experiment (ALICE) Operation and Utilisation	DST	Ongoing
23	Establishment of low temperature/high magnetic field facilities-phase-II: Torque magnetometer and scanning hall probe microscope/ magnetometer.	DST	Ongoing
24	A joint theoretical and experimental study of diluted magnetic semiconductor	International Collaboration Projects	Ongoing
25	Nanostructuring of nanofluidic/ microfluidic devices for enhanced blood filtering and detection of blood analytes associated with biosensors.	International Collaboration Projects	Ongoing
26	Statics and Dynamics of Low-Dimensional Disordered Systems	Department of Information Technology	Ongoing

Projects completed during 2013-14

Sr. No.	Project Title	Sponsored by	Status
1	HF Meet 2013 held during April 29 - May 1, 2013 at IIT Bombay	BRNS	Completed
2	GCET-2013	Government of Goa	Completed
3	Workshop on High Energy Physics	Multiple Institute Workshop	Completed
4	Microwave Losses in ferrite thin films for meta-materials	DST	Completed
5	Low Cost Computing Access Device.	Internally funded by MHRD project	Completed
6	Magnetism in low-dimension and/or frustrated magnetic systems	University Grant Commission (UGC)	Completed
7	Structurally Engineered Magnetic Nanoparticles: Gram Scale Synthesis Characterization and Surface Functionalization Leading to Colloidal suspensions	CSIR	Completed
8	Workshop on Grid & Cloud Computing to be held during April 1-3, 2012 at IIT Bombay	BRNS	Completed
9	Raman spectroscopy studies of TiO ₂ thin films and nano tubes/rods prepared by laser ablation - Dr. Aditi Chaturvedi - Women Sci, C/o Prof. Shiv Prasad	DST	Completed
10	Development of Ceramics and Nano Structured Magnetics Refrigerates.	DRDO	Completed

Consultancy Projects

No. of jobs	:	2
Faculty involved	:	2
Income generated	:	Rs.1298000/-

Patents

Sr. No.	Patent Title	Inventor	National/ International	Status: Granted/ Applied	Date : Granted/ Applied
1.	“Process for the preparation of monodisperse nanostructures”	Mohapatra Jeotikanta, Mitra, A., Bahadur, D. and Aslam, M.	Indian	Filed	2012
2.	“Preparation and Functionalization of Carbon Nano Onions”	Mohapatra Jeotikanta, Mitra, A., Bahadur, D. and Aslam, M.	Indian	Filed	2014

Extension Activities

Das Dibyendu

Gave a series of lectures titled “Theory of Stochastic processes” in a Refresher Course for college teachers, organised by Mumbai University, at Homi Bhabha Centre for Science Education, in November 2013.

Dr. Tomohisa Takimi of the Harish Chandra Research Institute, Allahabad, gave a seminar on “Phase Structure of Chern-Simons Matter Theories on $S^1 \times S^2$ ”, on November 12, 2013.

Dr. Subhadeep Datta of the Ecole Normale Supérieure, gave a seminar on “Hybrid Quantum Dot Devices”, on November 13, 2013.

Prof. L. R. Ram-Mohan of the Department of Physics and the Director of the Center for Computational NanoScience at the Worcester Polytechnic Institute, gave a seminar on “Efficient High Accuracy Electromagnetic Field Calculations (Modelling fields in waveguides and photonic crystals)”, on December 2, 2013.

Prof. Prathamesh S. Donvankar, of the School of Applied and Engineering Physics, Cornell University, gave a seminar on “Nonlinear Optics in Rubidium-Filled Photonic Band-Gap Fibers,” on December 20, 2013.

Dr. Arijit Saha of the Department of Physics, University of Basel, Switzerland, gave a seminar on “Novel transport phenomena in hybrid junctions of nanowires,” on January 8, 2014.

Dr. Vikram Rentala of the Department of Physics, Michigan State University, gave a seminar on “Identifying dark matter interactions in monojet searches,” on January 9, 2014.

Dr. Dhrubaditya Mitra from NORDITA (Nordic Institute for Theoretical Physics) Sweden, gave a

Visitors to the department

Dr. Niraj Kumar of the Department of Physics, University of Massachusetts, Boston gave a seminar on “Thermodynamics of small systems: Efficiency at maximum power”, on July 3, 2013.

Dr. Sumiran Pujari of the University of Toulouse gave a seminar on “Neel to valence-bond solid transition on the honeycomb lattice: Evidence for deconfined criticality”, August 21, 2013.

Prof. B. Ananthanarayan of the Indian Institute of Science, Bangalore, gave a seminar on “Perturbative expansion improved by renormalization-group summation and conformal mappings of the Borel plane for the QCD Adler function”, on September 11, 2013,

Prof. Amol Patwardhan of the University of California, San Diego, gave a seminar on “Late-time vacuum phase transitions: Connecting sub-eV scale physics with outstanding issues in cosmological structure formation,” on September 20, 2013.

seminar on “Can planetesimals form by collisional fusion?” on January 13, 2014.

Dr. Manimala Mitra of the Department of Physics, Durham University, gave a seminar on “On the Origin of Neutrino Mass and Lepton Number Violating Searches,” on January 22, 2014.

Prof. Gunnar Bali of the University of Regensburg, gave a seminar on “Matter in extremely strong magnetic fields,” on February 19, 2014.

Prof. Mahendra Verma of the Department of Physics, IIT Kanpur, gave a seminar on “Dynamics of Large-scale Structures in Turbulence,” on February 26, 2014.

Dr. Kalpataru Pradhan of the University of Augsburg, gave a seminar on “Magnetically Disordered Interfaces in Magnetic Tunnel Junctions,” on March 7, 2014.

Dr. Sudipto Muhuri of the University of Pune, gave a seminar on “Intrinsic oscillations of polymerizing antiparallel microtubules in a motor bath”, on March 12, 2014.

Dr. Prabhat Pujahari of the Wayne State University, Detroit, gave a seminar on “Two-particle differential correlations in ALICE at the LHC”, on March 21, 2014.

Dr. Harshal Bhadkamkar of the Raman Research Institute, Bangalore, gave a seminar on “X-ray binary evolution and their collective properties”, on March 28, 2014.

Conferences/Symposia/Workshops/ Seminars (Participated & Paper Presented)

National

Alam Aftab

Delivered a talk on “Low-energy magnetic defects at nano- and meso-scale in Fe-based superconductors” at the International Conference on *Structural and Physical Properties of Solids (SPPS 2013)* at Indian School of Mines, Dhanbad, November 18-20, 2013.

Delivered a talk on “Interplay of force constants and short-range ordering in the lattice dynamics of disordered alloys” at the *Asian-Sweden Meeting on understanding functional materials from lattice dynamics*, at Indian Institute of Technology Guwahati, Assam, India, January 9-11, 2014.

Shukla Alok

Delivered a talk on “Multi-Reference Configuration Interaction Approach and Its Applications to the Optical

Absorption Spectra of Clusters and Polymers” at the Workshop on *Numerical Many Body Methods in Quantum Chemistry and Physics*, at Orange County Resorts, Coorg, Karnataka and organized by IISc Bangalore, December 2-7, 2013.

Delivered a talk on “Theory of Electronic Structure and Optical Properties of Graphene Nanodisks,” at the India-UK Scientific Seminar on *From Graphene Analogues to Topological Insulators*, Vedic Village, Kolkata, organized by Indian Association for the Cultivation of Science, January 27-29, 2014

Sain Anirban

Presented an invited talk at the JNU mini symposium on *Soft Matter* in March 2014.

Presented a contributed talk at the *Stat-physics meeting*, IISc Bangalore, February 2014.

Presented a contributed poster at the Young investigators meet on *Soft matter phys*, Puducherry, December 2013.

Mitra Mithun K.

Presented a contributed talk on “Role of delays in epigenetic landscapes” at the *Stat-physics meeting*, IISc Bangalore, February 2014.

Presented a contributed poster on “Role of delays in epigenetic landscapes” at the *Young investigators meet on Soft matter phys*, Puducherry, December 2013.

Kalita Hemen, Harikrishnan V. and Aslam, M.

Presented a paper on “Humidity Sensing properties of Graphene Quantum Dots” at the International Conference on *Emerging Electronics (ICEE) 2012*, IIT Bombay IEEE explore conference proceeding-(In Press-2013)

Kushwaha Ajay and Aslam, M.

Presented a paper on “Surface roughness induced defects and photoconductivity of acid etched ZnO nanowire arrays” in the IEEE explore conference proceeding-(In Press-2013)

Mishra Abhishek, Khare Manali, Kalita Hemen, Aslam, M. and Kottantharayil Anil

Presented a paper on “Extraction of Graphene/TiN Work Function Using Metal Oxide Semiconductor (MOS) Test Structure” at the International Conference on *Emerging Electronics (ICEE) 2012*, IIT Bombay IEEE explore conference proceeding-(In Press-2013).

Mahajan Avinash

Presented an invited talk on “Search for Spin-liquid Behaviour In Some Ir-based Systems” at the International conference on *Magnetic Materials and Applications (MagMA-2013)* held at IIT Guwahati, December 5-7, 2013.

Das Dibyendu

Presented a seminar on “Dynamics and collective stall force of multiple bio-filaments under force” at the *Indian statistical physics community meeting*, organised by ICTS Bangalore.

Kabra Dinesh

Attended the INUP Coimbatore-2013 Outreach event.

Presented an invited talk at the *Indo-US Organic Solar Cell* workshop IITK, Kanpur.

Presented an invited talk in National Conference on *Recent Trends in Photonics 2014* workshop at Pandit Ravishankar University, Raipur.

Presented an invited talk at *IUMRS 2013*, IISc, Bangalore.

Presented an invited talk at *IWPSD 2014*, Amity University, Noida.

Presented an invited talk in *IITB-NUS Energy Meeting*, IIT Bombay, Mumbai

Das Gupta Kantimay

Presented an invited talk on “Making a Semiconductor Ambipolar: Or Making an ON-OFF-ON transistor” at the *58th DAE-Solid State Physics Symposium*, December 17-21, 2013, Thapar University, Patiala, India.

Jadhav Manoj, Kumar Shyam, Das Gupta, K., Misra, D. S., Sarin, P. and Varma, R.

Presented a poster on “Fabrication and Characterization of Diamond Radiation Detector as an Alternative to Silicon Detectors” at the *58th DAE-International Symposium on Nuclear Physics*, December 3-6, 2013, Bhaba Atomic Research Centre, Mumbai, India

Kumar Shyam Divyash, Jadhav Manoj, Das Gupta, K., Misra, D. S. and Varma, R.

Presented a poster on “Growth of diamond by MPCVD Process” at the *58th DAE-International Symposium on Nuclear Physics*, December 3-6, 2013, Bhaba Atomic Research Centre, Mumbai, India.

Nandi, R., Mohan, S. Srinivasa, R.S. and Major, S.S.

“Effect of ZnO seed layer on the morphology and optical properties of ZnO nanorods grown on GaN buffer layers” in the *AIP Conference Proceedings* 1591, 303 (2014); doi: 10.1063/1.4872581

Vasa Parinda

Attended the symposium *Active plasmonics, Symposium on Metamaterials and Plasmonics* at IIT Kanpur, India, August 2013.

Paramananda Punit

Presented an invited talk at the conference on nonlinear dynamics in Kolkata, 2014.

Presented an invited talk at the conference on nonlinear dynamics in Chennai, 2014.

Das, S. S. and Senthil Kumar, M.

Presented a paper on “Magnetic properties of sputtered Si/Fe multilayers” at the International conference on *Nanomaterials: Science, Technology and Applications, ICNM 13*, Chennai, India, December 5-7, 2013.

“Influence of Fe layer thickness on the structure and magnetic properties of Si/Fe multilayers” in the *AIP Conference Proceedings* 1512 (2013) 666-667.

Yajnik Urjit

Presented an invited talk on “Neutrino masses and $\$CP\$$ phases: Cosmology and unification perspective” at the Workshop on *Double Beta Decay and Neutrino Masses*, IIT Ropar-Punjab University, April 20-21, 2013.

Presented an invited outreach talk on “Dark Matter and Dark energy” at the Conference on *Triggering Discoveries in HEP*, September 9-14, 2013, Jammu University.

Attended the Conference on *Field Theoretic Aspects of Gravity*, at IIT Gandhinagar, on September 5-8, 2013, Ahmedabad.

International**Kalita Hemen, Harikrishnan V. and Aslam, M.**

Presented a paper on “Field effect transport properties of chemically treated graphene quantum dots” in the *International Journal of Nanoscience* (Accepted).

Afanasev Andrei, Carl E. Carlson and Mukherjee Asmita

Presented a paper on “Orbital angular momentum of gauge fields: Excitation of an atom by twisted photons” in the *International Journal on Mod. Phys. Conf. Ser.* 25 1460048, 2014.

Mukherjee Asmita and Vogelsang Werner

Presented a paper on “Single inclusive jet production in pp collision: Dependence on jet algorithm” in the *International Journal on Modern Physics Conference Ser.* 25 1460043, 2014.

Buffing, M.G.A., Mulders, P.J. and Mukherjee, A.

Presented a paper on “Universality of Quark and Gluon TMD Correlators” in the *International Journal on Modern Physics Ser.* 25 1460003, 2014, NIKHEF-2013-029.

Buffing, M.G.A., Mukherjee Asmita and Mulders Piet J.

“Universality of TMD distribution functions” in the *PoS DIS 2013*, 226, 2013, *NIKHEF-2013-021 Conference: C13-04-22 Proceedings*.

Mahajan Avinash

Presented an invited talk on “Search for spin-liquid behaviour in some Ir-based systems” at the International workshop on Mott Physics beyond the Heisenberg Model” held at Monte Verita, Switzerland, October 27-31, 2013.

Rao, A. and Mukhopadhyay, G.

Presented a poster on “Gate Leakage in Hafnium Oxide High-k Metal Gate nMOSFETs” at the International Conference on *Advances in Electrical Engineering (ICAEE 2013)*, December 19-21, 2013, Dhaka, Bangladesh

Presented a paper on “Gate Leakage in Hafnium Oxide High-k Metal Gate nMOSFETs” in the *Proceeding of 2nd International Conference on Advances in Electrical Engineering (ICAEE 2013)*, December 19-21, 2013, Dhaka, Bangladesh, IEEE Xplore (2014/03/03), pp 389-394.

Mak, W.Y., Sfigakis, F., Beere, H.E., Farrer, I., Das Gupta, K. and Ritchie, D.A.

Presented a poster on “Effects of bias cooling and illumination on undoped GaAs/AlGaAs heterostructures” at the *20th International Conference on Electronic Properties of 2 Dimensional Systems, EP2DS-20*, July 1-5, 2013, Wroclaw, Poland.

Wang, D.Q., Chen, J. C. H., Klochan, O., Das Gupta, K., Reuter, D., Wieck, A.D., Ritchie, D. A. and Hamilton, A. R.

Presented a poster on “Influence of surface states on quantum and transport lifetimes in high-quality undoped heterostructures” at the *20th International conference on Electronic Properties of 2 Dimensional Systems, EP2DS-20*, July 1-5, 2013, Wroclaw, Poland.

Croxall, A.F., Zheng, B., Sfigakis, F., Das Gupta, K., Farrer, I., Nicoll, C.A., Beere, H.E. and Ritchie, D.A.

Presented a poster on “Ambipolar high-mobility transistors in undoped GaAs/AlGaAs quantum wells” at the *20th International Conference on Electronic Properties of 2 Dimensional Systems, EP2DS-20*, July 1-5, 2013, Wroclaw, Poland

Hamilton, A.R., Chen, J.C.H., Keane, Z.K., Godfrey, M.C., Wang, D.Q., Klochan, O., Fricke, S., Burke, A. M., Micolich, A.P., Das Gupta, K., Sfigakis, F., Beere, H. E., Ritchie, D.A., Reuter, D. and Wieck, A. D.

Presented a poster on “Electron and hole transport in ambipolar GaAs devices” at the *20th International Conference on Electronic Properties of 2 Dimensional Systems, EP2DS-20*, July 1-5, 2013, Wroclaw, Poland.

Mohanta, P., Mohan, S., Srinivasa, R. S. and Major, S. S.

“Study of $\text{In}_x\text{Ga}_{1-x}\text{N}$ Alloy Films Deposited by Reactive Co-sputtering of GaAs and Indium” at the *IUMRS-ICA*, IISC Bangalore, December 16 – 20, 2013.

Vasa Parinda

Presented an invited talk on “Optical Stark effect in semiconductor-metal hybrid nanostructures” at Photonics West, San Francisco, USA, February 2014.

Paramananda Punit

Presented an invited talk at the conference on nonlinear dynamics in Peru, 2013.

Presented an invited talk at the conference on nonlinear dynamics in Japan, 2014.

Prasad Shiva

Attended the *11th International Conference on Ferrites*, held in Okinawa, Japan from April 15-19, 2013.

Dhar Subhabrata

Presented an invited talk on “Molecular beam epitaxy grown random networks of wedge-shaped GaN nanowalls: An interesting material to achieve high electron mobility” at the *EMN (Energy Material and Nanotechnology) East meeting*, Beijing, China, September 7-10, 2013.

Presented an invited talk on “The quest for ferromagnetic GaN” at the *International Union of Material Research Societies (IUMRS) - The International Conference in Asia*, Bangalore, December 16-20, 2013, India.

Bhasker, H. P., Thakur Varun, Kesaria Manoj, Shivaprasad, S. M. and Dhar, S.

Presented a paper on “Transport and optical properties of c-axis oriented wedge shaped GaN nanowall network grown by molecular beam epitaxy” in the *AIP Conference Proceedings*, Vol.1583, 2014, p. 252.

Yajnik Urjit

Presented a paper on “Left-right symmetry, supersymmetry: Cosmological constraint” in the *AIP Conference Proceeding*, Vol. 1560, 2013, pp.284-288.

Presented an invited talk on “Spontaneous parity breaking and metastable SUSY breaking: Cosmological constraint” at the *21st International Conference on Supersymmetry and Unification of Fundamental Interactions, SUSY 2013*, ICTP Trieste, August 26-31, 2013.

Presented an invited talk on “Spontaneous parity breaking and metastable SUSY breaking: Cosmological constraint” at *10th Symposium on Cosmology and Particle Astrophysics*, Honolulu, November 12-15, 2013.

Conferences/Symposia chaired by faculty

Prasad Shiva

One of the organizers of *7th India-Singapore Symposium in Experimental Condensed Matter Physics* held in IIT Bombay from February 24-26, 2014.

Yajnik Urjit

Coordinator of “WG III on Astroparticle Physics and Cosmology” at the Workshop on *High Energy Physics and Phenomenology WHEPP13*, Puri, December 12-21, 2013

Invited Lectures

Singh, B.P.

Delivered an invited lecture on “Semiconductor Nanostructures for optoelectronics and photonics :Glimpses of research at IIT Bombay” at *Frontier in Physics 2013* held at University of Hyderabad, in September 2013.

Das Dibyendu

Delivered an invited lecture on “Dynamics and collective stall force of multiple bio-filaments under force” at the Physics Department, Simon Fraser University, Canada, the Physics Department, University of Toronto, Canada and at Jawaharlal Nehru University.

Ramadevi, P.

Delivered three lectures in the *SMS meeting* held at University of Montreal during June-July 2013.

Prasad Shiva

Delivered an invited lecture at the Data Storage Institute in Singapore.

Mahapatra Suddhasatta

Delivered an invited lecture on “Quantum Computing with Electron Spins in Silicon” at NTNU, Trondheim, Norway, December 13, 2013.

Yajnik Urjit

Delivered an invited lecture on “Topological objects and vacuum stability” GPP, Universite de Montreal, Montreal, Canada, November 27, 2013.

Significant Awards/Distinctions

Vasa Parinda

Received the Science and Engineering Research Board (SERB) Women Excellence Award, Government of India, 2013

Mitra Mithun K.

Received the Ramanujan Fellowship, Department of Science and Technology, Government of India

Honorary Work

Mukherjee Asmita

Peer Reviewer for Phys. Rev. D, Phys Lett B and Veni research funding, NWO, Netherlands.

Mukhopadhyay Gautam

Serving as Member of the Editorial board for Research & Reviews: Journal of Physics (RRJoPHY), STM Journals, Division of Consortium eLearning Network Pvt. Ltd.

Serving as Member of the Editorial board for PHYSICS EDUCATION, a Quarterly e-Journal devoted to Physics Pedagogy, Supported by The Board of Research in Nuclear Sciences (BRNS), Department of Atomic Energy, Govt. of India; University of Pune, Pune and IISER, Pune.

Kabra Dinesh

Advisory Committee of National Conference on Recent Trends in Photonics -2014
Reviewer for INUP, DEITY, MNRE research proposals
Reviewer for Optical Society of America (OSA), American Institute of Physics, RSC Journals

Yajnik Urjit

Honorary member of the Governing Body, “Eklavya” Bhopal

Faculty members and their specializations

1. Dipan K. Ghosh

Theoretical condensed matter physics; Exactly solvable models in Magnetism.

2. Gautam Mukhopadhyay

Theoretical condensed matter physics; Magnetism & magnetic materials; Nano scale physics; Statistical physics; Non-equilibrium physics.

3. Shiva Prasad

Magnetism and magnetic materials; Nano scale physics; Thin films and multilayers.

4. S.S. Major

Nanomaterials (semiconductors/carbon based materials); Nano scale physics; Thin films and multilayers.

5. Bhanu P. Singh

Nano scale physics; Experimental Laser physics and spectroscopy; Non-linear optics.

6. Urjit A. Yajnik

Theoretical high energy physics; Cosmology.

7. D.S. Misra

Nanomaterials (semiconductors/carbon based materials); Nano scale physics; Thin films and multilayers.

8. Raghava Varma

Experimental nuclear physics; Relativistic heavy-ion physics.

9. S. Umasankar

Theoretical high energy physics.

10. Tapanendu Kundu

Experimental; Laser physics and spectroscopy; Non-linear optics.

11. Prabhakar P. Singh

Theoretical condensed matter physics.

12. C.V.Tomy

Magnetism and magnetic materials; Superconductivity and low temperature physics.

13. Alok Shukla

Theoretical condensed matter physics.

14. Avinash V. Mahajan

Magnetism and magnetic materials; Superconductivity and low temperature physics.

15. K.G. Suresh

Magnetism and magnetic materials.

16. M. Senthil Kumar

Magnetism and magnetic materials, Nano scale physics; Thin films and multilayers.

17. Pragya Das

Experimental nuclear physics.

18. N.Nambudiripad

Magnetism and magnetic materials; Superconductivity and low temperature physics.

19. P. Ramadevi

Theoretical high energy physics.

20. Punit Parmananda

Non-linear dynamics; Non-equilibrium physics.

21. Dibyendu Das

Statistical physics; Non-equilibrium physics.

22. Basanta Kumar Nandi

Experimental nuclear physics; Relativistic heavy-ion physics.

23. Asmita Mukherjee

Theoretical high energy physics.

24. Anirban Sain

Statistical physics; Non-equilibrium physics.

25. Subhabrata Dhar

Nanomaterials (semiconductors/carbon based materials); Magnetism and magnetic materials; Thin

films & multilayer growth processes; and Experimental Laser physics and spectroscopy.

26. Aslam Mohamad

Nanomaterials (semiconductors/carbon based materials); Magnetism and magnetic materials; Nano scale physics.

27. Tathagat A. Tulsi

Quantum computation theory.

28. Pradip Sarin

Experimental nuclear physics.

29. Kantimay Das Gupta

Low temperature transport in semiconductor heterostructures and bi-layers; Probing electronic interaction by Coulomb drag method; Vortex phases in superconducting thin films..

30. Parinda Vasa

Optical and Near-field spectroscopy; Optical properties of semiconductors nanoparticles.

31. Kumar Rao

Theoretical Particle Physics.

32. Sadhana Dash

Experimental nuclear physics; Relativistic heavy-ion physics.

33. Dinesh Kabra

Optoelectronics; Light emitting polymers.

34. Suddhasatta Mahapatra

Experimental Quantum Computation; Molecular Beam Epitaxy of II-VI compounds.

35. Mithun Kumar Mitra

Statistical Physics; Theoretical soft condensed matter physics; Physics of biological systems.

36. Aftab Alam

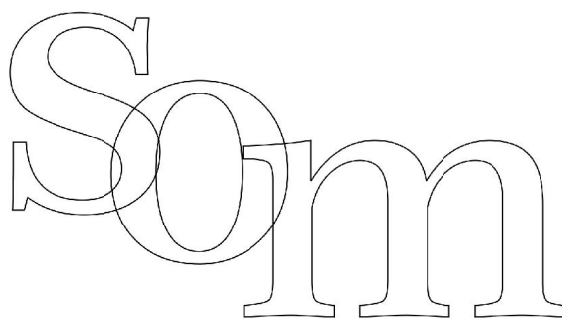
Theoretical condensed matter physics; Computational materials science; First principles calculation of the properties of complex materials on microscopic scale.

37. S.H. Patil

Theoretical physics; elementary particles; Quantum mechanics and applications to atoms; molecules; and nuclei.

38. Yogesh K. Gambhir

Conventional Nuclear Physics; High Spin States and Super-deformations; Exotic Nuclei and Neutron Halos; Relativistic Mean Field for Finite Nuclei (Structure and Reactions.); Equation of State; Nuclear Matter Under Extreme Conditions; Very Dilute Neutron Matter in Practically Proton Free Environment.



Shailesh J. Mehta School of Management

Introduction

Since its establishment in 1995, the Shailesh J. Mehta School of Management (SJMSOM) has emerged as a significant player in management education in the Country. The School functions as a self-funding entity, and also contributes significantly to the Institute's corpus. This year was marked by further strengthening and consolidation of the academic programmes of the School. Currently it has 23 full-time faculty members, 4 Adjunct Faculty members and 2 Visiting Professors.

Academic Programmes

The School runs a full-time Master of Management program to develop professionals who manage the business activities in a dynamic environment in which technology is a key determinant of organizational success. The School also offers both full-time as well as external Ph.D. programs to develop future cutting edge researchers. The School also offers B. Tech Minor

in Management. In the academic year 2013-2014, the School awarded both Master of Management and Ph.D. degrees as shown in the following table.

Degrees Awarded

M.Mgt.	: 116
Ph.D.	: 5

The total number of scholarships awarded in 2013-2014 for Master of Management Programme is 19. The total number of scholarships awarded in 2013-14 for the Ph.D. Programme is 6 including 3 Shailesh J Mehta Endowment Scholarship and 3 UGC Junior Research Fellowship.

R&D Activities

Sponsored Research Projects :

New	: 3
Ongoing	: 14

List of the projects is given below:

Sr. No.	Project Title	Sponsoring Agency	Project Status
1	Mathematical Modelling and Optimization of Quality in Service Environment	Council of Scientific and Industrial Research	New
2	DS Foundation IIT Bombay Entrepreneurship Centre	Desai Sethi Foundation	New
3	Design and Development of Integrated Forward-Reverse Supply Chain under Risk and Uncertainty	Department of Science & Technology (DST)	New
4	Capacity Creation In IP Education and Research (Operationalization of IP Chair)	Ministry of Human Resource Development (MHRD)	Ongoing
5	IPR Cell	IRCC, IIT Bombay	Ongoing
6	Accelerating Industrial Competitiveness through Innovation	IRCC, IIT Bombay	Ongoing

Sr. No.	Project Title	Sponsoring Agency	Project Status
7	Studies of competitiveness evaluation and barriers to enhancement	Sub-project in NCPRE (MNRE)	Ongoing
8	Collaborative activities in the area of entrepreneurship: National Network Project	Wadhvani Foundation– Indo US Collaboration	Ongoing
9	Design and Development of Integrated Forward- Reverse Supply Chain under Risk and Uncertainty	DST	Ongoing
10	Development of Decision Support System for Project Scheduling Using Meta-Heuristics (R&D) Innovation	MHRD	Completed
11	Fuzzy decision-making approach to production-inventory problems in the context of supply chain management	IRCC, IIT Bombay	Completed
12	Research and Training in Technology Management	TMD, DSIR	Completed

Consultancy Projects

No. of Jobs	:	1
Faculty involved	:	1

Extension activities

Momaya, K.

Evolving cooperation between IIT Bombay, SJMSOM and Hitotsubashi University, Institute of Innovation Research (IIR), Tokyo, Japan. In Phase I, initiated people exchanges to discuss areas of shared interest. Exchanges of knowledge resources have started and a unique niche library (incl. leading journals from Japan such as Hitotsubashi Business Review (HBR), is being evolved). Visits by experts on India-Japan cooperation are evolving.

Management Development Programmes through Continuing Education and Quality Improvement Programme, IIT Bombay.

Sr. No.	Project Title	Coordinator(s)	No. of days/ Weeks
1	Certificate Program in Management (Batch-IV/Term-2) (for Godrej Group of Industries).	Prof. S.N. Rao.	12 days.
2	Certificate Program in Management (Batch-IV/Term-3) (for Godrej Group of Industries).	Prof. Narayan Rao Sapar	14 days.
3	Green Finance : Challenges and Opportunities.	Prof. Trupti Mishra	2 days.
4	Management of Technology and Innovation.	Prof. Ashish Pandey	3 days.
5	Leadership Development Centre.	Prof. Ashish Pandey	3 days, held in June, September, November & December 2013 & January 2014

Sr. No.	Project Title	Coordinator(s)	No. of days/ Weeks
6	Institution building through Appreciative Mindset.	Prof. Ashish Pandey	5 days.
7	10th Batch of Executive Programme in Management.	Prof. Shivganesh Bhargava	40 days.
8	11th Batch of Executive Programme in Management with specialization in Marketing and HRM.	Prof. Shivganesh Bhargava	40 days
9	Certificate Programme on Business Management, Godrej Professionals.	Prof. Gajendra Adil and Prof. Pankaj Dutta	8 weeks.
10	Strategies for Organizations' Growth.	Prof. Atanu Ghosh	5 days.
11	Skill Enhancement Programme on Project Management.	Prof. Varadraj Bapat	5 days.

Visitors to the Department

Dr. S. Jaykrishnan, Director, Niko, spoke on “Skills and capabilities required for Indian youth to compete in the Japanese market”, July 16, 2013.

Dr. Ajitabh Ambastha, Head, Learning and Development, Tata Capital, delivered a talk on “People CMM as a tool to enhance Organizational Competitiveness”, March 23, 2014.

Conferences/Symposia/Workshops/Seminars (Participated/Papers Presented)

National

Singh, A.

Presented a paper “Economic Growth, Regular Employment and the Need for Labour Market Reforms: What Does the Data Say?” *National Conference on Indian Economy: Perspectives and Challenges*, held during February 21-22, 2014, at Sri Satya Sai Institute of Higher Learning, Anantapur.

Ranganathan, T. and Ananthakumar, U.

Price discovery in Commodity Futures Markets: An Integrated Framework’, published in proceedings of the *3rd International Conference on Managing Inclusive Growth: The bottom-up Approach for Harmonious Development* held at IBA, Greater Noida, March 2013.

Ghosh, A.

Delivered a talk on “Reverse Innovation” to the Post Graduate students of Department of International Politics/Relations, School of Global Studies, Sikkim University, Gangtok, Sikkim, on May 7, 2013.

Delivered a talk on “Disruptive Innovation for Emerging Economies - necessities, challenges and success stories” as Chief Guest for the Inaugural function of the Management week of Baroda Management Association, May 26, 2013.

Took part in a panel discussion on “Recession & Resources - How to Manage?” at the *Annual Conference of Vadodara Audit Club*, part of The Institute of Internal Auditors, Inc. USA, held on May 18, 2013.

Attended *Strategic Management Forum to the 14th Annual National Management Convention* held at IIM Kozhikode on May 23-25, 2013 and chaired two academic sessions and one case colloquium session.

Mishra, T.

Presented a paper “Effectiveness and Sustainability of Water Supply: An Empirical Analysis,” *National Conference of Emerging Trends in Mechanical Engineering*, held during March 6-8, 2014, at Annual International Sustainability Conference, IIM Shillong

Roy, S., Kushwaha, S. and Mukherjee, I.

“Parametric Estimates in Proportional Odds Logistic Regression Model using Bias Correction Method for Modelling Service Quality Perception”, *International Conference on Quality, Reliability & Operations Research (ICONQROR 2013)*, Indian Statistical Institute, Mumbai, India.

Vinutha, S. and Rao, S.V.D.N.

“Speed of Reaction of Share Price Indices to Macroeconomic Information,” *The Empirical Economics Letters*, 2013.

Haldar, A. and Rao, S.V.D.N.

“Governance Practice of Indian Firms: An Empirical Analysis,” *Empirical Economic Letters*, 2013, (Accepted).

Prasad, M., Mishra, T., Kalro, A. and Bapat, V.

Presented a paper on “An empirical assessment of the role of corporate towards managing ecosystem: An Indian context”, at the *Seventh Biennial Conference of the Indian Society for Ecological Economics (INSEE) on Global Change, Ecosystems, Sustainability*, held from December 5-8, 2013, at Tezpur University, Tezpur, Assam.

Pandey, A. and Gupta, R.

Presented a paper on “Spiritual Climate and its Impact of Learning in Teams,” in *Conference of Indian Academy of Management*, 2013, in IIM Ahmedabad.

Rao, S.V.D.N.

Presented a paper on “An Empirical Analysis of Governance Practices of Indian Firms,” *Proceedings of 3rd IIMA International conference on Advanced Data Analysis, Business Analytics and Intelligence*, IIMA, India, April 2013.

International

Ananthakumar, U. and Durga, A.

Presented a paper on “Application of Extreme Value Theory in Commodity Markets”, at *IEEE, International Conference on Industrial Engineering and Engineering Management*, December 10-12, 2013, Thailand.

Nagare, M., Dutta, P. and Kambli, A.

Presented a paper on “Retail Inventory Management for Perishable Products with Two Bins Strategy”, in *Proceedings of the World Academy of Science, Engineering and Technology*, Vol.7, No.4, 2013, held during April 14-15, 2013 at Venice, Italy.

Nagare, M. and Dutta, P.

Presented a paper on “A fuzzy-stochastic inventory model without backorder under imprecise customer demand”, *Proceedings of 2nd International Conference on Operations Research and Enterprise Systems*, Paper ID: 127, held during February 16-18, 2013 at Barcelona, Spain.

Ghosh, A.

Was invited to chair and participate in a Panel Discussion on “Organic, BCI & Fair Trade in Cotton Branding & Retailing” at the *International Conference on the theme Back to Glory –Challenges Facing Indian Cotton* held on April 9 -10, 2013 held at IIM Ahmedabad.

Mishra, T

Presented a paper on “Cost and Benefit Analysis of Bio Energy Alternatives in India”, at an *International Conference and Utility Exhibition 2014 on Green Energy for Sustainable Development*, held during March 19-21, 2014, at Pattaya, Thailand.

Sikder, S., Mukherjee, I., Panja, S.C., Bera, S. and Mahalanobis, A.

Presented a paper on “Taguchi System-based Approach for Correlated Multiple Response Process Monitoring,” at *4th International Conference on Industrial Engineering & Operations Management, IEOM*, 2014, Indonesia, January 7-8, 2014.

Bera, S. and Mukherjee, I.

Presented a paper on “Integrating a Modified Desirability Function Approach and Ant Colony Strategy to solve Two-stage Multiresponse Optimization Problem,” *4th International Conference on Industrial Engineering & Operations Management (IEOM 2014)*, Indonesia, January 7-8, 2014.

Roy, S. and Mukherjee, I.

“A Multistage Transactional Process View of Service Quality,” *International Journal of Service and Operations Management*, Inderscience.

Kushwaha, S., Sikdar, S., Mukherjee, I. and Ray, P.K.

Presented a paper on “A Modified Desirability Function Approach for Mean-Variance Optimization of Multiple Responses,” *International Journal of Software Science and Computational Intelligence (IJSSCI)*, IGI-Global Journal.

Rao, Subir S. and Adil, G. K.

“Optimal two and three class partitions considering product specific setup to holding cost ratio”, *Asia Pacific Journal of Operations Research*.

Jain, B. C., Adil, G. K. and Ananthakumar, U.

Presented a paper on “Development of questionnaire to assess manufacturing capability along different decision areas”, *International Journal of Advanced Manufacturing Technology*.

Ranganathan, T. and Ananthakumar, U.

“Do Commodity futures help in future spot price discovery? – An integrated approach”, (to appear in *Empirical Economics Letters*).

“Does Hedging in Futures Markets Benefit Indian Farmers?”, *Studies in Economics and Finance* (Accepted for Publication).

“Market Efficiency in Indian Soybean Futures Markets”, *International Journal of Emerging Markets* (Accepted for Publication).

Rao, S.N. and Dhanuka, A.

Presented a paper on “Long-term Stock Market and Operating Performance of Buyback Firms in India,” *49th Annual Conference of Eastern Finance Association* held during April 10-14, 2013 in St. Pete Beach, Florida (USA)

Singh, A., Pallikadavath, S. and Ram, F.

Presented a paper on “Gender Differentials in Inequality of Educational Opportunities in India: New Evidence from an Indian Youth Study,” *European Journal of Development Research*, October 2013.

Bhargava, S.

Presented a paper on “Attitude, Intension and Behavior towards Electronic Piracy: Insights from Literature,” at the *American Marketing Association*, Boston USA, August 9-13, 2013.

Arora, S., Kalro, A., Sharma, D. and Kumar, P.

Presented a paper on “A content analysis of invented brand names,” at the *7th International ACBM Conference on Branding & Marketing - An Emerging Markets Perspective* at the Hong Kong Polytechnic University, on November 18, 2013.

Pandey, A., Bhattacharya, D.P. and Bose, S.

Presented a paper on “Spiritual Connection of Leader with Work and its Impact on Spiritual Climate with Mediating Impact of Leaders Reputation,” *Academy of Management*, Meeting, 2013, Florida.

Patil, R.

“Application of vehicle routing at an Indian dairy firm,” *LOGMS*, Singapore, September, 2013.

Optimal Production and Sales Plans for a New Product in the presence of Scarcity Effects, *POMS Annual Conference*, Denver, USA, May 3-5, 2013.

Conferences/Symposia/Workshops/ Seminars (Coordinated/Chaired by Faculty)

National

Jha, S. K.

Organized six weekends workshop on “Fundamentals of IPR”, August – November 2013.

Mishra, T.

Chaired a session on “Green Transport,” *International Conference and Utility Exhibition 2014 on Green Energy for Sustainable Development*, held during March 19-21, 2014, at Pattaya, Thailand.

Coordinated the *National Workshop on Climate, Science and Policy* held on March 6-7, 2014, at Climate Studies, IIT Bombay, Mumbai.

Momaya, K.

Chaired a session on “Flexibility in Technology and Innovation Management,” at *Thirteenth Global Conference on Flexible Systems Management* on December 13-15, 2013, DMS, IIT Delhi.

Chaired a seminar on “India-Japan Relations: Need for Young Leaders”, October 9, 2013.

International

Ananthakumar, U.

Presented a paper “Price discovery in Commodity Futures Markets: An Integrated Framework”, *3rd International Conference on Managing Inclusive Growth: The bottom-up Approach for Harmonious Development* held at IBA, Greater Noida, March 2013.

Dutta, P.

Chaired a session at *International Conference on Fuzzy Systems and Neural Computing*, held during April 14-15, 2013 at Venice, Italy.

Chaired a session on “Methodologies and Technologies,” at an *International Conference on Operations Research and Enterprise Systems*, held during February 16-18, 2013 at Barcelona, Spain.

Jha, S.K.

Organized the *2nd International Conference on Management of Intellectual Property Rights & Strategy*, January 30-February 2, 2014, at IIT Bombay.

Mishra, T.

Coordinated a CEP course on “Green Finances: Challenges and Opportunities” on April 25-26, 2013.

Rao, S.N. and Dhanuka, A.

Presented a paper “Long-term Stock Market and Operating Performance of Buyback Firms in India”, *49th Annual International Conference of Eastern Finance Association* held during April 10-14, 2013, at St Pete Beach, Florida (USA).

Invited Lectures

Rao, S.N.

Delivered a lecture on “Quality of Earnings”, at NIT Karnataka, Suratkall, on November 4, 2013.

Delivered a lecture on “Earnings Management”, at Academic Staff College, Mumbai University, on December 4, 2013.

Delivered a lecture on “Valuation for Mergers and Acquisitions”, at IIM Shillong, on March 3, 2014.

Significant Awards and Distinctions

Dutta, P.

“Fast Track Young Scientist Scheme”, SERB, DST, Govt. of India, October 2013.

“INSA Nominated Visiting Scientist for Germany-2014” by Indian National Science Academy, New Delhi, India.

Momaya, K.

Editor, International Journal of Global Business and Competitiveness (IJGBC), An Open Access Journal.
Member, Board of Advisors, National Competitiveness Research, Korea, 2012-13.
Member, Editorial Advisory Board, JAMR.

Mukherjee, I.

Listed in Marquis 'Who's Who in the World', 2012 (30th Pearl Anniversary Edition).
Seconded by Government of India to teach a course (Inventory & Logistic Management) to the School of Industrial & Systems Engineering, AIT Bangkok in January 2013.

Honorary Work**Ananthakumar, U.**

Reviewed paper for International Journal of Operations and Production Management, July 2012.

Dutta, P.

Reviewed PhD Thesis for NBHM Postdoctoral Fellowship, July, 2013. Served as a Programme Committee Members, ICORES-2014, Loire Valley, France.

Reviewed Research Papers for *International Conference CORES-2014, Loire Valley-France*, November, 2013.

Reviewed paper for the following International Journals: Computer Integrated Manufacturing, September, 2013 & February 2014; Advanced Manufacturing Technology, October 2013; Simulation Modeling Practice and Theory, March 2014; and Advanced Operations Management, March 2014.

Reviewed paper for OPSEARCH, February 2014.

Momaya, K.

Reviewed papers for Journal of Flexible Systems Management, Springer.
Member of Academy of Management.
Life Member of Global Institute of Flexible Systems Management.

Rao, S.N.

Examiner for Ph.D thesis (IIT Kanpur).

Sonar, R.M.

Chief Editor, Computer Society of India Communications (CSI-C).

Faculty Members and their Specializations**1. Anand Kusre**

Management of New Ventures.

2. Anand Patwardhan

Vulnerability and adaptation to global change, Technology policy, Economics and regulation of information and communication technology.

3. Arti Kalro

Marketing Management, Communication and Presentation Skills.

4. Ashish Pandey

Organization Development, Organization Behavior (Macro).

5. Ashish Singh

Economics.

6. Atanu Ghosh

Strategic Management, Services Marketing, Relationship Marketing, Supply Chain Management Product Launch and Brand Building.

7. Dinesh Sharma

Marketing Strategy, Market Research, Sales & Distribution management.

8. Gajendra K. Adil

Operations Management and Decisions Sciences.

9. Indrajit Mukherjee

Quality Management, Operations Management, Applied Operations Research.

10. Karuna Jain

Operations Management, Technology and Innovation Management, Supply Chain Management, Project Management, Intellectual Property Management.

11. Kirankumar Momaya

Techchnology Management, Technological and Organizational Competitiveness.

12. Niranjana Tarikere

Operations Management.

13. Pankaj Dutta

Operations Research, Decision Making under Risk and Uncertainty, Supply Chain Management, Inventory Management, Project Management, Mathematical Finance, Business Simulation and Optimization.

14. Rahul Patil

Operations Management.

15. Rajendra Sonar

Intelligent Systems, Hybrid Intelligent Systems, Business Intelligence using Knowledge-based Systems, N=1 Analytics.

16. Shivganesh Bhargava

Prediction of Performance, Organizational Wrongdoing, Reward Preference in Indian Organizations, Managing of Human Resources in Technical Institutes.

17. Sapar Narayan Rao

Corporate finance, Investment Management, Valuation, Mergers & Acquisitions, Capital Markets.

18. S.V.D. Nageswara Rao

Corporate Finance and Capital Markets.

19. Shishir Kumar Jha

Copyright, Digital Economy and International Business.

20. Trupti Mishra

Economics of Environment and Climate Change.

21. Usha Ananthakumar

Applied Statistics and Applied Multivariate Analysis.

22. Varadraj Bapat

Financial Reporting, Managerial Accounting and Financial Inclusion.

23. Vinish Kathuria

Industrial Organization, Environmental Management and Regulatory Economics.

Adjunct Faculty**1. Dr. Atul Kanyalkar**

Purchase and Supply Chain Management.

2. Dr. Kamal Sharma

Managerial Effectiveness Skills, Technology Forecasting and Assessment.

3. Dr. Raj Hirwani

Patent Analysis and Intellectual Property Rights.

4. Mr. Sanjeev Chachondia

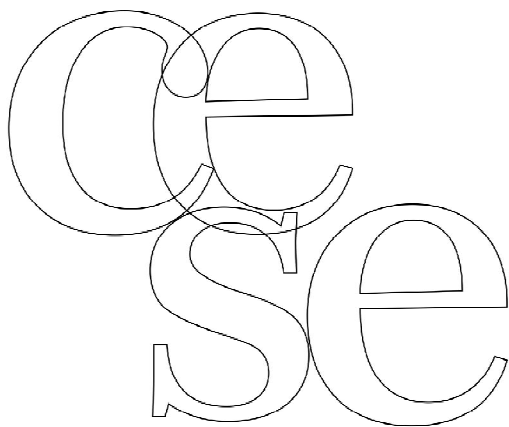
Industrial Marketing.

Adjunct Faculty**1. Dr. Natesan Ramesh**

Strategic Transformatio

2. Mr. Owen Berkeley -Hill

Lean Management



Centre for Environmental Science & Engineering

Introduction

The Centre for Environmental Science and Engineering (CESE) was established in 1985. The Centre has a core group of 12 faculty members (11 regular and 1 emeritus) and 2 visiting faculty with multi-disciplinary background and diversifying research interests.

The on-going research activities of the Centre are focused towards addressing the priority areas (local and global) set by major national agencies like MHRD, CPCB, SPCB, MNRE, DBT, MoEF, CSIR, DST, AICTE etc. The Centre has established strong links and collaborations with leading industries, academic institutions and national/international agencies by conducting sponsored research and offering consultancy and technical services. The Centre is also actively engaged in organizing workshops and CEP courses for benefiting the professional from other academic institutions, industries and governmental sectors.

Academic Programmes

CESE currently offers M. Tech., Ph.D. and M.Sc.-Ph. D. programmes in Environmental Science and

Engineering. The Centre is also running a minor in Environmental Science and Engineering for undergraduates studying in other departments

Degrees Awarded

M. Tech.	: 15
Ph. D.	: 5

R&D Activities

Two new projects have been awarded in 2013-2014. The details of the projects are given below.

Sponsored Research Projects

Sponsored Research Projects:

New	: 3
Ongoing	: 17
Completed	: 6
Faculty Involved	: 10

Sr. No.	Project Title	Sponsoring Agency	Project Status
1	Emerging Chemicals of Concern: PPCPs in Water Resource Recovery Facilities of Developing Countries	Industrial Research and Consultancy Center (IRCC), IIT Bombay	New
2	Energy recovery from municipal solid waste using anaerobic digestion and its life cycle analysis	IRCC, IIT Bombay	New
3	A Comprehensive Mapping of Flood Risk in Changing Climate: An Application to Jagatsinghpur District, Orissa	STC-IITB (ISRO)	New
4	Treatment of Oily Sludge: Biodegradability Assessment and Effect of Bio-augmentation and Bio-stimulation	IIT Bombay	Ongoing

Sr. No.	Project Title	Sponsoring Agency	Project Status
5	Biological Treatment of Biomass Gasifier Wastewater Using Algal-Bacterial System in Rotating Biological Contactor	DBT, New Delhi	Ongoing
6	Newcastle and Mumbai Partnership on Sustainability and Environment Research (NAMP SER)	UK-India Education and Research Initiative	Ongoing
7	Improvement in Biodegradability of Cresylic Spent Caustic Waste Stream (Generated From Petroleum Refinery) Using Catalytic Wet Oxidation in Combination with Adsorption Process	CSIR, New Delhi	Ongoing
8	Preventive Technological Interventions for Improving Environmental Attributes of Ship Recycling in Alang i.e. Green Alang Initiative	Gujarat Maritime Board, Govt. of Gujarat	Ongoing
9	Enhancement of Natural Water Systems and Treatment Methods for Safe and Sustainable Water Supply in India i.e. <i>Saph Pani</i>	European Commission, Brussels, Belgium	Ongoing
10	Ganga River Basin Management Plan	Ministry of Environment and Forests, New Delhi	Ongoing
11	Environmental Stewardship Studies	Andhra Pradesh Paper Mills Pvt Ltd., Rajhamundry	Ongoing
12	Evaluation of Trophic State of Lakes in Thane city.	Thane Municipal Corporation	Ongoing
13	Funding for Research Collaboration	Washington University in St. Louis	Ongoing
14	Multivariate Flood Frequency Analysis: Nonparametric Approach	Department of Science & Technology (DST)	Ongoing
15	Constructed Wetlands and Natural Treatment Systems for Wastewater Treatment and Reuse	European Commission's Seventh Framework Programme	Ongoing
16	Continuous Arsenic Removal Using Zero-valent Iron Filter (ARUZIF) from Drinking Water	DST	Ongoing
17	Design and Development of Vacuum Pyrolysis Plant to Process Various Agricultural and Agro-Industrial Biomass to Demonstrate Its Technical and Economical Feasibility	Ministry of New and Renewable Energy	Ongoing
18	Sustainable Technology for Removal of Arsenic from drinking water: Principles and performance of Electrocoagulation.	Mc Donnel Academy, St. Louis, USA	Ongoing
19	Multivariate flood frequency analysis: Nonparametric approach	DST	Ongoing

Sr. No.	Project Title	Sponsoring Agency	Project Status
20	Evaluation of trophic state of lakes in Thane city	Thane Municipal Corporation	Ongoing
21	Characterization and Treatment of Wastewater from Large/Small Scale Biomass Gasification Systems	IIT Bombay under Access Scheme	Completed
22	Assessment of the Prevailing Situation & Development of Policy Framework and Plan for Implementation of Strategies for Application of Waste to Energy Technologies in the Context of Integrated Municipal Solid Wastes Management in India	The Planning Commission of India	Completed
23	Technology and Waste Load Assessment for NPK Fertilizers Expansion as well as Assessment of Technology and Wastes generated from the proposed CNA Plant	Deepak Fertilizers and Petrochemical Limited (DFPCL), Taloja, Mumbai.	Completed
24	Measures for Achieving Near-Zero Discharge from the Proposed Additional Lines for Cold Rolling of Aluminum Foils at the Mouda Site	Hindalco Industries Limited, Mouda, Nagpur	Completed
25	Collaborative Research and Technical Advice on Effluent Management (Agave Industries (India) Pvt Ltd., Andhra Pradesh)	Agave Industries (India) Pvt. Ltd.	Completed
26	Development of Continuous Mode Arsenic Removal Technology for Drinking Water Based on Indigenous Zerovalent Iron.	DST	Completed

Consultancy Projects

A total of on consultancy jobs were undertaken by 7 faculty members. Total income generated from consultancy work was Rs. 4,51,463/-.

Patents

Sr. No.	Title of the patent	Inventor	National/ International	Status: filed/granted	Date of patent filed/granted
1	"A process for the preparation of Granulated non-living biomass of the fungus Rhizopus species for sorption of Toxic Trade and Heavy metal and organic chemicals from effluents"	Asolekar, S.R., Sureshkumar, G.K., Shah, N.A. and Iynampudi Padma Suhasini	Indian	Renewed for the current year	October 2001
2	"A process for sorption of toxic trace and heavy metals and organic chemicals from effluents using granulated non-living biomass of the fungus Rhizopus species"	Asolekar, S.R., Sureshkumar, G.K., Shah, N.A. and Iynampudi Padma Suhasini	Indian	Renewed for the current year	October 2001

Extension Activities

Dikshit, A.K.

Helped develop the course contents for “Introductory Course on Environmental Technology” mainly to be given to students on the Construction program, primarily on basic level (year 2) but also as an optional course for first year students on advanced level (first year), School of Business, Society and Engineering at Malardalen University, Vasteras, Sweden.

Asolekar, S.R.

Organized the 5th Biannual Meeting of the R & D Project funded by the European Commission entitled “Constructed wetlands and other natural treatment systems for wastewater treatment and reuse”, Organized by Centre for Environmental Science & Engineering (CESE) in Victor Menezes Convention Centre (VMCC) during November 25-26, 2013 in IIT Bombay.

Organized a Two-days Training Course on Constructed Wetlands for “*Wastewater Treatment and Reuse*” at IIT Bombay during November 20-21, 2013.

Organized a Round Table on “*Is Free Water Sustainable?*” conducted by the Indian Environmental Association (IEA) and several other Institutions at IIT Bombay on February 21, 2014.

Garg, A.

Three-day, short-term course on “*Municipal Solid Waste Management – Options for Recycling and Recovery*” was conducted at IIT Bombay during October 3-5, 2013.

Sethi, V.

Co-organized a national workshop on *Automated Air Pollution Monitoring – State of Art, Data Management, Decision Making and Implementation*, held during January 23-24, 2014, at IIT Bombay, Mumbai.

Organized the short course on *Occupational Exposure & Industrial Health and Safety*, held during July 22- 23, 2013, at IIT Bombay, Mumbai.

Visitors to the Department

Prof. Margaret Bell and Prof. Anil Namdeo from New Castle University, U.K., visited CESE in January 2014. Prof. Bell delivered a talk on “Air pollution from transport operation”.

Ms. Divya Vasudeva from ENVISA, France, visited in February 2014. She interacted with faculty members to explore possibility of joint collaboration.

Prof. Tong Yen Wah from Department of Chemical and Biomolecular Engineering, National University of Singapore visited in February 2014. Prof. Tong is Co-Supervisor of Mr. Ramjee Chaudhary under IITB-NUS joint Ph.D. programme along with Prof. A.K. Dikshit.

Prof. Brajesh Dubey from Environmental Engineering Science and Health, University of Guelph, Canada, visited in March 2014. He delivered a talk on “Municipal solid waste management scenarios in developing and developed world”.

EU delegation on resources engineering and clean technology from Copenhagen Cleantech Cluster, LiqTech International A/S, AVAENSEN, KALHIDRA, Plastics Recyclers Europe, CeDo Recycling B.V., Mazovia ICT Cluster, Bel System Ltd., Water Sensors and Membranes (WSM), POLYMEM, GreenWin, RECYMET SA visited the Centre on October 24, 2013.

Dr. Sharad P. Kale, Professor & Padma Shri winner-Homi Bhabha National Institute, Head Technology Transfer Division, BARC and Head, Pesticide Residue and Soil Sciences Division, visited CESE to deliver a set of lectures on “Industrial Wastewater Treatment and Reuse” on March 28, 2014.

Dr. R. Gopichandran, Director, Vigyan Prasar, Delhi, visited CESE to deliver lecture on “Industrial Pollution Prevention and Clean Technology” on March 19, 2014.

Conferences/Symposia/Workshops/ Seminars (Participated/Papers Presented)

National

Asolekar, S.R.

Invited by ENVIS Centre, Ministry of Environment and Forest (MoEF) to speak on “Safe Disposal of Municipal Solid Waste” at SNDT Women’s University, on February 26, 2014, Mumbai.

Participated in Waste to Resource Conference / Exhibition, India, 2013 held at The Leela Hotel, during December 18-19, 2013, Mumbai

Ghosh, I., Kamat, M. and Mukherji, S.

“Degradation of a Synthetic NAPL containing Aliphatic Hydrocarbons and PAHs by Two Pure Bacterial Isolates”, *National Conference on Environment: Pollution and Protection EPP 2014*, Organized by NIT Durgapur, January 30-February 1, 2014, Durgapur.

Panchratna, D., Sethi, V. and Mukherji, S.

Gave an oral presentation on “Sorption of Simulated Biomass Gasification Wastewater on Rice Husk Char and Activated Carbon” *2nd International Conference on Agriculture, Food Technologies and Environment-*

New Approaches (AFTENA-2013), Jawaharlal Nehru University, October 19-20, 2013, New Delhi.

Lal, K. and Garg, A.

Oral presentation on "Treatment of Pulp Mill Wastewater by Combined Coagulation-Fenton-like Oxidation Process," in an *International Symposium on Halogenated Persistent Organic Pollutants (POPs)* organized by CSIR – National Environmental Engineering and Research Institute (NEERI), Nagpur, during January 16-17, 2014, India.

Gupta, A. and Garg, A.

Paper presented on "Removal of ciprofloxacin by sewage sludge based activated carbon," in *International Conference on Chemical, Environmental and Bioprocess Engineering (CEBE – 2013)* organized by Krishi Sanskriti at Jawaharlal Nehru University, December 21-22, 2013, New Delhi.

Manu, M. K., Kumar, R. and Garg, A.

Paper presented on "Physical and chemical characterization of yard waste," in *International Conference on Chemical, Environmental and Bioprocess Engineering (CEBE – 2013)* organized by Krishi Sanskriti at Jawaharlal Nehru University on December 21-22, 2013, New Delhi.

Mandal, D., Dohare, V., Honkalaskar, V. H., Garg, A., Bhandarkar, U. V. and Sethi, V.

Oral presentation on "Evaluation of Micro Gasifier Cookstove Performance with Handmade Biomass Pellets using Region-Specific Fuels and Assessment of Deployment Potential," in *Proceedings of The National Conference on Recent Advances in Bio-Energy Research* at Sardar Swaran Singh National Institute of Renewable Energy, Kapurthala, during November 22-24, 2013, Punjab.

Mohite, R. and Garg, A.

Oral presentation on "Catalytic wet oxidation of o-cresol using copper impregnated activated carbon catalyst," in *International Conference on Technologies for Sustainable Waste Management in Developing Countries* organized by Vignan University in Association with WTER-India and CSIR-NEERI at Vadlamudi, Guntur, on August 23-24, 2013, Andhra Pradesh.

Mohite, R., and Garg, A.

Oral presentation on "Catalytic wet air oxidation of o-cresol using copper impregnated activated carbon catalyst," in *International Conference on Advances in Chemical Engineering (ICACE)*, NIT Raipur, held on April 5-6, 2013, India.

Lal, K., and Garg, A.

Oral presentation on "Phenol degradation using homogeneous copper catalyzed wet oxidation at mild

conditions," in *International Conference on Advances in Chemical Engineering (ICACE)*, NIT Raipur, held on April 5-6, 2013, India.

Phuleria, H.C.

Presented a paper on "Air pollution exposure modeling using GIS" in a Workshop on *New GIS and Modelling – Applications in Environmental Engineering*, held at Sri Jayachamarajendra College of Engineering, Mysore, on March 28-29, 2014, Karnataka, .

Participated in national workshop on *Automated Air Pollution Monitoring – State of Art, Data Management, Decision Making and Implementation*, held during January 23-24, 2014, at IIT Bombay, Mumbai.

Presented a paper on "Long-term air pollution exposure assessment in epidemiological studies" in a workshop on *Occupational Exposure & Industrial Health and Safety*, held at IIT Bombay, during July 22- 23, 2013, Mumbai.

International

Dikshit, A.K.

Attended *International IWA Conference on Sludge Management* organised by International Water Association at Vasteras, on May 3-5, 2013, Sweden.

Agnihotri, S., Mukherji, S. and Mukherji, S.

Presented a paper on "Comparison of Amine and Thiol Functionalized Glass Wool Fibres for Silver Nanoparticle Immobilization: Characterization, Bactericidal Efficacy and Potential Risk," in *International Conference on Nanoscience and Technology, ICONSAT 2014*, organized by Institute of Nano Science & Technology, Mohali, March 3-5, 2014, Chandigarh, India.

Jeswani, H. and Mukherji, S.

Presented a paper on "Effect of Wastewater Characteristics on Performance of a Lab-scale RBC Treating Biomass Gasifier Wastewater," in *First International Forum on Asian Water Environment Technology (1st IFAWET)*, by University of Tokyo, Japan, JNU, New Delhi and IIT Roorkee, on December 18-20, 2013, at JNU, New Delhi.

Presented a paper on "Sustainable Management of Tank Bottom Sludge from Refineries: Role of Bioaugmentation with n-Alkane and Naphthalene-Degrading *Burkholderia* Cultures," in an *International Symposium on a Sustainable Future (ISSF)*, IGIDR, October 18-19, 2013, Mumbai

Presented a paper on "Evaluation of Bioaugmentation and Biostimulation Effects on the Treatment of Refinery Oily Sludge using 2n Full Factorial Design,"

in *IWA Regional Conference on Waste and Wastewater Management Science and Technology*, Grand Resort Hotel, Limassol, June 26-28, 2013, Cyprus.

Ghosh, I. and Mukherji, S.

Presented a poster on “Micellar Solubilization of Pyrene in Triton X-100 Hinders Pyrene Degradation by *Pseudomonas aeruginosa*,” in *IWA Regional Conference on Waste and Wastewater Management Science and Technology*, Grand Resort Hotel, Limassol, June 26-28, 2013, Cyprus.

Tejaswini, D. N., Karmakar, S., Pradhan, M. M. and Palkar, V. S.

Presented a paper on “A Framework for Assessing Eutrophication: Application to a Cluster of Lakes in Thane City, India,” in *International Conference of Estuaries and Coastal Areas in Times of Intense Change*, Elsevier, held during October 13-17, 2013, Shanghai, China.

Ragettli, M.S., Braun-Fahrländer, C., Tsai, M.Y., de Nazelle, A., Schindler, C., Perez, L., Ducret-Stich, R.E., Künzli, N. and Phuleria, H.C.

Presented a paper on “Simulation of NO₂ commute exposure: Investigation of its contribution to total exposure and comparison of air pollution models,” *Environment & Health conference - Joint international conference of three international societies: ISEE, ISES & ISIAQ*, held during August 20-24, 2013 in Basel, Switzerland.

Jeong, A., Phuleria, H.C., Keidel, D., Rochat, T., Probst-Hensch, N.M. and Schindler, C.

Presented a paper on “Stability of air pollution models over time: Evaluation of PolluMap models for the Swiss cohort study, SAPALDIA,” *Environment & Health Conference - Joint international conference of three international societies: ISEE, ISES & ISIAQ*, held during August 20-24, 2013 in Basel, Switzerland.

Phuleria, H.C., Tsai, M.Y., Ragettli, M.S., Corradi, E., Ineichen, A., Rochat, T., Probst-Hensch, N.M., Fierz, M. and Künzli, N.

Presented a paper on “Spatiotemporal variation of particle number and surface area concentration in four Swiss areas and its relationship with mass measurements,” *17th ETH-Combustion Generated Nanoparticles conference*, held during June 18-20, 2013, Zürich, Switzerland,

Phuleria, H.C., Ineichen, A., Corradi, E., Tsai, M.Y., Schindler, C., Probst-Hensch, N.M. and Künzli, N.

Presented a paper on “Seasonal and spatial variation of indoor and outdoor particulate mass and nitrogen dioxide concentrations in eight Swiss areas,” *Environment & Health Conference - Joint international conference of three international*

societies: ISEE, ISES & ISIAQ, held during August 20-24, 2013 in Basel, Switzerland.

Phuleria, H.C., Chandrasekaran, V., Swaminathan, S. and Probst-Hensch, N.M.

Presented a paper on “Impact of household cooking fuels on gender-specific adult tuberculosis and diabetes in India: A cross sectional study,” *Environment & Health Conference - Joint international conference of three international societies: ISEE, ISES & ISIAQ*, held during August 20-24, 2013 in Basel, Switzerland.

Ducret-Stich, R.E., Corradi, E., Foraster, M., Morelli, X., Aguilera, I., Basagana, X., Rivera, M., Slama, R., Künzli, N. and Phuleria, H.C.

Presented a paper on “Spatial distribution and modeling of ultrafine particle concentrations in a Swiss urban city,” *Environment & Health Conference - Joint international conference of three international societies: ISEE, ISES & ISIAQ*, held during August 20-24, 2013 in Basel, Switzerland.

Bhusnoor, S.S., Bhandarkar, U.V and Sethi, V.

“Study of Thermophoretic Deposition of Engine Emissions in a Pipe flow,” at *24th International Symposium on Transport Phenomena*, Tokyo University of Science, November 1-5, 2013, Japan.

Menon, R., Husar, R.B., Sethi, V., and Westphal, D.L.

“Dust pattern over Indian subcontinent based on NAAPS model, satellite and surface observations,” *American Geophysical Union*, at Fall Meeting, in 2013.

Bojjagani, S., Chaudhari, R.H., Menon, R., Motghare, V.M., Patil, R.S., Kumar, R. and Sethi, V.

“Development of approaches for air quality management in coal mining areas,” *International Symposium on Environmental Management and Current Practices in Mining & Allied Industries (EMPM-2014)*, February 13-15, 2014, Indian Institute of Technology, Varanasi.

Invited Lectures

National

Dikshit, A.K.

Delivered a keynote on “Environmental Concerns in the Reuse and Disposal of Fly Ash,” in the *National conference on Fly Ash Utilization for Sustainable Environment Management*, organized by SIES Nerul, Navi Mumbai, on January 16-17, 2014.

Delivered a lecture on “Water Quality Modelling” at Department of Civil Engineering, Bapuji Institute of Engineering and Technology, Davangere, April 8, 2013.

Delivered a keynote address on “RIO+20-Sustainable Development: Environmental Issues and Concerns particularly for the Shipping Sector,” at the *50th World Maritime Day Celebrations*, organised by the Directorate General of Shipping, Governmental of India, Mumbai on September 27, 2013.

Delivered lectures on “Operation and Maintenance of Wastewater Treatment Plant-I” and “Operation and Maintenance of Wastewater Treatment Plant-II” in the *CEP on Operation and Maintenance of Environmental Facilities for P.W.D. and Irrigation Engineers* organised by Department of Civil Engineering, BDT College of Engineering, Davangere on October 11, 2013.

Asolekar, S.R.

Invited by UN CEO Water Mandate to speak at the CEO Water Mandate’s Multi-Stakeholder Working *International Conference on Corporate Water Stewardship and the Post-2015 Development Agenda* during March 5-7, 2013 in Mumbai.

Gave an invited lecture on “Technology selection on Poly Chlorinated Biphenyl disposal,” at DMD CPRI, Bangalore, during March 12-13, 2013.

Delivered a lecture on “State of the Art Preventive Environmental Strategies in Aluminium Sector” at Aluminum India Summit, 2013, on *Developing Profitable Strategies to Grow New Markets for the Indian Aluminum Industry* on September 12, 2013 in Mumbai.

Delivered a talk on “Frugal Engineering” on the eve of Engineers Day, at The Institution of Engineers India, on September 15, 2013 in IEI Mumbai.

Delivered a lecture on “Zero Liquid Discharge Concept For Efficient Management Of Urban Water/ Wastewater Resources” in a *Regional workshop on Energy and Resource Efficiency in Urban Water Management*, organised by the Centre for Science and Environment (CSE), New Delhi, on September 27, 2013 in Goa.

Invited as a Panel Member by “Save Ganga & Save Himalayas Meeting-Cum-Panel Discussion” at Bhartiya Vidya Bhavan, K.M. Munshi Road, Mumbai, on October 2, 2013.

Delivered a lecture on “Activated Sludge: History and Theory” at the National Seminar organised by Jedimetla Effluent Treatment Ltd., 2014, held during March 28-29, 2014 in Hyderabad.

Mukherji, S.

Delivered a lecture on “Clean-up of Coal Wastewater using Microorganisms with Enhanced Degradation Capabilities” at the *National Symposium on*

Environmental Management on Coal Based Thermal Power Plants in Indian perspective organized by College of Engineering and Management, Kolaghat, December 21-22, 2013.

Delivered a lecture on “Biofuel from Algae and Sustainability Considerations,” at a *Workshop on Algae Cultivation and Biofuel Production*, Organized by Algae, Biofuel and Biomolecules Centre (ABBC), Maharshi Dayanand Saraswati University, Ajmer, Rajasthan, July 26-31, 2013.

Delivered a lecture on “Mass Cultivation of Algae,” at a *Workshop on Algae Cultivation and Biofuel Production*, organized by Algae, Biofuel and Biomolecules Centre (ABBC), Maharshi Dayanand Saraswati University, Ajmer, Rajasthan, July 26-31, 2013.

Delivered a talk on “Water Disinfection using Silver Nanoparticles and Sustainability Considerations,” at a *Workshop on Nanotechnology Applications for Sustainable Development* organized by Department of Chemical Engg., SVNIT, Surat, India, April 19-21, 2013.

Garg, A.

Two lectures were delivered on Wastewater Treatment Processes in a training course, organized by Civil Engineering Department, IIT Bombay for BMC, Mumbai, held on September 25-26, 2013.

A lecture was presented on “Sustainable Wastewater Management for Industries” in a short course conducted by Civil Engineering Department, IIT Bombay for ONGC professionals on April 4, 2013.

Karmakar, S.

Chaired a session on “Session 4: Linking Science to Impact and Response,” *1st Climate Science and Policy Workshop*, held during March 6-7, 2014, at IIT Bombay.

Delivered a lecture on “Design of Sampling Locations for River Water Quality Monitoring considering Seasonal Variation of Discrete and Diffuse Pollution Loads,” at the Centre for Water Resources Development and Management (CWRDM), Kozhikode, Kerala, on May 10, 2013, India.

Chandel, M.K.

Delivered an expert lecture on “Emissions from Incinerators and its Health Impacts,” at *National Seminar on Thermal and other techniques for waste management*, National Institute of Technology Calicut, March 7-8, 2014.

Delivered an expert lecture on “Carbon Capture and Storage – The Way Forward to Reduce Greenhouse Gases,” at an *International Conference on Emerging*

trends in Science & Technology, Impact on Environment & Society for inclusive growth at AISECT University, Bhopal, during February 14-15, 2014.

Padhye, L.P.

Delivered a lecture on “Pharmaceuticals in Urban Drinking Water – Challenges for Developing Countries”, at *International Conference on Emerging Trends in Science & Technology: Impact on Environment & Society*, Bhopal, India, February 14-15, 2014.

Phuleria, H.C.

Coordinated the workshop on *Occupational Exposure & Industrial Health and Safety*, held during July 22-23, 2013, at IIT Bombay, Mumbai.

Sethi, V.

Chaired a national workshop on *Automated Air Pollution Monitoring – State of Art, Data Management, Decision Making and Implementation*, held during January 23-24, 2014, at IIT Bombay.

International

Dikshit, A.K.

Delivered lecture series on “Biotechnology for Sustainable Environmental Management” to Bachelors students at the School of Business, Society and Engineering at Malardalen University, Vasteras, 2013, Sweden.

Asolekar, S.R.

Invited by World Maritime University (WMU) of International Maritime Organization (IMO), the member institution of the United Nations (UNO) to be a member of scientific committee and to deliver the keynote address on “The role, actions and projects of the NGOs in Ship Recycling” at the *International Conference entitled: Ship Recycling (SHIPREC-2013)* during April 7-9, 2013 in Malmo, Sweden.

Phuleria H.C.

Co-chaired a session on “Measuring and Modeling Spatio-Temporal Variation in Airborne Pollutants”, in *Environment & Health Conference - a joint international conference of three international scientific societies: ISES, ISEE, ISIAQ* held during August 20-24, 2013, in Basel, Switzerland.

Significant Awards/Distinctions

Dikshit, A.K.

Erasmus Mundus Visiting Professorship in the School of Business, Society and Engineering at Malardalen University, Vasteras, Sweden from May-July 2013 under EU Fellowship.

Member, Editorial Advisory Board, Journal of Environmental Science and Engineering, (Publishers: NEERI, Nagpur, India)

Member, Editorial Board, Journal of Environmental Science and Health, Part A (Publishers: Taylor and Francis Group)

Member, Editorial Board, Journal of Clean Technology and Environmental Policy (Publishers: Springer Verlag)

Asolekar, S.R.

The best paper award for the paper “Towards Green Ship Dismantling: Scientific Assessment of Health, Safety and Environment Agenda” authored by Deshpande, P. C., Hiremath, A. M., Kalbar, P. P. and Asolekar, S. R. and presented by P. C. Deshpande at the International Conference on Ship Recycling SHIPREC2013 – in Malmö, Sweden, during April 7-9, 2013.

Garg, A.

“Nawab Zain Yar Jung Bahadur” Memorial Prize by Institution of Engineers (India) for a paper published in the Series A Journal of IEI.

Member, Advisory Committee Municipal Waste Treatment Facility in Navi Mumbai, India

“Best paper award” in an International Conference on “Technologies for Sustainable Waste Management in Developing Countries” held on August 23-24, 2013 at Guntur, India.

Chandel, M.C.

Young Faculty Award

Padhye, L.P.

Young Faculty Award

Phuleria, H.C.

Young Faculty Award

Honorary Work

Dikshit, A.K.

Member, Advisory Committee for Bio-Medical Rules, Govt. of Maharashtra since 2009

Member, Academic Advisory Committee, Nirma University, Ahmedabad since 2010.

Member, Sub-Committee for ‘Development of National Sustainable Habitat Parameters in the field of Storm Water Management’ constituted by the Carbon Credit Cell of the Ministry of Urban Development, Govt. of India since 2010.

Honorary Professor in the School of Civil Engineering, Faculty of Engineering, University of KwaZulu-Natal, Durban, South Africa.

Nominated Invitee Member on the Academic Board of the Government College of Engineering, Amravati (Maharashtra).

Asolekar, S.R.

Member of the Technical Expert Panel (TEP) for the World Bank aided “Capacity Building for Industrial Pollution Management Project (CBIPMP)”

Member of “Project Review and Supervisory Group” Constituted by Ministry of HRD and Government of India for Establishing “E-Training Environment for Training Technical Teachers and Students”.

Member of the “Dahanu Taluka Environmental Protection Authority” (since 1997) constituted by the Honorable Supreme Court of India.

Member of “Steering Committee on Environment, Forests & Wildlife” for the 12th Five Year Plan constituted by the Honorable Planning Commission of India (2012-2017).

Member of the “Award Committee” of Indira Gandhi Paryavaran Puraskar (IGPP)-2011 constituted by MoEF, India 2013.

Member of “Vasvik Award Committee” for 2012, 2013 and 2014 constituted by Vividhlaxi Audyogik Samshodhan Vikas Kendra, India.

Member of the “Technical Committee” constituted to Study Merits/Demerits of use of Petcoke as a Fuel in Place of Coal by Maharashtra Pollution Control Board (MPCB), Government of Maharashtra, February, 2014.

Patil, R.S.

Member, Atmospheric and Space Science Board of Studies Committee, Pune University from April 19, 2012 for two years.

Member, Scientific Program Committee of the Environmental Health Conference in Basel; from August 19-23, 2013; Organized by Swiss Tropical and Public Health Institute, Univ. of Basel, with Int. Soc. Of Exposure Sciences (ISES), Int. Soc. Of Env'tl. Epidemiology (ISEE) and Int. Soc. of Indoor Air Quality (ISIAQ).

Nominated as a member of MAPAN (Monitoring Air Pollution Automatic Network) Project Monitoring Committee (PMC), IITM, Pune, March 2013, for 5 years.

Reviewer, Research projects, Dept. of Science & Technology, Atmospheric Sciences under SERC, 2004 till date.

Member, Editorial Board, Asian Journal of Chemical and Environmental Research, 2007 till date.

Mukherji, S.

Editorial Board Member, Applied Nanoscience, Springer

PhD Thesis Review, Thesis submitted in Department of Ecology and environmental Sciences, Pondicherry Central University, Kalapet, Puducherry, March 2014.

Reviewed papers following for international journals: Applied Nanoscience in August 2013; Reviews in Environmental Science and Engineering, September, 2013; Acta Biomateriala, September, 2013; Colloids and Surfaces B Biointerfaces, October, 2013; Chemical Engineering Journal, October, 2013; and Bioresource Technology, March 2014

Expert Committee Member for External Review of Centre for Environment, IIT Guwahati, January 2014.

Chaudhari, S.

Reviewed papers for Journal of Water and Health, Water Research, Environmental Science and Technology, Chemical Engineering Journal, Journal of Hazardous, Toxic, and Radioactive Waste.

Reviewed grant proposal for National Science Centre, Poland.

Reviewed several project proposal for DST-SERB (Civil), DST-WTI.

Member of Research Committee for CSIR-NEERI Nagpur, Member PAC of DST-SERB (Civil)
Member Technical Advisory Committee-Wastewater MCGM (Mumbai)

Garg, A.

Reviewed paper for the following: Bioresource Technology, November 2013; Waste Management & Research, April & August 2013; Journal of Toxic, Hazardous and Radioactive Wastes, November 2013; Chemical Engineering Journal, November 2013; Desalination and Water Treatment, November 2013; Clean Technologies and Environmental Policy, September & December 2013 and March 2014; and American Journal of Environmental Sciences, May 2013.

Karmakar, S.

Reviewed papers for the following: ISH Journal of Hydraulic Engineering, April 2013 and July 2013; Journal of Climate, June 2013; Climate Dynamic, September 2013; Journal of Computing in Civil Engineering (American Society for Civil Engineers), August 2013; November 2013; Journal of Flood Risk Management (Wiley), October 2013; February 2014; and Water Resources Research (AGU), November 2013

Chandel, M.K.

Reviewed paper for Clean Technologies and Environmental Policy, October 2013.

Reviewed research proposals for Department of Science and Technology, Govt. of India, December, 2013.

Member of Expert Committee on Municipal Solid Waste (MSW) Processing Facility at Calangute / Saligao in North Goa & Cacora in South Goa, 2013.

Padhye, L.P.

Invited Reviewer for Environmental Science & Technology

Faculty Members and their Specializations

1. Anil K. Dikshit

Water and Wastewater Treatment Technologies; Urban Solid Waste Management; Environmental Systems Modelling and Optimization; Environmental Management and Impact Assessment; GIS Applications for Environment.

2. Shyam R. Asolekar

Hazardous, municipal & biomedical waste management, Eco-industrial networking, Eco-centric and low-cost wastewater treatment, Treatment of leachates and special industrial wastewaters, Environmental policy and preventive environmental management.

3. Virendra Sethi

Air Pollution Science and Engineering, Aerosol Transport Measurements, Aerosol Characterisation. Satellite Data Assisted Air Quality Management, Biomass Gasification Hot Gas Cleanup, Engineering Education.

4. Sumathi Suresh

Environmental biochemistry and microbiology, Biological treatment processes, Enzymology, Application of biochemistry for cleaner production technologies, Biomonitoring and bioassay for toxicity testing.

5. Sanjeev Chaudhari

Water and Wastewater Treatment.

6. Suparna Mukherji

Biodegradation and Bioremediation of Complex Organic Pollutants, Toxicity Evaluation of Complex Mixtures, Environmental Application of Nanomaterials, Sorption Phenomena, Sampling and Analysis of Bioaerosols.

7. Subhankar Karmakar

Environmental and Water Resources Systems Engineering, Uncertainty Modeling, Disaster Risk and Vulnerability Assessment.

8. Anurag Garg

Catalytic wet oxidation, Advanced oxidation, Coagulation, Adsorption, Biological treatment processes, Municipal Solid waste characterization and treatment, Energy from solid waste; Decision support modeling for solid waste management.

9. Munish Kumar Chandel

Carbon Capture and Storage, Chemical Looping Combustion, Fluidized bed combustion, Greenhouse Gas Mitigation, Solid Waste Management, Waste to Energy, Water-Energy Nexus

10. Harish C. Phuleria

Aerosols & Air Quality Characterization, Environmental Noise Exposures, Environmental Health

11. Lokesh P. Padhye

Aquatic Chemistry and Physicochemical and Biological Treatment Processes.

12. Rashmi S. Patil

Air Pollution Modelling Monitoring and Management, Indoor Air Quality and Exposure Assessment, Environmental Impact Assessment.

13. Rakesh Kumar

Environmental Chemistry and Water Quality Assessment

14. Pramod Kulkarni

Aerosol Measurement and Nanomaterial Characterisation

15. Gurumurthy Ramachandran

Occupational and ambient exposure assessment, Bayesian methods in exposure assessment and occupational hygiene decision making, exposure modeling, nanoparticle risk assessment, nanotechnology policy, inhalation dosimetry for mixed exposures, aerosol measurements, theoretical and experimental studies on design of aerosol samplers, and inversion methodology.



Introduction

Industrial Design Centre (IDC) at IIT Bombay offers an excellent environment for academics, research and applications in the field of design. The Centre interacts with industries and institutions for promotion and awareness of design. These are in the form of organizing seminars, conducting short term courses and workshops. In the area of design practice, IDC offers professional design consultancy and advisory services to industries and other organizations. The total faculty strength is 22. Four new faculty members have joined the Centre during the year.

Academic Programmes

IDC offers M.Des. in Product Design, Visual Communication, Interaction Design, Animation and Mobility and Vehicle Design. The programmes are meant to develop skills, knowledge and aptitude among students to become creative problem-solvers who can bring about innovation in the manufacturing and communication industries. At the end of their education they are expected to make a meaningful contribution to the industry and set new future directions.

List of sponsored research projects is as following:

Sr. No.	Project Title	Sponsored by	Status (New/ Ongoing/ Complete)
1	Standardization of Virtual Keyboards	Department of Information Technology (DIT)	New
2	Consultation for Ergonomics of Data Centre Design Concept (Project id.DRD/ID/GGR-7/12-13, PC 12ID017)	Bharat Diamond Brause	New
3	Project Entitled “Time Motion Study for brick kiln” (Project id.:DRD/ID/GGR-2/13-14, Project Code: 13ID007)	Prayas, Ahmedabad,	New

Degrees Awarded

M.Des. : 54

Students Award

Mr. Govind Janardhanan of IDC has won award at ‘Noida International Film Festival 2014’ for best Animation Award (Student Category) and best Animation Production Institute for IDC, IIT Bombay for his film “A Glimpse of Happiness...”. His film got nominated for the following: Festival International De Cine Contra Corriente South America; Dada Sahib Phalke Film Festival 2014; Jamuura Online Mumbai Film Festival 2014; and 1st Maharashtra Short Film Festival 2014.

R & D Activities

Sponsored Research Projects

New : 6
Ongoing : 17
Completed : 6

Sr. No.	Project Title	Sponsored by	Status (New/ Ongoing/ Complete)
4	Additive Manufacturing of Aerospace Components Using Variable-Axis Deposition	Aeronautical Research & Development Board (ARDB)	New
5	Support to Project eSlate (Knowledge at hands for self learning by semi literates from lower income groups in India)	Internally funded by MHRD project	New
6	Integrated Impact Assessment Study of Mithi River	Mumbai Metropolitan Region Development Authority (MMRDA)	New
7	TAMA Pilots	Janssen Pharmaceutical	Ongoing
8	Scaling The Rural Enterprise. Under The Indo-Uk Collaborative Research Initiative on “Bridging The Urban And Rural Divide.”	Department of Science & Technology (DST)	Ongoing
9	Development of Robust Document Image Analysis & Recognition System for Printed Indian Scripts (OCR Consortium Project Phase – 2)	DIT	Ongoing
10	Award of “Faculty Research Fellowship” for India Post	India Post	Ongoing
11	Architectural typologies: Exploring alternative living solutions for Semi-urban India	HUDCO	Ongoing
12	Shenoy Innovation Studio Facilities & Services	IN account.	Ongoing
13	Interior Design of Driver’s Cab for New EMU Rakes.	Mumbai Railway Vikas Corporation Limited	Ongoing
14	Understanding artisanal livelihoods	Self-sponsored	Ongoing
15	Support to Project eSlate (Knowledge at hands for self learning by semi literates from lower income groups in India)	Internally funded by MHRD project	Ongoing
16	Integrated Impact Assessment Study of Mithi River	MMRDA	Ongoing
17	TCS-IITB joint proposal for research and development in service design	Tata Consultancy Services - IITB research cell	Ongoing
18	Design and coordination of Dandi Salt Satyagraha Memorial	Ministry of Culture, Government of India	Ongoing
19	Creating Digital-learning Environment for Design in India (e-kalpa)	MHRD	Ongoing
20	Design Guidelines for Light weight city bus	The Automotive Research Association of India (ARAI)	Ongoing

Sr. No.	Project Title	Sponsored by	Status (New/ Ongoing/ Complete)
21	Damroo seminar	Damroo Seminar	Ongoing
22	Proposal for developing the software for IID	IID Pune	Ongoing
23	Taposva Vegetable Vending machine	Taposva Fresh Produces Pvt Ltd	Ongoing
24	Indian Language Input Method	Nokia	Completed
25	Frugal innovation approach towards enhancing driver environment for Volvo 9400.	Volvo Technology Corporation	Completed
26	Playing to Grow	British Council	Completed
27	Consultancy services towards NIT Patna Convocation	NIT Patna	Completed
28	Development of prototypes in mobility lab	IRCC	Completed
29	Design and Development of Hygienic Toilet for Rural Areas	Ministry of Drinking Water & Sanitation, GoI.	Completed

Consultancy Projects

The department undertook 9 jobs generating Rs.94,73,319/-
The total number of faculty involved was 7.

Patents

Sr. No.	Title of the patent	Inventor	National/ International	Status filed/granted	Date of patent filed/granted
1.	System For Assisting A User In Getting Up From A Bed	Ray, G. G.	National	Granted	June 25, 2013

Extension activities

The following workshops were organised at IDC

- Building Community Collaboration, INTERACT 2013.
- Rethinking Universal Accessibility: A broader approach considering the digital gap, INTERACT 2013
- Getting Started with Your PhD Proposal, March 2014.
- Workshops for traditional potter communities held during March 2013 – February 2014
- Workshop with Pinguli village school on the 'Art of Chitrakathi'

The following Short-term course was conducted at IDC

- Open Arts Residency Programmes held from January 2014 onwards

The following CEP courses were conducted at IDC

- DE Shaw Hyderabad (4 days)
- Monsoon course on HCI 2013, in July 2013.
- SAS Pune (4 days)
- hCentive Delhi (2 days)

Design & Degree Show 2014

Design & Degree show - an annual event organised by the students of the IDC, IIT Bombay. The DDS was held at Victor Menezes Convention Centre, IIT Bombay from June 21- 23, 2013 and at Nehru Centre, Mumbai on June 29 - 30, 2013. The event was relatively scaled on a bigger platform with eminent people for conference and workshop from different industrial domains.

The theme of the event was 'Design- The Catalyst for Change'. The event showcased the work of students of IDC along with conferences and workshops for masses, industrialists, designers and students of IIT and other institutions. The aim of the event was to spread design awareness and provide a platform where design ideas and ideologies could be shared.

Visitors to the Department

Prof. Matt Jones, Swansea University, UK. He delivered a lecture on "There's Not An App for That".

Prof. Anand Patwardhan, delivered a lecture on screening of documentary, film-making 'Jai Bhim Comrade' for Art, Design & Society course, in August 2013.

Conferences/Symposia/Workshops/Seminars (Participated/Papers Presented)

National

Joshi, Anirudha

Presented a paper on "Technology Adoption by 'Emergent' Users - The User - Usage Model", at a Conference of *APCHI* held in 2013 at Bangalore.

Presented a paper on "Exploration of Optimal Multimodal Input Interaction for Applications Based on Goals", at the Conference of *APCHI* held in 2013 at Bangalore.

Ray, G. G.

Participated in *Humanizing Work and Work Environment (HWWE)* held during December 4- 6, 2013 at Vidyasagar University, Midnapore, West Bengal.

Presented a paper on "Success of Design: A Holistic Approach through User Centered Research and Awareness Creation for Design Sustainability", at *HWWE 2013* held on December 4, 2013 at Midnapore West Bengal.

Presented a paper on "Interior Design of Drivers Cab for New Emu Rake of Mumbai", *HWWE 2013*, held on December 6, 2013 at Midnapore, West Bengal.

Delivered a lecture on "Ergonomics in Product Design: With special reference to Agricultural tool & Equipment Design", at a five day in-house program for Agricultural equipment Designer of ICAR, September 16 - 20, 2013.

Chakravarthy, B. K.

Made a presentation on "Introduction to IDC" & "Product Innovation" for *Expo PDI - Exposure to Product Design and Innovation* on September 26-28, 2013 held at IDC, IIT Bombay.

International

Joshi, Anirudha

Presented a paper titled "A comparison of list vs. hierarchical UIs on mobile phones for non-literate users", at the *Conference of INTERACT* held in 2013 at Cape Town, South Africa.

Presented a paper titled "Empirical Evaluation of Multimodal Input Interactions", in the *Conference of HCI International*, held in 2013 at Las Vegas, USA.

Ray, G. G.

Participated in two-day workshop on *Applied Ergonomics and Manual Materials Handling* in the National Institute of Occupational Health, Johannesburg, South Africa Johannesburg on May 28 - 29, 2013

Chakravarthy, B. K.

Made a presentation on "Contemporary Issues and Trends in Design" in Reflections-2014, International Conference on *Fashion, Retail and Management (ICFRM)* held on January 11, 2014 at NIFT, Hyderabad.

Conferences/Symposia/Workshops/Seminars (Coordinated/Chaired by Faculty)

National

Ray, G. G.

Coordinated a half day seminar to the participants at CII- Godrej Centre of Excellence, held on July 2, 2013.

Coordinated a five day in-house program on "Ergonomics in Product Design: With special reference to Agricultural tool & Equipment Design" for *Agricultural equipment Designer of ICAR*, held during September 16 - 20, 2013.

Chakravarthy, B. K.

Coordinated CEP In-house Course on "Industrial Design Approach to Innovation" held during February 28 - March 1, 2014 for Honeywell Technology, Hyderabad.

Joshi, Anirudha

General Chair, India HCI 2013, at *APCHI 2013*

Coordinated “Rethinking Universal Accessibility: A broader approach considering the digital gap”, *INTERACT 2013*.

Coordinated “Getting Started with Your PhD Proposal” held in March 2014.

International**Ray, G. G.**

Coordinated a workshop on *Applied Ergonomics and Manual Materials Handling* held during May 28- 29, 2013 at National Institute of Occupational Health, South Africa, Johannesburg.

Invited Lectures**National****Joshi, Anirudha**

Delivered a lecture on “The story of Swarachakra”, in *India HCI 2014* Curtain-raiser, IIT Delhi, March 2014

Delivered a Guest lecture on “Interaction Design for Those with Less Education”, PreCog Group, IIT Delhi, in March 2014.

Delivered a lecture titled “Introduction to HCI”, Honeywell, Hyderabad, in October 2013 and at Don Bosco Institute of Technology, Mumbai, in April 2013.

International**Joshi, Anirudha**

Delivered a lecture on “Supporting Treatment of People Living with HIV/AIDS”, at University of Waikato, Hamilton, New Zealand, February 2014.

Delivered a key note lecture on “Impact of Human factors on software development”, at *Conseg - 7th International Conference on Software Engineering*, Pune, in November 2013

Honorary Work**Joshi, Anirudha**

India representative on IFIP TC13, also Treasurer .
India representative on APCHI Steering Committee.
HCI Professionals Association of India, Founder.

Chakravarthy, B.K.

Worked on the “Design Manifesto” collaboratively and launched it on January 16, 2014 in the Manekshaw Centre, New Delhi, presided by Dr. Pallam Raju, Union Minister, MHRD.

Invited as Jury member for the India Innovation Initiative, i3 2013 – Regional Fair (West), at IIT Bombay, September 24, 2013

Setting-up the ‘Design Collaboration Zone’ in the Shenoy Innovation Studio, IDC, IIT Bombay in collaboration with Ryerson University, IDC and Bombay Stock Exchange (BSE) Institute Limited.

Faculty Members and their Specializations**1. U.A. Athavankar**

Basic Design, Product Design, Product Semantics, Cognition and Imagery, Environment Design, Furniture Design, Exhibition Design

2. A.G.Rao

Product Design, Basic Design, Bamboo Craft, Creativity

3. K. Munshi

Design & Design management, Mobility and Vehicle Design, Design Integration

4. Ravi Poovaiah

Designing for children, Collaborative Environments, Digital Resources for Learning, Information Visualisation And Design, New media Design and Interaction Design, Visual Language and Communication Design, Wayfinding, Identity and Information Systems

5. V.P.Bapat

Basic Design, Product Design

6. K.Trivedi

Graphic Design, Indian Design Traditions, Exhibition Design.

7. G.G.Ray

User Centered Design, Control Panel Ergonomics, Workstation Design, Manual Material Handling, Design for the Elderly, Design for People with Special Needs. Mobility/Vehicle Ergonomics, Furniture ergonomics

8. K. Ramachandran

Product design, Mobility Design

9. Ravi Hazra

Architecture, Sustainability, Urban Design and Street Furniture/Signage Design, Interior and Furniture Design

10. N. Sadhu

Product Ergonomics

11. B. K. Chakravarthy, Head

New Product Innovation, Collaborative Innovation Methodology, Design Strategy, Humanizing Technology, Product Styling and Perception, Creativity.

12. Girish Dalvi

Indic Type Design & Typography, Physical/embedded/ low-cost/wearable Computing, Design for Web/ Mobile Application Development.

13. Anirudha Joshi

Interaction Design, User Studies, Usability Evaluations, Text Input In Indic Scripts, Interaction Design For Those With Less Education, Interaction Design For Healthcare, Learning Indic Scripts.

14. Raja Mohanty

Visual Arts, Aesthetics, Communication Design, Art and Design, and Pedagogy.

15. G.V. Sreekumar

Typography, Publication Design, Information Design and Data Visualization, Font Design, Human Anatomy, Visual Design, and Illustration.

16. Nina Sabnani

Animation film-making, Documentary cinema, Illustration, Storytelling, and Visual Ethnography

17. Shilpa Ranade

Animation, Illustration, Graphic Design

18. Sumant Rao

Animation, Special Effects, Film making, and Education

19. Mandar Rane

Graphic Design, Book and Publication design, Corporate identity Systems, and Interface design and Interactive applications

20. R. Sandesh

Product Design: Context based Industrial/Product Design, Basic Form and Form Abstraction and Expression, Craft Practices and Traditional Vocation based Livelihood Opportunities, Design Based Study of Traditional Craft Communities and Craft Practices.

21. Phani Tetali

Animation, gaming, Storytelling with Sequential Art, Illustration, and Cartooning

22. Balan Sudesh

Areas of Study and Research, Digital Film-making, Photography, and Cinematography

23. Nishant Sharma

Automotive Design, CAID Computer Aided Industrial Design, Automotive Design, Vehicle Design Process, Product Form and Aesthetics, and Participatory Innovation

24. Purba Joshi

Product Design, Computer aided Design, Form Design, Product Interface Design, and Nature of material and processes

25. Narayan Parasuram

Sound Design, Music Appreciation, and Designing Content for Children

26. Pramod Khambete

Interaction Design, and Design Management

27. Alka Hingorani

Film, Photography and Story-telling - adaptations across media, Architecture and design (research interest in Biomimicry), Aesthetics, art criticism and appreciation, Visual Narratives.

28. Kumaresan P.

Product Design, Innovation Entrepreneurship, Product form, Craft, and Electronics & Rotations

30. Venkatesh R.

Data Visualization and Data Products, E-learning Design, Human Computer Interaction, and Interaction Design



Centre of Studies in Resources Engineering

Introduction

The Centre of Studies in Resources Engineering (CSRE) was established at Indian Institute of Technology, Bombay by the 'Ministry of Education and Social welfare', Government of India, for advancing the frontiers of science and technology and generating manpower required in the area of Natural Resources Engineering, in 1976.

Geoinformatics & Natural Resources engineering is an interdisciplinary area encompassing diverse issues of exploration and management of natural resources such as land, water, mineral, forest, soil and ocean resources; socio-economic aspects of sustainable development with respect to environmental impact of natural resources exploitation, renewable energy resources management; global warming and climate change.

The Centre receives sponsored projects from government and other scientific organizations such as DST, ISRO, DRDO, ONGC etc. The centre is working in theoretical aspects of Geospatial Technology in the Development of Efficient Algorithms, Spatio Temporal Processes, Spatial Data Security Methods and Spatial Data Structures and Visualization Methods. It is also working on snow cover mapping methods using three component and four component decomposition theorems and development of polarimetric discriminators for identification of snow which has resulted in the RADAR snow index development. The Centre has contributed towards high resolution image analysis, hyper-spectral image analysis, and content based image retrieval and educational content development. Research work is also in progress in planetary remote sensing especially geology of Mars using VNIR-SWIR and thermal remote sensing data (CRISM and THEMIS data) with the main objective of identifying and mapping hydrothermal minerals in Valles Marineris. There is an ongoing collaboration with the University of Western Australia.

Infrastructural facilities were augmented with a low-cost distributed sensing system which has been developed completely with open-source hardware and software for the Agro informatics lab. A Psychrometer

(HD500) for measuring leaf temperature and a Irrrometer for measuring soil moisture, Trimble Geo-XH 6000 series Dual frequency with hand-held receiver, Matlab with 10 user license and ENVI with 25 user license were also added.

Academic Program

Students Intake

M. Tech.	:	21
Ph.D.	:	08

Degrees Awarded

M. Tech.	:	18
Ph.D.	:	04

Geoinformatics and Natural Resources engineering is a multidisciplinary program with the sole objective of providing a balanced approach for studying Resources, Applications, Tools and Techniques. The Centre offers M.Tech and Ph.D. program in 'Geoinformatics and Natural Resources'. Presently, 15 faculty members are engaged in teaching and research with expertise in various areas of remote sensing and resources engineering and allied subjects. The centre has expertise in Datamininig and Microwave remote sensing. There are presently 61 Ph.D. scholars on its rolls. Some of the research areas actively pursued in the Centre are Water Resources, Terrain Evaluation, Land use Planning and Monitoring, Rural Development and Agro-informatics, Mineral systems studies and Mineral Exploration, Natural Hazards of Droughts, Desertification, Landslide, Avalanche, Earthquake, Tsunami etc., Marine Resources and Ecology, Snow, Glaciers and Atmosphere and Microwave Remote Sensing. The research areas offered by Theoretical group are Digital Image Processing, Digital Photogrammetry and Cartography, Geospatial Technologies and Synthetic Aperture Radar Information Analysis and Polarimetry. The student can choose a topic that suits his/her background and interest for dissertation work. Students admitted for M.Tech and Ph.D programs in both private the sector and Govt. organizations such as ISRO, DRDO, CSIR etc.

B.Tech., (U.G Minor Program) in “Geoinformatics and Applications” and M.Tech Institute Elective are also being offered. The Centre has admitted 19 students for M.Tech. GNR program this year. A new course is proposed on ‘Remote sensing of Vegetation’.

R & D Activities

The R & D activities of the Centre are in the areas of remote sensing, natural resources identification, development & management and spatial data base systems and applications. New research and development work is taken up in the area of virtual laboratory development to enable students from remote locations perform satellite image processing and analysis experiments. Other areas of activities include:

- Development of inversion algorithms for estimation of geo-physical parameters of snow such as grain size, snow wetness and snow density using polarimetric SAR data and implementation and validation of developed algorithms for Himalayan region.
- Remote sensing and GIS applications to hydrology, earth sciences including mineral exploration, terrain evaluation and land use planning, wetland and coastal investigation, desertification and drought monitoring, environmental management, landslide investigations.
- Microwave remote sensing of soil moisture and SAR Interferometry, training and Database development.
- Image data processing and analysis and GIS software and Development
- Theoretical aspects of Geospatial Technology related to Development of Efficient Algorithms, Dynamic Models, Spatial Data Security Methods and Spatial Data Structures

- Atmospheric Remote Sensing
- Development of multimedia educational content for digital image processing with emphasis on remotely sensed images
- Ensemble classifiers, hyper spectral image analysis and high resolution image segmentation and classification.
- Computer Vision and Graphics
- Geo-ICT and Sensor Network in Agriculture/ Environment
- Geosemantics, image information mining, cloud computing-based Geocomputations
- Bio-physical variables retrieval from remote sensing data
- Geologic remote sensing (including planetary geology), 3D crustal modeling; Mineral systems modeling (Au, Pb-Zn, U and Ni systems), GIS-based spatial analyses and modelling for mineral resource potential mapping and Machine learning algorithms and applications

The centre is working in collaboration with NEERI for Mithi EIA project and with Maharashtra Maritime Board (MMB) for the Coastal development of Maharashtra. The centre continues to interact with Department of Space, Govt. of India, through ISRO-IIT Bombay Space Technology Cell which sponsors research projects in the areas of remote sensing and space technology.

Sponsored Projects :

New	:	7
Ongoing	:	6
Completed	:	6

Sr. No.	Title of the Project	Sponsored by	Status
1	“Integrated Impact Assessment Study for Mithi River”	Mithi River Development Project Authority (MRDPA), Mumbai Metropolitan Region Development Authority (MMRDA)	New
2	“ICT in Water and Pest/Disease Management for Yield Improvement in Horticulture (Citrus)”	Information Technology Research Academy (ITRA), Media Lab Asia, Department of Electronics & Information Technology (DeitY), Ministry of Communication and Information Technology, GoI	New

Sr. No.	Title of the Project	Sponsored by	Status
3	“Microwave Remote Sensing and SAR Tutor with Virtual Laboratory”	ISRO-IITB Space Technology Cell	New
4	“Transfer Learning Driven Rapid Change Detection for Disaster Management”	ISRO-IITB Space Technology Cell	New
5	“Internet of Things (IoT) tested: Distributed Heterogeneous Experimental Facility for IoT”	Department of Electronics & Information Technology (DeitY), Ministry of Communications and Information Technology, GoI	New
6	“Development of Methodologies for Snow Pack Characterization using SAR Polarimetry and Interferometry”	DST-JSPS under the India-Japan Cooperative Science Program (IJCSP) in collaboration with The University of Tokyo	New
7	“Calibration of Polarimetric SAR systems and Software Development”	ISRO-IITB Cell	New
8	“Geospatial Data Security Methods”	CAIR, DRDO, Bangalore	Ongoing
9	“Satellite Image Processing and Analysis Virtual Lab”	MHRD	Ongoing
10	“Development of Methodology for snow pack characterization and glacier movement studies using multifrequency SAR time series satellite data”	Department of Science and Technology (DST)	Ongoing
11	“Monitoring snow and glaciers of Himalayan region-Phase 2”	Department of Space	Ongoing
12	“Snow pack parameters estimation and glacier movement studies using SAR polarimetry data – JAXA – 2012 (ALOS PALSAR data) (MOU with JAXA)”	DST	Ongoing
13	“3D crustal modeling and deep-seated mineral potential mapping of the Aravalli province, Western India”	IRCC, IIT Bombay	Ongoing
14	“Effect of Terrain Relief and Vegetation Cover on Interferometric SAR derived Digital Elevation Models”	ISRO-IITB Cell	Ongoing
15	“Methodology Development for Modeling the Propagation of Pollutant Plume & Estimation of Futuristic Impact on Coastal Ecology using Remote Sensing & GIS”	MMR-EIS, MMRDA & MPCB	Completed
16	“Estimation of sea surface Nitrate- Nitrogen; New production around Mumbai Coast”	ISRO-IIT Cell	Completed
17	“Utilization of leading edge ICT to enhance Australian and Indian ground water and land Resources under climate change scenarios”	Australia-India Strategic Research Fund (AISRF)	Completed

Sr. No.	Title of the Project	Sponsored by	Status
18	“Combining passive and active microwave observations for improving snow parameters estimation over Himalaya”	DRDO	Completed
19	“Chandrayaan -1 MiniSAR Data Analysis for Lunar Polar Region”	Department of Space, Govt. of India	Completed
20	“Development of land parameter retrieval techniques & tools for polarimetric SAR data Analysis”	ISRO, SAC, Ahmedabad	Completed

Consultancy Projects

Consultancy Projects were received from several organizations such as MCGM, ONGC, NMMC etc.,

Consultancy projects :	04
Faculty Involved :	04

Patents

Mohite Jyantrao, Sawant Suryakant and Adinarayana J.

“e-Citrus: A Prototype Crowd Sourcing System for Agricultural Advisory Services in Pest and Disease Management”, National patent filed on October 29, 2013, (PAT/CR/JA-1/13-14).

Short Term Courses organised

“QIP Short Term Course on Advanced Techniques for Satellite Image Analysis” at CSRE, IIT Bombay, February 10-14, 2014.

Conferences/Symposia/Workshops/Seminars (Participated and Papers Presented)

National

Khire, M. V.

Attended *International Symposium on a Sustainable Future (ISSF)* and presented a paper on “Risk matrix approach for analyzing sustainability of land resources towards desertification in arid/semiarid zones”, IGIDR, Mumbai, October 16-18, 2013.

International

Adinarayana, J.

Participated in AISRF Workshop *Utilization of leading edge ICT to enhance Australian and Indian ground water and land resources under climate change scenarios*, during January 21-24, 2013, at International Water Management Institute, Hyderabad.

Participated in annual Conference 2013 organised by National Science and Technology Development Agency (NSTDA), during April 3-4, 2013, at Bangkok, Thailand.

Alok Porwal

Participated in “GIS-based mineral prospectively modeling”, the University of Western Australia, October 2013 and “Uranium exploration” at Sri Lankan Geological Survey, September 2013.

Inamdar, A.B.

Participated in ACRS 2013: *Asian Remote Sensing Conference*, Bali, Indonesia, October 20-24, 2013.

International Conference on IWRM2014, Calicut, Kerala, February 19-21, 2014.

International Workshop on *Coastal and River Zone (CRZ), Management: Regulations and Development*, February 6-7, 2014, IIT Delhi.

Khire, M. V.

Attended 2nd *International Conference on Biodiversity and Climate Change (ICBCC 2013)* and presented a paper on “Qualitative analysis of extent and severity of desertification for semi-arid regions using remote sensing techniques”, November 17-18, 2013, Abu Dhabi, UAE.

Mohan, B. K.

Attended TerraSAR-X/Tandem-X Meeting at German Aerospace Center (DLR), and presented a paper on “Virtual Laboratory for SAR and Optical Images”, June 2013.

Nagarajan, R.

Participated in *River basin management*, Organized by Wessex Institute of Technology, Ashurst, Southampton, New Forest, UK, May 2013.

Rao, Y.S.

Participated in APSAR-2013, and presented papers on “Classification of RISAT-1 Hybrid Polarimetric Data for Various Land Features, Asia-Pacific Synthetic Aperture Region Growing Based Improved SAR Speckle Filter for Polarimetric Data, Asia-Pacific Synthetic Aperture Radar”, September 23-27, 2013, Tsukuba, Japan.

Participated in *International Expert Meet on Microwave Remote Sensing*, and presented a paper on “Full and Hybrid Polarimetric SAR Data Analysis for Various Land Features Evaluation of an DEM-X DEMs over Indian Test Areas”, at Ahmedabad, December 16-17, 2013.

Venkatachalam, P.

Attended *5th International Conference on Environmental Science and Development - ICESD 2014* and presented a paper on “A Bayesian model to study spatio-temporal variability of latent heat flux and its trend”, at Singapore, February 19-21, 2014.

Venkataraman, G.

Attended *9th International Conference on Microwaves, Antenna, Propagation & Remote Sensing*; and presented paper “Polarization States of Scattered Waves from Lunar Surface” at Jodhpur, India, on December 11-14, 2013.

Attended *IEEE IGARSS’ 2013 conference* and presented two papers “Characterization of Backscattered Radar Waves from the Lunar Surface”, and “Snow Wetness Estimation Based on Pol-SAR Decomposition Technique” at Melbourne, Australia, July 21-26, 2013.

Attended *Polarimetric SAR Workshop in Niigata 2013* and presented a paper “Snow Wetness Estimation Using Synthetic Aperture Radar Technique” at Niigata, Japan, on November 15, 2013.

Conferences/Symposia/Workshops/ Seminars (Coordinated/ Chaired by Faculty)

Adinarayana, J.

Chaired “Indo-Australia Workshop, Ag-Working Group Sessions as a part of APAN (Asia-Pacific Advanced Network) Conferences; Five Sessions at various APAN Biennial Conferences (Chiang Mai, Colombo, Hawaii, Daejeon, Republic of Korea) on ICDTs in Agriculture and Two ITRA Project based Group Meets with partnering institutions and users.

Rao, Y. S.

Chaired “International Expert Meet on Microwave Remote Sensing”, Ahmedabad, December 16-17, 2013

Venkataraman, G.

Chaired the poster session on “SAR Interferometry”, ‘IEEE-IGARSS’ 2013 at Melbourne, Australia, on July 22, 2013.

Invited Lectures

National**Adinarayana, J.**

“Geo-ICT and Sensor Networks in agriculture and rural development”, Centre for Geoinformatics Applications in Rural Development Division of National Institute for Rural Development (C-GARD/NIRD), Hyderabad Training Programs, November 23, 2013.

Alok Porwal

“GIS-based mineral potential modeling,” DST workshop on Geostatistics, ISM, Dhanbad, February 28, 2014.

Inamdar, A. B.

“Scientific Rationale for Modifications in CRZ Rules,” Invited Lecture, during IWRM2014, held in Kozikode, Kerala, during February 19-21, 2014.

Mohan, B. K.

“ISRS 2013 Geospatial Excellence Award Lecture,” Andhra University, Visakhapatnam, December 2013.

Rao, Y.S.

“SAR Polarimetry and its applications”, NRSC, ISRO, Hyderabad, May 29, 2013.

Surya Durbha

Transfer learning for the QIP program on “Advanced Techniques in Satellite Image Analysis”, IIT Bombay, February 2014.

Venkataraman, G.

“Synthetic Aperture Radar Application in Snow Studies”, Indo-Swiss Capacity Building in Himalayan Glaciology, School of Environmental Sciences, Jawaharlal Nehru University, New Delhi, April 17, 2013.

“Chandrayan-1 MiniSAR data analysis for the presence of water ice in the polar regions of moon”. Special lecture delivered in International Conference on Microwaves, Antenna Propagation and Remote Sensing ICMARS conference, Jodhpur, December 13, 2013.

International**Adinarayana, J.**

“Rural-Informatics in decision making” at the Asian Institute of Technology Summer School, in August 2013.

“Geoinformatics and Issues on Sustainable Development in Asia”, organized by the Chubu

Institute for Advanced Studies, Chubu University, Japan and Asian Institute of Technology, Bangkok, Thailand, August 19-30, 2013.

“GeoSense++: An improved GeoSense Information, Communication and Dissemination System for precision farming” at University of Tokyo and National Agricultural Research Center/Tsukuba, Japan, July 2013.

“Precision farming in India: GeoICT and Sensor Network based DSS for Agriculture and Environment Assessment”, National Science and Technology Development Agency (NSTDA) Annual Conference 2013, Bangkok, Thailand, April 3, 2013.

Alok Porwal

Key note address delivered on “Mineral systems modeling: Need for a new paradigm”, FUORES Conference, James Cook University, Townsville, Australia, June 3-5, 2013.

Inamdar, A.B.

“Scientific rationale for modifications in CRZ rules, CRZ Conference,” International Workshop on Coastal and River Zone (CRZ), Management: Regulations and Development’, February 6-7, 2014, IIT Delhi.

“Application of Remote Sensing to CRZ”, CWDRM, Kerala, February 19, 2014.

Mohan B. K.

Keynote Address delivered at “ICIARGIS 2013”, K.J. Somaiya College, Mumbai, April 2, 2013.

Surya Durbha

“Syntactic and Semantic approaches for Earth observation data interoperability” at OGC Technical Committee (TC) meeting (Earth Systems Science DWG), 2013.

Venkataraman, G.

“Synthetic Aperture Radar Application in Snow Studies”, India – Japan Cooperative Science Program (IJCSP), The University of Tokyo, Japan, November 13, 2013.

Significant Awards and Distinctions

Adinarayana, J.

Vice Chairman, Agriculture Working Group, Asia Pacific Advanced Network (APAN)
Visiting Associate Professor, The University of Tokyo (April-June 2013)
Editorial Member, GeoDerma Regional, Elsevier, The Netherlands.

Mohan, B.K.

Awarded Indian Society of Remote Sensing (ISRS) “Geospatial Award for Excellence” in Visakhapatnam, December 2013.

Surya Durbha

Program committee member: Spatial and Spatiotemporal Data Mining (SSTD-13)
Scientific Committee: (IEEE/GRSS) IGARSS 2013.

Venkatachalam, P.

Ms Sangita Zope-Chaudhari, Research Scholar supervised by Prof. P. Venkatachalam, CSRE presented their research work “Secure Distribution and Outsourcing of Geospatial Data” at 8th Maharashtra State Inter-University Research Convention “Avishkar 2013-14” held on January 4-6, 2014 and won first prize at Mumbai University.

Honorary Work

Adinarayana, J.

Reviewed papers for the Journals Journal of Environmental Management; International Journal of Information Technology in Agriculture (JITAg), ICT in Agriculture, International Journal of Information Technology in Agriculture (JITAg), Journal Indian Society of Remote Sensing.

Carried out DST Project Review (July 2013) and MHRD Project Review (March 2014).

Alok Porwal

Provided IAEA sponsored training on uranium exploration on the invitation of the Sri Lankan Geological Survey.

Provided invited short-course on GIS-based mineral prospectivity modeling at the University of Western Australia.

Delivered a key note address in Futores – A highly prestigious international conference on ore geology at the Townsville University, Australia.

Reviewed papers for international journals “Ore Geology Reviews”, Computers & Geosciences”.

Editor, Special issue of the international journal “Ore Geology Reviews”.

Inamdar, A.B.

Reviewed papers for Environmental Monitoring and Assessment and Current Science journals.

Gedam, S. S.

Reviewed Technical Papers for ACODS-2014, held at Indian Institute of Technology Kanpur, India during March 13-15, 2014.

Mohan, B.K.

Reviewed papers for IEEE Geoscience Remote Sensing Letters, Indian Journal of Remote Sensing, IEEE Journal on Special Topics in Applied Remote Sensing (JSTARS).

Rao, Y. S.

Reviewed papers for International Journal of Remote Sensing and Remote Sensing Letters, April 2013.

Reviewed papers for Journal of Geodesy, September 2013 and for IEEE GSRS, April 2013.

Shyamalee Mukherji

Reviewed seven papers, including one for the Student Paper Competition, and papers for the Invited Sessions on Data Fusion, and Mobile Laser Scanning and Point Cloud Processing, for the 2014 IEEE International Geoscience and Remote Sensing Symposium (IGARSS 2014) and the 35th Canadian Symposium on Remote Sensing.

Surya Durbha

Manuscript Reviews carried out for IEEE Journal of Special Topics in Applied Remote Sensing (JSTARS), IEEE Transactions on Geoscience and Remote Sensing (TGRS) and Computers and Geosciences.

Conferences reviewed for Spatial and Spatio-temporal data mining (SSTDM) 2013 and IEEE Geoscience and Remote Sensing Symposium (IGARSS) 2013.

Venkatachalam, P.

Member, Academic Council, Indian Institute of Remote Sensing, Dehradun, Member, Advisory committee, Indian National Centre for Ocean Information Services, Hyderabad and Member, Editorial Board, Indian Journal of Geomatics.

Venkataraman, G.

Reviewed several papers for Current Science, Arabian Journal of Geosciences, International Journal of Applied Earth Observation and Geoinformation and International Journal of Climatology.

Faculty Members and their Specializations

1. P. Venkatachalam

Development of Efficient Algorithms, Dynamic Models, Multi-Dimensional Data Handling and Spatial Data Visualization for GIS Systems, Software Development.

2. Alok Porwal

Mineral systems modeling, Fuzzy systems and machine learning, Hyperspectral and thermal infrared remote sensing, Geologic remote sensing of Mars.

3. J. Adinarayana

Agro-Informatics and Rural Development

4. Avik Bhattacharya

Microwave Remote Sensing

5. S. S. Gedam

Remote Sensing and GIS applications to Surface Hydrology, Landuse and Urban Planning (AM/FM); Stereo and Trinocular Image Processing and Analysis for Feature Extraction and Matching; Multimodal Stereo Image Analysis and Global Positioning System for Precision Geo-location

6. A. B. Inamdar

Coastal and Marine Environmental applications of RS & GIS

7. M. V. Khire

Applications of Remote Sensing and GIS in Terrain Evaluation and Landuse/Landcover Mapping required in various type of civil engineering projects, analysis of floods, earthquakes, desertification, effects of urbanization, soil erosion etc.

8. B. Krishna Mohan

Digital Image Processing and Analysis, High spatial and hyperspectral image analysis, Change detection, Machine learning and Educational content development for remote sensing and image analysis

9. M. V. R. Murti

Remote Sensing of Atmosphere and Trace gases; Spectroscopic Analysis of Planetary Materials, Instrumental Analysis XRF and XRD.

10. R. Nagarajan

Remote sensing and GIS applications to Natural Hazards-Landslides and Drought

11. Y. S. Rao

Microwave Remote Sensing – Applications (Soil Moisture, Agriculture Crops and SAR Interferometry)

12. Shyamalee Mukherji

Computer Graphics and Vision, Computational Methods

13. Surya Durbha

Image information mining, semantics, knowledge-based systems, big data analytics for geospatial applications, critical infrastructure protection, remote sensing and sensor webs.

14. G. Venkataraman

Spatial Modeling for Mineral Exploration, Microwave Remote sensing to the study of Glacier



Centre for Technology Alternatives for Rural Areas

Introduction

Centre for Technology Alternatives for Rural Areas (CTARA) activities include offering academic programme (M.Tech, Ph.D. and TDSL) and undertaking R&D projects. CTARA also focuses on field experimentation and associations with industry, governmental and non-governmental community based organisations. CTARA has ten core faculty members and is supported by a large number of associated faculty from several departments.

Academic Programmes

Presently, the undergraduate and graduate students from other engineering or applied science disciplines participate in CTARA activities as a part of their thesis, course work or project requirement. The centre offers academic programme leading to M.Tech. and Ph.D in Technology and Development. R&D and outreach activities include technical research, development and demonstration (R&D and D) projects.

Recently MoRD, New Delhi, has signed an MoU with IIT Bombay to offer a special fellowship programme that enables the M.Tech. graduates of the centre to work on a 'One year fellowship' after graduation, wherein the candidates will be associated with a governmental activity engaged in 'action related' developmental programmes linked with S&T implementation. In addition, there are five HAL and one NCPRE fellowships available to M.Tech. students.

Degrees awarded

M.Tech.	:	11
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R & D Activities

The main thrust areas of R & D activity in CTARA include Appropriate Technology, Agro-Food Industrial development, Bioprocessing, Climate change, Renewable Energy, Water and Sanitation, Policy and Governance, Environmental Policy and Management, Field assessments & remediation, Matrix characterization, Evidence based policy advocacy, Food and Nutrition, Woman and Child Health, Pedagogy of Engineering, Transdisciplinary research.

The first graduating student of CTARA, Mr. Vijay Honkalaskar won Gandhian Young Technological Award for his Ph.D thesis work on "A Simple and Cost Effective Retrofitting to Improve the Thermal and Combustion Performance of Traditional Cook Stoves".

Sponsored Research Projects

Sponsored Research Projects	:	14
Ongoing	:	13
Completed	:	01
Faculty Involved	:	07

List of the Sponsored projects is given below:

Sr. No.	Project Title	Sponsoring Agency	Project Status
1.	Process Improvements and Technology Dissemination in jaggery making	RGSTC, Govt. of Maharashtra	Ongoing
2.	Extraction, Minimal Processing and Packaging of Tender Coconut Water	MoFPI-New Delhi	Ongoing

Sr. No.	Project Title	Sponsoring Agency	Project Status
3.	Rural Technology Action Group (West Zone)	Office of Principal Scientific Advisor, New Delhi	Ongoing
4.	Production and use of Medical Nutrition Therapeutic Foods in Clinical Trials for Malnourished kids at Sion Hospital and slum areas in Mumbai	Toddler Food partners, US NGO, MN, USA	Ongoing
5.	Microwave Processing of selected nuts and Mushrooms	MoFPI-New Delhi	Ongoing
6.	Demonstration and assessment of economic viability of new energy efficient and less polluting brick making technology (vertical shaft brick kiln)	RGSTC, Govt. of Maharashtra	Ongoing
7.	Environmental Impact Assessment of Farming Operations for Sugarcane and Cotton Crop Cycles	John Deere India Pvt. Ltd., Pune	Ongoing
8.	Solar Urja Lamps through Localisation of Solar Energy	Sir Dorabji Tata Trust	Ongoing
9.	Water Engineering: Normalization, Development and Social History	Indian European Research Network Program (ANR, Paris)	Ongoing
10.	Localization of Solar Energy Through Local Assembly, Sale and Usage of 1 Million Solar Study Lamps	National Clean Energy Fund, MoEF, Govt. of India	Ongoing
11.	Panchayat planning for Solar Integration in Kerala	National Centre for Photovoltaic Research, IIT Bombay	Ongoing
12.	Extraction of bioactive compounds and sugars from horticulture processing waste using microwave-membrane technology	Department of Science and Technology	Ongoing
13.	Heating and cooling techniques for small poultries – DIL, UC-Berkeley	DIL, UC-Berkeley, USA	Ongoing
14.	Voltage Monitoring in Rural Areas – Explore Grant	Development Impact Labs, UC Berkeley	Completed

Consultancy Projects

The total number of faculty involved in consultancy projects: 4

Extension Activities

Arora, A.

Met the farmers of a small village Khukhri in Chhattisgarh, entrepreneurs in Dapoli, Maharashtra

and visited food processing units, academic and research institutions in Jabalpur and Bhopal, Madhya Pradesh to explore the possibility of strengthening agro based industry and improving livelihood options.

Jadhav, P.

Have been appointed the University Representative on Board of Studies of Electrical Engineering Dept., Rajarambapu Institute of Technology, Islampur, Shivaji University, Kolhapur.

Rao, A.B.

Conducted meetings with the Manchar Gram Panchayat to explore the possibility of engaging with them in improving the water and sanitation situation, October 8, 2013.

Coordinated the CTARA exhibition stall at the “Shetkari 2014 Agri Expo” at Manchar, Tal. Ambegaon, Dist. Pune, during January 10-11, 2014.

Conferences/Symposia/Workshops/ Seminars (Participated/Papers Presented)

Narayanan, N.C.

“Towards a Political Understanding”. Key note in the session on Environment and Development, at the *Fourth Development Studies Meet* at the Bihar Central University held during February 21-22, 2014, Patna, Bihar.

“Re-imagining Centralised Solutions for Urban Water and Sanitation Services in India: A Policy Review,” at the *Conference in Honour of Ramaswamy Iyer*, India International Centre, held during November 25-27, 2013, New Delhi.

“Policy Shifts in Urban Water and Sanitation Sector and the Emerging trends in PPPs in India: An Inquiry in Ganga Basin,” in *Emerging Technologies and Development*, at the *VIIIth Annual Conference of Forum for Global Knowledge Sharing*, held at IIT Bombay, held during October 25 – 27, 2013, Mumbai.

Two Rain fed Region Case Studies and Thoughts on Transdisciplinary Research at the *20th Biennial Conference of All India Economic and Financial Studies (AIFES)* held during August 2-3, 2013 at IGIDR, Mumbai.

“Rural Drinking Water Schemes in Kerala: Policy Changes, Sustainability Questions and Role of Civil Society in Water Governance,” in the *Kerala Development Meet* by Kerala Sastra Sahitya Parishat (KSSP) held during April 30-May, 2013 at Trivandrum.

“Threats and Contestations: Forest and Water Resource Mining in Jhamar Kotra, Udaipur, India,” held during June 3-7, 2013 at the *14th Global Conference of the International Association for Study of Commons* at Mt. Fuji, Japan

Jadhav, P

Poster presentation “Feasibility of Irrigation through Solar Photovoltaics” by Udit Sharma, Bakul Rao, Priya Jadhav, *International Conference on Advances in Energy Research (ICAER2013)*, held during December 2013 at IIT Bombay, Mumbai.

Technology exhibit “Voltage Quality Monitor” – technology developed in a TDSL project by Rachit Agarwal, Mudt Dandawate, Pushkar Limaye, Priya Jadhav, *Bandhkaam Vishwa 2013* Exhibition held during December 20-22, 2013, at Manchar, Pune.

Workshop attended “Mini-Grid Development for Livelihood Generation Opportunities” organized by TERI held during January 3, 2014 in Xavier’s Institute, Bhubaneswar, Odisha

Rao, A.B.

Advances in Energy Research (ICAER) 2013, December 10-12, 2013.

“Cost Implications of Carbon Capture and Storage for the Coal Power Plants in India”, in *Energy Procedia*, accepted.

“Understanding the impact of lifestyle on individual carbon footprint”, accepted in *Procedia - Social and Behavioral Sciences*, reference: SBSPRO 17160.

Rao, B.

“Application of Multi-criteria Decision Making Tools for Technology Choice in Treatment and Disposal of Municipal Solid Waste for Local Self Government Bodies - A case study of Kerala, India”, *The Journal of Solid Waste Technology and Management*, Accepted.

“Multi-criteria analysis of alternative biogas technologies for India’s sustainable development”, *Energy Procedia*. Accepted

“Social and Environmental Life Cycle Assessment of Brick making in Western Maharashtra, India”, *Energy Procedia*. Accepted

Shah, N.G.

“Enabling decision making for a development practitioner based on empirical evidences: A case study of Nutrition Delivery in Malnourished kids,” *ISRDC-19*, held during July 1-3, 2013 at Stellenbosch, South Africa.

“Indigenously Prepared Medical Nutrition Therapeutic Food (MNT) for Children with Severe Acute Malnutrition: A Controlled facility based Trial,” *Clinicians Conference*, held during September 2013 at Pokhara, Nepal.

“Integration of Heat Recuperation Unit (HRU) in Jaggery Making Process,” *International Conference on Advances in Energy Research*, held during December 10-12, 2013 at IIT Bombay.

Conferences/Symposia/Workshops/ Seminars (Coordinated/Chaired by Faculty)

National

Rao, A.B.

Chaired for the Session on “Energy-economy-environment modeling” and as a panelist in the session on Low Carbon and Development” 1st Climate Science and Policy Workshop held during March 6-7, 2014.

Invited Lectures

National

Arora, A.

“Biofuels and Biorefinery” – seminar presented at the College of Agricultural Engineering, J.N.K.V.V, June 26, 2013, Jabalpur

“Separations in Biorefinery” seminar presented at Indian Institute of Technology Kharagpur, West Bengal.

Rao, B.

“Social and Environmental Life Cycle Assessment” at Mahindra Sanyo Ltd, Khopoli, March 24, 2014

Shah, N.G.

“Research and development at CTARA-IIT Bombay on Foods and Bio-Materials”, CHM College, Ulhasnagar, January 17, 2014.

“Applying Engineering Principles for Value Addition”, *National Workshop on Rural Chemical Engineering*, January 5, 2014, MGIRI-Wardha

International

Arora, A.

“Biofuels Potential in India: Technology and Policy Issues” – presentation made at the annual Faculty-Alumni-Network (FAN) Meeting, October 20, 2013, St. Louis, USA.

Rao, A.B.

“A Quest for Sustainable Energy Solutions”, *Annual Faculty-Alumni-Network (FAN)*, October 20, 2013, St. Louis, USA .

“My Journey from Inter-disciplinarity towards Trans-disciplinarity: A Quest for Sustainable Energy Solutions” Department of Engineering and Public Policy, Carnegie Mellon University, October 21, 2013, Pittsburgh, USA.

Rao, B.

“Experiments in Development Planning for Villages in Maharashtra, India,” University of California, UC Merced, School of Engineering, December 17, 2013, U.S.A.

Shah, N.G.

“Entrepreneurship in Food Process Engineering at IIT Bombay”, NMAIST, Arusha, July 6, 2013, Tanzania.

Honorary Work

Arora, A.

Invited as an expert panel for ANVESHAN-AIU National Student Research Convention, Tata Institute of Social Sciences Mumbai, March 20-22, 2013.

Rao, A.B.

Examined a Ph.D. thesis titled “Design and Integration of Post-Combustion Carbon Capture Processes: Retrofitting to Coal-fired Power Plants” from the University of Sydney, Australia.

Invited as an expert member for the Field Review of Innovation Sites / Organizations in connection with Maharashtra Rural Livelihood Innovation Forum (MRLIF), August 2013 – visited 4 organizations in Nashik, Satara, Nanded and Sindhudurg.

Jadhav, P.

Reviewed a paper for IEE INDICON-2013, held December 13-15, 2014, IIT Bombay, Mumbai.

Faculty Members and their Specializations

1. A.W. Date

Heat Transfer, Thermodynamics and Energy Conversion, Energy Systems, Appropriate Technology

2. Milind Sohoni

Drinking water-rural and urban, groundwater and watershed modelling, Pedagogy of Engineering

3. Rangan Banerjee

Energy Management & Energy Efficiency, Demand Side Management, Energy Modelling, Power Systems Planning, Energy Planning and Policy

4. Narendra G. Shah

Agro-Food Industrial development, Biomass processing for food and energy

5. Anand B. Rao

Climate change and CDM, Energy and environment, Sanitation

6. N. C. Narayanan

Water Policy, Governance and Conflicts.
Interdisciplinary research in environment and
development (political ecology)

7. Priya Jadhav

Rural Electrification, Energy

8. Amit Arora

Bioprocessing, Food engineering, Renewable energy,
Process design and development, Paper and Pulp
Engineering

9. Subodh M. Wagle

Public Policy and Governance, Independent
Regulatory Agencies, Infrastructure Reforms, Water
Sector Regulatory, Urban Governance Reform

10. Prasad Modak

Environmental Policy, Environmental Impact
Assessment, Environmental Management,
Environmental Modeling

11. Bakul Rao

Environmental impact framework for rural areas, State
of environment studies, Field assessments &
remediation, Matrix characterization, Climate change

12. Vishal Sardeshpande

Solar thermal energy, Energy efficiency, benchmarking
and audits, Thermal and fluid system experimentation
and modeling, Technology for rural and agro
applications, Product development.

13. Om Damani

System Design and Performance

14. Puru Kulkarni

Drinking water security assessment and planning,
groundwater modeling, energy and water



Centre for Formal Design & Verification of Software

Introduction

The Centre was set up in April 1999, with the following broad objectives:

- Carry out R&D activities towards building advanced tools and environments, based on formal methods for industrial scale safety-critical applications.
- Create resources, develop expertise and provide consultancy for Independent Verification and Validation (IV & V) for safety-critical systems used in DAE and other similar organizations.
- Provide education and training in Verification and Validation (V & V) of such systems

The importance of formal methods based software engineering in design and verification of safety critical software was the primary inspiration behind DAE's establishing the Centre for Formal Design and Verification of Software (CFDVS) through BRNS, and in collaboration with IIT Bombay and TIFR. Over the past 15 years, CFDVS has established itself as a national R & D Centre in the area of formal verification of high-integrity software and hardware. The Centre has contributed to several R&D programs in formal verification, and has taken up sponsored industrial projects from various Government organizations like VSSC, ADA, DRDL and DRDO, and also from high-profile private organizations like Intel, Microsoft Research, Texas Instruments, General Motors, etc.

Academic Programmes

Over the last 14 years, 14 Ph.D. students have worked/ are still working on their doctoral dissertation at CFDVS. Of these, 5 Ph.D. students have already graduated. In addition, more than 75 M.Tech. students and more than 50 B.Tech. students from IIT Bombay have done their M. Tech. and B. Tech. projects, respectively, from CFDVS. Research and development work done at CFDVS has resulted in more than 75 publications in international peer-reviewed conferences and journals.

Technical Scope of Work at the Centre

During the past 14 years, tools and techniques developed at CFDVS have been applied successfully to small and medium sized problems, both from the academia and industry. This has demonstrated our ability to handle the technological challenges involved in addressing complex problems at the small to medium scale. The next logical step for CFDVS is to focus on automated techniques for larger real-life systems, and to make the resulting technologies available to the end-user community in India.

R&D Activities

R&D will be the primary activity in CFDVS, and the goal of this will be to contribute towards larger scale applicability of formal verification techniques to real-life hardware and software systems. The core research agenda of the Centre will therefore focus on the development of theories, tools and technologies to scale up the sizes of systems (both hardware and software) to which automated verification methods can be applied. This will eventually help end-users verify larger sub-systems than is currently possible, leading to an overall improvement in the reliability of the system. The Centre will perform research with clear objectives to evolve techniques and tools that are easy to adopt in software and hardware development environments for high integrity systems.

Based on consultation with our collaborators and end-users of verification technologies in BARC, and also after taking into account the general requirements of formal verification tools in the design and verification community in India, the following three R&D sub-projects have been identified for execution over the next 5 years. Each project involves development of theories, techniques and automated tools, and is envisaged to be tested on real designs from DAE organizations.

Sub-project 1: Safety Checking in Large Finite State Spaces: The goal of this sub-project is to develop a tool for checking safety properties of very large finite

state systems with $>2^{1000}$ states. Such systems routinely arise in networks of embedded controllers in safety-critical systems. The theoretical component of this sub-project poses several challenging problems. The proposed tool implementation is intended to run on a custom-configured cluster of high-performance computers in order to achieving scalability with precision.

Sub-project 2: Configurable Automated Program Analysis: As part of this sub-project, an automated program analysis tool is intended to be developed for detecting run time errors in ANSI C programs. The theoretical component of this sub-project involves developing new techniques to allow a fine-grained control of the accuracy and scalability of program analysis. The tool implementation is intended to improve the precision of analysis i.e. reduce false positives, while allowing non-trivial programs to be automatically analyzed.

Sub-project 3: Requirements Modeling and Analysis: The goal of this sub-project is to develop a mathematically rigorous framework for capturing and reasoning about requirement specifications. Such a framework is then intended to become the basis for a requirements modeling and analysis tool.

While execution of the three sub-projects outlined above is expected to account for a significant portion of the time commitments of various PIs, students and technical staff associated with CFDVS, other small to medium-scale projects in areas related to formal methods are likely to be initiated by various PIs as well. These projects are expected to lead to better insights and improvements in the three sub-projects identified above, in addition to contributing to the generation of new technologies and applications.

Advanced System (software & hardware) Design and Verification Facility

In addition to core R&D activities as outlined above, CFDVS will further augment and maintain its infrastructure of tools and hardware for supporting rigorous design and verification methodologies for computer-based systems. It is envisaged that a high-end multi-node compute server will be acquired and used as an experimental testbed to develop tools and

techniques for compute-intensive formal verification tasks. This is expected to be the first-of-its-kind compute infrastructure in India devoted to formal verification tasks that are required to scale to much larger systems than those amenable to automated analysis today.

Applications, Consultancy and Services

It is proposed that CFDVS will continue to provide a platform for collaboration to build expertise and resource base in the technologies useful for building reliable systems. The Centre will have the freedom to utilize this expertise and resource base to generate income by taking up sponsored projects from DAE, DOS, DRDO and from other private organizations.

Training and Education

The Computer Science and Engineering (CSE) Department at IIT Bombay currently does not have any specialization in the M.Tech. degree and offers only one common degree to all students. The number of M.Tech. students who work in CFDVS for their final project has increased to more than 10 per year in recent years. In addition, there are close to 5 Ph.D. students working in the area of formal methods at any point of time. These students are keenly sought after for their specialized skills in formal methods by various industries. CSE faculty members associated with CFDVS have been actively discussing the possibility of formulating a specialized M.Tech. program in CSE that focuses on “Formal Methods for Software Engineering”. The CSE Department’s Post Graduate Committee has also been exploring the possibility of introducing streams/specializations in the M.Tech. programme. A sub-committee of CSE faculty members has been formed to make recommendations on this. CFDVS has been working with the subcommittee to propose “Formal Methods for Software Engineering” as a CSE specialization.

The research and development project being carried out at CFDVS can be broadly classified in the following category:

- Logic, Symbolic Simulation, Model checking and Theorem Proving
- Trusted Translation Systems
- Static Assertion Checking Tools
- Tools and Techniques for GALS Systems and SoCs

List of ongoing research projects:

Sr. No.	Title of the Project	Status
1	Development of ACE II	Ongoing
2	CESE : A Visual Formalism for Specification and Verification of SoCs	Ongoing
3	VEDAC and EXPERT : Modeling and Verification Tool-sets for GALS	Ongoing

Sr. No.	Title of the Project	Status
4	Design and Analysis of High-Speed Interfaces for GALS systems	Ongoing
5	Slicing Tools for Synchronous Reactive Programs	Ongoing
6	Reachability Analysis in Timed Automata	Ongoing
7	Bounded Model Checking of IDL formulae	Ongoing
8	Optimizations for Automata-based Validity Checking of QDDC	Ongoing
9	Clock Reducing Approximations in Verification of Timed Automata	Ongoing
10	Symbolic Model checking with Additive Decomposition	Ongoing
11	Inductive Theorem Proving and Rewriting Techniques	Ongoing
12	Verification of Programmable Logic Controllers	Ongoing
13	Test derivation of Distributed Component-based Systems	Ongoing
14	Automatic Generation and Verification of Optimizers	Ongoing
15	Trusted Code Generators	Ongoing

List of sponsored projects

Sr. No.	Project Title	Sponsored by	Status
1.	Formal Verification of Hardware Modules in ANAIO FPGA	Bhabha Atomic Research Centre, Mumbai	New
2.	Visual Specification and Modeling of Distributed Systems	General Motors, Bangalore	Ongoing
3.	Formal Verification of Akash on board process.	Defence Research and Development Laboratory (DRDL), Hyderabad	Ongoing
4.	Development of tool for formal verification of VHDL based data and control Dominated designs used in safety critical systems	Board of Research in Nuclear Science (BRNS), Mumbai	Ongoing
5.	Analysis of SCADE lusture models : Run time monitoring and testing	BRNS, Mumbai	Ongoing
6.	Development of Techniques and Tools for Formal Verification of Computer Systems with Improved Precision and Scalability	BRNS, Mumbai	Ongoing
7.	Feasibility Study of Formal verification of onboard Software	Vikram Sarabhai Space Centre, Trivandrum	Completed
8.	Improving GCC ports of ABACUS and ANUPAMA	ANURAG DRDO, Hyderabad	Completed

Centre Staff

Participating Faculty:

1. Prof. G. Sivakumar

Department of Computer Science & Engineering
Areas of Interest: Logic and Automated Reasoning, Networks and Distributed Systems.

2. Prof. Supratik Chakraborty

Department of Computer Science & Engineering
Areas of Interest: Formal methods in analysis/ validation / verification of digital systems, Asynchronous and concurrent systems, Timing Analysis.

3. Prof. Kavi Arya

Department of Computer Science & Engineering
Areas of Interest: Functional Programming Applications (Domain Specific Languages), Embedded Systems/Parallel Programming Language, Distance Learning

4. Prof. Krishna S.

Department of Computer Science & Engineering
Areas of Interest: DNA Computing, Membrane Computing, Grammar Systems, combinatorics on words, Formal Methods, Duration calculus and Logics of Time.

5. Prof. Bharat Adsul

Department of Computer Science & Engineering
Areas of Interest: Formal methods in Concurrency, Logics and Games, Geometric Complexity Theory

6. Prof. Ashutosh Trivedi

Department of Computer Science & Engineering
Areas of Interest: Formal Methods in Design, Analysis, and verification of Systems, Hybrid and Timed Automata, Cyber-Physical Systems, Automata, Logic, and Games

7. Prof. S. Akshay

Department of Computer Science & Engineering
Areas of Interest: Probabilistic verification with applications to systems biology, Modeling and verification of timed and distributed systems, Formal Methods

8. Prof. P.K. Pandya

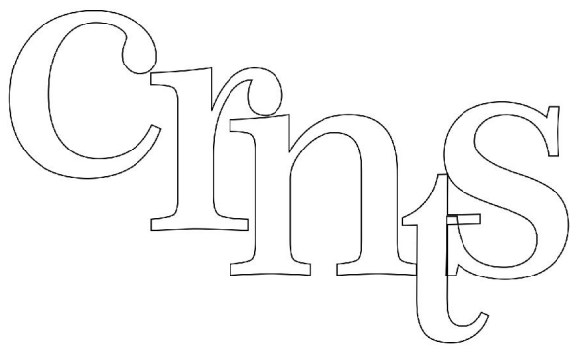
Areas of Interest: Logic, Concurrency, Programming Languages, Formal Methods and Software Engineering. Specific work has been on Duration Calculus, Refinement Algebra and CSP, Hoare Logics for Distributed Programs and Scheduling Theory.

Research Engineers/Scientists:

A. Mr. Abhisekh Sankaran

B. Mr. Hrishikesh Karmarkar

C. Ms. Shetal Shah



Centre for Research in Nanotechnology and Science

Introduction

Centre for Research in Nanotechnology and Science (CRNTS) has been the nodal point wherein the efforts of about 40 faculty across the Institute and affiliated to several departments are synergized. The Centre houses a number of research equipments required for research in Nano and makes them available to all, thus promoting interdisciplinary research in Nano sciences and technology.

The Centre offers Ph.D. programme in Nanotechnology.

The facilities being set up in CRNTS presently include the cell and tissue culture facility and the chemistry laboratory for synthesis of nanoparticles and nano-coatings.

Sophisticated Analytical Instrument Facility (SAIF)

From its inception in 1976, Sophisticated Analytical Instrument Facility (formerly known as *Regional Sophisticated Instrumentation Centre*), has grown over the past three decades and has successfully made efforts to acquire, maintain and provide advanced analytical research facilities to a broad spectrum of users from Universities, R&D laboratories, Industries and Educational Institutions. Due to generous grants

from Department of Science and Technology (DST), new sophisticated analytical instruments have been added to the Centre at regular intervals to keep up with the ever developing research & advanced technology.

SAIF at IIT Bombay continued its endeavor of providing excellent instrumental facilities thereby attracting large numbers of scientific and research personnel from Universities, R&D establishments and Industry. Large number of students & faculties at IIT Bombay extensively use SAIF facilities for their research work.

The Centre has provided facilities for the analysis of 37698 samples during the year 2013-14. The value of service provided is Rs. 3,19,65,950/- with concession and Rs. 14,81,06,830/- without concession. The contribution of SAIF to the various categories of users from IIT Bombay is given in Table-1 along with value of services provided.

Table-2 provides information on samples analysed during the year 2013-14 and the earnings accrued to SAIF from external users.

DST continued to support SAIF facilities by providing financial support of Rs. 4.07 crore for procurement of state of the art facilities

Patents

Sr. No.	Title of the Patent	Inventor	National/ International	Status filed/granted	Date of patent filed/granted
1.	Optimization of an Integrated Heavy Ion Selective Screening Layer (IHISL) to mitigate ion induced degradation of Schottky junction diode based thermal neutron detector	Das Achintya, Duttagupta Siddhartha P., and Gandhi Mayuri N.	National	Filed	2013

Sr. No.	Title of the Patent	Inventor	National/ International	Status filed/granted	Date of patent filed/granted
2.	Solvo-thermal derived Europium doped ZnO nano-particle synthesis for scintillator based detector application	Bhoutekar Arti, Das Achintya, Duttagupta Siddhartha P., and Gandhi Mayuri N.	National	Filed	2013
3.	Si based nano-template for quantum dot fabrication	Chaterjee Uddipta, Das Achintya , Duttagupta Siddhartha P., and Gandhi Mayuri N.	National	Filed	2013
4.	A method for synthesising defect rich nanocrystals of variable size with enhanced defect luminescence	Ashok, A., Kulkarni, A.R. and Gandhi, M. N.	National	Filed	November 26, 2013

**Table 1 : Contribution of SAIF to Academics at IIT Bombay
(April 1, 2013 - March 31, 2014)**

Sr No.	Course	No. of Users	No. of Samples	Charges (Rs.)	As per Industry Charges (Rs.)
1	2 Yr. MSc.	5	60	40850	204250
2	5 Yr. MSc.	3	28	29850	149250
3	B.Tech.	8	73	64300	321500
4	Dual Degree Programme	59	707	632505	3162525
5	MSc. & Ph.D Dual Degree	60	2106	2961960	14809800
6	M.Tech.	152	3229	2146810	10734050
7	M.Tech. + Ph.D. Dual Degree	22	629	349005	1745025
8	Ph.D.	407	18823	15788495	78942475
9	Other (Faculty/Project Staff)	64	1836	1503255	7516275
	Total	780	27491	23517030	117585150

Sample Analysed Information (External+Internal)
Table 2: Period : (April 1, 2013 to March 31, 2014)

Sr No.	Instrument	No. of Users	No. of Internal Samples	No. of External Samples	No. of Samples	Internal Charges (Rs.)	External Charges (Rs.)	Charges (Rs.)
1	CHN	160	1009	378	1387	925750	481914	1407664
2	ESEM	180	1504	-	1504	713000	-	713000
3	ESR	116	1036	668	1704	380300	172187	552487
4	ESR-JEOL	71	22	524	546	15400	236402	251802
5	FEG-SEM	482	3961	823	4784	4281100	1149740	5430840
6	FEG-TEM	352	2250	7	2257	3883050	53122	3936172
7	FTIR-IMG	293	2507	1013	3520	634450	263450	897900
8	GC-HRMS	116	217	578	795	245750	581009	826759
9	HR-LCMS	45	1068	204	1272	2540500	429528	2970028
10	ICP-AES	276	6772	3018	9790	4710620	1263040	5973660
11	ICP-MS	7	200	-	200	72150	-	72150
12	LCMS	94	442	646	1088	485870	873646	1359516
13	LRS	178	2456	67	2523	2532500	139988	2672488
14	NMR	155	265	1024	1289	336980	1030048	1367028
15	SIMS	58	338	83	421	489500	337480	826980
16	TEM	285	419	824	1243	419750	1038435	1458185
17	TG/DTA	120	359	326	685	342450	333605	676055
18	XRF	46	2666	24	2690	507910	65326	573236
	Total	3034	27491	10207	37698	23517030	8448920	31965950

Samples analysed in different categories
Period: (April 1, 2013 to March 31, 2014)

Internal IITB	University	National Lab	Large Scale Industry	Total
27491	8874	957	476	37698

Earning with concession (Rupees)
Period: (April 1, 2013 to March 31, 2014)

Internal IITB	University	National Lab	Large Scale Industry	Total
23517030	5009581	1664539	1774800	31965950

Earning without concession (Rupees)
Period: (April 1, 2013 to March 31, 2014)

Internal IITB	University	National Lab	Large Scale Industry	Total
117585150	25047905	3698975	1774800	148106830

Samples Analysed
(April 1, 2013 to March 31, 2014)

Type	Users	Samples	Charges	Actual Charges
Internal	780	27491	23517030	117585150
External	2254	10207	8448920	30521680
Total	3034	37698	31965950	148106830

Department Wise Total Internal Charges
Period: (April 1, 2013 to March 31, 2014)

Sr No.	Department	No. of Users	No. of Samples	Internal Charges (Rs.)	As per Industry Charges (Rs.)
1	Aerospace Engineering	2	9	5750	28750
2	Biosciences and Bioengineering	83	3901	2886235	14431175
3	C.E.S.E.	45	1637	1682905	8414525
4	Chemical Engineering	63	2518	2583800	12919000
5	Chemistry	87	1351	1210205	6051025
6	Civil Engineering	27	4359	2685260	13426300
7	Corrosion Science & Engg	1	52	38250	191250
8	C.R.N.T.S	36	1752	1395505	6977525
9	C.T.A.R.A.	4	127	40600	203000
10	Earth Sciences	24	1369	886045	4430225
11	Electrical Engineering	46	841	948210	4741050
12	Energy Science & Engineering	59	1961	1922985	9614925
13	Engineering Physics	6	87	92550	462750
14	Mechanical Engineering	34	349	141250	706250
15	Met.Engg & Mat.Science	197	4923	4590120	22950600
16	Physics	48	1456	1546385	7731925
17	S.A.I.F.	2	16	47425	237125
18	School of Bio-Science and Bio-Engg	10	783	813550	4067750
	Total	774	27491	23517030	117585150

Conferences/Symposia/Workshops/ Seminars (Participated/Papers Presented)

International

Dalai Sridhar, Vijayalakshmi S. and Sharma Pratibha

Presented a paper on “Preparation & characterisation of Zn loaded HGMs from amber coloured glass frits 3rd/2013,” at an *International Conference on Energy, Environment and Sustainable Development (EESD-2013)* during November 12-13, 2013, in Shanghai, China.

Presented a paper on “Magnesium and Iron loaded hollow glass microspheres for hydrogen storage (HGMS),” at the *2nd International Conference on Advanced Electromaterials (ICAE-2013)* organized by The Korean Institute of Electrical and Electronic Material Engineers during September 12-15, 2013, ICC Jeju, Korea.

Dalai Sridhar, Vijayalakshmi, S., Shrivastava Pragya and Sharma Pratibha

Presented a paper on “Fabrication of zinc loaded hollow glass microspheres (HGMS) for hydrogen storage,” *8th International Conference on Surfaces, Coatings and Nanostructured Materials (NANOSMAT-2013)* organized by NANOSMAT, U.K during September 22-25, 2013, Granada, Spain.

Presented a paper on “Preparation and characterization of hollow glass microspheres (HGMS) for hydrogen storage using urea as a blowing agent,” at the *8th International Conference on Surfaces, Coatings and Nanostructured Materials (NANOSMAT-2013)* organized by NANOSMAT, U.K, during September 22-25, 2013, Granada, Spain.

Shrivastava Pragya, Dalai Sridhar, Vijayalakshmi, S. and Sharma Pratibha

Presented a paper on “Hollow Glass Microspheres as potential adjunct with orthopaedic metal implants,” at the *8th International Conference on Surfaces, Coatings and Nanostructured Materials (NANOSMAT-2013)* organized by NANOSMAT, U.K, during September 22-25, 2013, Granada, Spain.

Chatterjee, U., Das, A., Ghosh, T., Duttagupta, S.P., Gandhi, M.N. and Singh, S.G.

Presented a poster on “Study of thin film (6Li, 10B based Lithium borate) grown by non-vacuum process on SiO₂/Si for the use of thermal neutron detection”, “Effect of annealing on thermal evaporated ZnSe: Te towards a scintillator application for \pm -particle radiation”, at *NANOSMAT*, Spain.

Nampoothiri Pramod, K., Gandhi Mayuri, N. and Kulkarni, A.R.

Oral presentation on “Synthesis and characterization of NIR Luminescent LaF₃: Ln³⁺ nanoparticles and their transparent Epoxy Nanocomposites”, Accepted for Oral Presentation in *IMMCT*, Seol, South Korea, 2013.

Gandhi Mayuri, N.

Attended *ACCMES*, during November 7-9, 2013, at Osaka, Japan.

Presented a paper in *ECCED*, during November 12-13, 2013, at Shanghai, China.

List of Scientists and their Specialisations

1) Dr. C.S. Harendranath

Principal Research Scientist
Structure – Property Correlations,
Instruments: Electron Microscopy and X-ray microprobe analysis, Environmental Bio Technology, SIMS

2) Dr. R.P.R.C. Aiyar

Principal Research Scientist
Magnetism & Magnetic Materials, Computational Electromagnetics, Nano materials and Composites
Instrument: ESR, PPMS, High frequency characterization.

3) Dr. Mayuri N. Gandhi

Research Scientist
Nano materials, Quantum dots, solvent Extraction, Nanobio Sensors, solar cells,
Instruments: HRLCMS/MS, LCMS, CHNS(O) analysis, FTIR Imaging, Fluorescence Spectrometer, Uv-Vis Spectrophotometer

4) Dr. S. Vijayalakshmi

Research Scientist
Nano materials, Biogas for bone tissue Engineering, CZTS materials for Solar cells.
Instruments: GC-LC-MS, FTIR, ICP, Uv-Vis

5) Mr. L.S. Mombasawala

Sr. Research Engineer
Electronics Measurement
Instruments: NMR Spectroscopy, ICP AES/MS spectrometry, Noble gas Ar-Ar geochronology, X-ray Fluorescence Spectroscopy.



Introduction

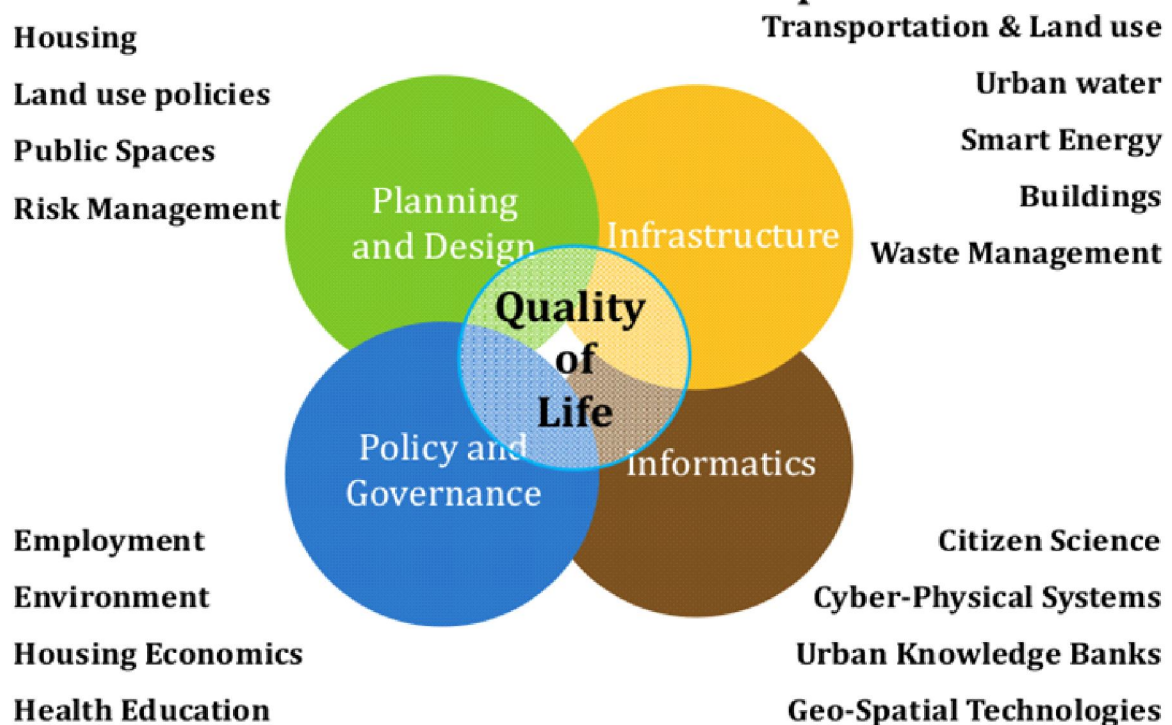
Centre for Urban Science and Engineering (C-USE) is a new Centre at IIT Bombay, which came into existence in September 2013. The Centre aims to pursue a broad portfolio of research topics related to various facets of modern urban challenges in addition to undertaking teaching, real life projects and training programs. The driving goal behind all the research and projects in the Centre is to improve some aspect of the quality of life of the urban population.

The research activities of the C-USE focus on new products and solutions related to housing, transport, water management, energy efficiency, urban informatics, health, governance, urban poverty and citizen science while mitigating the effects of natural disasters and climate change.

The scope of research in the Centre is classified into four intersecting disciplines.

- Planning and Design
- Policy and Governance
- Infrastructure
- Informatics

C-USE Research Topics



Major activities held during the year are as follows:

- UNESCO proposal in the amount of USD 1.1 million for development of UNESCO Centre for Urban Science, Technology & Design Innovation under C-USE umbrella was submitted in February 2013.
- Rs. 4 crore MHRD FAST proposal was submitted in September 2013 where funds for infrastructure development have been requested in addition to other research development activities. The proposal is under review and awaits approval.

Academic Programmes

- The Centre started PhD program in Spring Semester 2013. Eight students were given admission. They all completed required course work successfully.
- Two new post graduate courses were introduced at the beginning of January 2013 – ‘CE 639 Green Building Design’ and ‘CE 649 Introduction to Urban Design’ offered in Spring and Autumn semesters, respectively. These courses are project oriented courses looking at real life case studies including campus building efficiency and planning. These courses are institute level electives and are also offered under required courses for C-USE PhD candidates.
- A new course “US 602 Fundamentals of Urban Science & Engg.” and “US 601 Urban Geomatics and Analytics” for Autumn 2014, were introduced.

- Three students have been offered admission for PhD for Autumn 2014.

R & D Activities

Research and Development activities of the department include:

1. Evaluating the energy efficiency of campus buildings through survey and energy modelling.
2. Studying energy efficiency of buildings in tropical climate through modelling and sensing.
3. Understanding the water supply and waste water systems on IIT Bombay campus and proposing water conservation, water recycling and water metering to ensure efficient water operations.
4. Studying the current planning of the campus and proposing integrated master plan for the next 15-20 years.
5. Collaborative research on sustainable buildings and campus with industry partners such as IBM, CISCO and Infosys, in addition to university partners such as University of Warwick, New York University and National University of Singapore.

Sponsored Research Projects

New	:	7
Ongoing	:	4

Sr. No.	Project Title	Sponsored by	Status
1	A spatial and demand based framework to integrate, strengthen and facilitate affordable primary healthcare opportunity in urban areas	Seed Grant	New
2	Research and Teaching Excellence in Urban Science and Information Engineering	British Council	Ongoing
3	CampuSense: Sustainable campus through sensor networks and data analytics	CISCO	Ongoing
4	Creating a Smart Sustainable IIT Bombay Campus	IRCC Seed Grant	Ongoing
5	Team Shunya – Solar Decathlon Europe 2014	Multiple Sponsors	Ongoing
6	US and India for Sustainable Earthquake Engineering (Obama Singh 21st Century Knowledge Initiative (OSI))	CISCO	Ongoing review

Sr. No.	Project Title	Sponsored by	Status
7	Design Guidelines and Intelligent Management for Green Buildings (HUDCO)	HUDCO	Under review
8	MHRD COE Fast proposal for C-USE, IIT Bombay	Ministry of Human Resource Development	Under review
9	<ul style="list-style-type: none"> - Optimising location and capacity of emergency response infrastructure for megacities - Towards an affordable and socially inclusive privatized healthcare: Learning from implementing and assessing a Swasth India project in Mumbai - Empowering citizens to/and monitoring urban spaces - Effects of real estate dynamics on urban forms and its emergence as growth machine in Indian Cities – Study area: Mumbai. - Urban Form and Extreme Precipitation Events: Are compact cities more vulnerable to flooding? - Designing Immersive virtual environments (IVEs) to pro-environmental behavior (PEBs) in educational campus - Understanding the relationship between FSI change and infrastructure demand: Developing an impact fee based mechanism for financing infrastructure 	IIT Bombay	New

Extension Activities

The Honorable Chief Minister of Maharashtra, Mr. Prithviraj Chavan, inaugurated the centre and gave an inspiring speech illustrating the issues that C-USE can take up, on September 30, 2013. A conference and brain storming session was also organized during the function. Shri Vidhyadhar Phatak, Urban Planning consultant, was keynote speaker and presented a talk on ‘Disciplinary Lenses and Objective of City’.

“Green Building Awareness” workshop was organised through NME-ICT to outreach to 10,000 students and teachers in 196 colleges all across India on August 24, 2013 as a part of Team Shunya outreach activities.

A talk on “Bridging the Science and Art of Urban Planning: How to Shape the Right Instruments, Institutions and Strategies” by Prof. Arnab Chakraborty, University of Illinois, Urbana Champaign & Visiting Faculty at C-USE was organized at Department of Computer Science & Engineering, IIT Bombay, on January 22, 2014.

Visitors to the Department

Mr. Praful Kulkarni, IIT Alumni, President and CEO, GKK Works, visited the students.

Mr. Enrique Penalosa, President of ITDP & Ex-mayor Bogota, gave a talk on “Equity, Mobility and Quality of Urban life” on December 2, 2013.

Mr. Gil Penalosa, Executive Director of the Canadian non-profit organization 8-80 Cities, gave a talk on “Sustainable Mobility in Mumbai for all” on March 13, 2014.

Prof. Jit N. Bajpai, Columbia University, gave a talk on “Managing the interplay of urban structure, mobility and affordability,” on January 13, 2014.

Dr. Paul Barter, National University of Singapore (NUS), gave a talk on “Rethinking Parking in the Context of Mumbai – Relationship to Urban Transportation, Urban Form & Affordable Housing” on October 22, 2013.

Mr. J.C. Bonilla, CUSP, NYU, visited in October 2013 and gave an overview of CUSP and delivered a lecture on “The Promise of Urban Informatics”.

Prof. Monica Bordegoni, Politecnico di Milano & **Prof. Massimo Bricocoli**, School of Architecture, Milano, Italy visited C-USE on March 27, 2014.

Dr. P.C. Jain, Chairman IGBC and other IGBC members visited Team Shunya’s house H-Naught during the period of January- April 2014.

Conferences/Symposia/Workshops/Seminars (Participated/Papers Presented)

Jain Monika

Invited to be a member of Steering Committee of Indian Green Building Council for Green Building Congress, April 10, 2014.

Presented a paper at *Future of Cities Workshop* conducted by MHRD, New Delhi, India, July 19, 2013.

Participated in *Green Cities and Green Townships - For Sustainable Urban Future*, Mumbai. Confederation of Indian Industry, April 25 -26, 2013.

Participated in 4th International Holcim Forum for Sustainable Construction, "Economy of Sustainable Construction", Mumbai, April 11-13, 2013

Participated in 11th Annual New York Green Building Conference, Syracuse, New York, during March 11-12, 2013.

Bardhan Ronita

Participated at the *UK-India Future Cities Workshop*, New Delhi, India, February 2014.

Invited Lectures

Jain Monika

Guest Lecture in CS 620, "*Green Buildings - A holistic approach*," IIT Bombay, January 24, 2014.

Delivered a talk on "Creating a smart and sustainable model for cities at IIT Bombay," at *Green Strategy Workshop* at IIT Kanpur, October 7, 2013.

Delivered a talk on "Smart, Integrated and Sustainable Campus," at *MHRD Future of Cities Workshop*, New Delhi, September 4, 2013.

Delivered a lecture on "Buildings and Energy in India," at *NME-ICT enabled Green Building Workshop* by Team Shunya, on August 24, 2013.

Delivered a lecture on "Making Cities More Liveable", at *HUDCO International Training Programme 2013*, IIT Bombay, February 25, 2013.

Delivered a lecture on "Ideas for Sustainable Cities - IIT Bombay as Living Lab," at *Knowledge Economy Partnership*, British Council, University of Warwick, UK, December 18, 2013.

Delivered CRC Tech talk on "Urban Development and Sustainability - can they go hand in hand?" at CISCO Systems Inc. San Jose, CA, March 5, 2013.

Bardhan Ronita

Delivered a talk on "Green Growth for improving quality of life: Introduction to C-USE," at the IL&FS

Academy for Applied Development, on March 26, 2014, Mumbai, India.

Jana Arnab

Delivered a lecture on "Linking unplanned urbanisation, disparity and accessibility in the context of Indian mega cities," *Taoyaka Program Seminar*, Hiroshima University, Hiroshima, Japan, March 2014.

Significant Awards/Distinctions

Jain Monika

IBM Faculty Award

CISCO University Grant Award

Honorary Work

Jain Monika

Reviewed paper for ACM e-Energy, 2014

Reviewed paper for Clean Technologies and Environmental Policy, 2013, Springer

Faculty Members and their Specializations

1. Krithi Ramamritham

Timeliness and consistency issues in computer systems, in particular, databases, real-time systems, and distributed applications.

Dynamic Data in sensor networks, embedded systems, mobile environments and the web.

Information and Communication Technologies for creating tools aimed at socio-economic development.

2. Monika Jain

Green and energy efficient buildings and infrastructure design including energy modeling Landscape architecture with emphasis on streetscape and public space design Sustainability, environmental consciousness and climate change adaptation Zoning and land-use policy and regulations

3. Arnab Jana

Infrastructure planning, locational advisory, application of ICT in urban and regional planning, policy formulations & assessment, sustainability & environmental issues

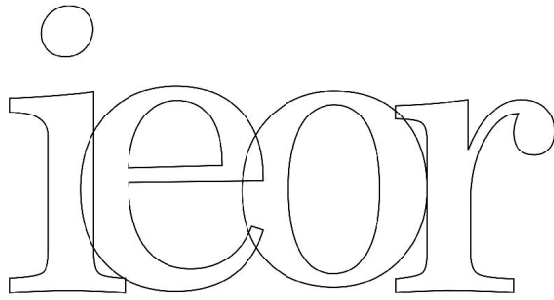
4. Ronita Bardhan

Compact urban form and Quality of life.

Green growth policy in urban sectors.

Sustainable urban water use and management.

Sustainable waste management and pro-environmental behavior.



Industrial Engineering & Operations Research

Introduction

Industrial Engineering and Operations Research (IEOR) at IIT Bombay is an interdisciplinary programme that offers Ph.D. and M.Tech. degrees in IEOR and an M.Sc.-Ph.D. dual degree in Operations Research. IEOR has seven faculty members and one emeritus fellow. Together with other institute faculty members who are associated with the programme in teaching and research, IEOR has a depth and breadth in capability that makes the programme unique in the country. One Post Doctoral Fellow joined the programme in the year 2013-14 in IEOR and another Post Doctoral Fellow is visiting IEOR.

degree programme, started in 2009-10, now has 29 students on rolls. The M.Tech. programme has a total strength of 35 students. IEOR also participates in the IITB-Monash Academy Ph.D. programme, with 4 doctoral students in the joint programme.

IEOR continues to contribute to UG/PG teaching with significant number of students from other departments opting for IE labeled courses as electives.

Degrees Awarded in 2013-14

M.Tech.	: 17
Ph.D.	: 1

Academic Programmes

IEOR offers M.Tech., Ph.D. degrees and an M.Sc.-Ph.D. dual degree. The current strength of Ph.D. students is 13 and continues to increase. The M.Sc.-Ph.D. dual

R&D Activities

The research and development activities of the IEOR group span a variety of areas ranging from optimization to simulation and scenario analysis. The supporting agencies range from government departments, research labs, private industry and private institutions.

Sponsored Research Projects

Sr. No.	Project Title	Sponsoring Agency	Status
1	Application of optimal control and game theory in communication networks	Indo-French Centre for Applied Mathematics	Ongoing
2	Second Generation Area Traffic Control System (CoSiCoSt2G)	Department of Information Technology	Ongoing
3	Evolutionary Stability in Games with Continuous Action Spaces	National Board of Higher Mathematics (NBHM)	Ongoing
4	Localisation of Solar Energy Through Local Assembly, Sale & Usage of One Million Solar Study Lamps by IIT Bombay	MNRE, Government of Madhya Pradesh, Government of Rajasthan, SDTT, etc.	New
5	FOSSEE: Free/Open Source Software in Science and Engineering Education (Assimilation of Open source Software in Science and Engineering)	MHRD	New
6	Risk-Sensitive Stochastic Control	Department of Science & Technology (DST)	Ongoing
7	Some Train Pathing Problems	DST and DFG – Germany	Ongoing

Internal Projects

Sr. No.	Project Title	Sponsoring Agency	Status
8	Infrastructure aware resource allocation, Continuous Polling Models and Learning Algorithms	IRCC – Seed Grant	Ongoing
9	Theory, Algorithms and Software for Mixed-Integer Nonlinear Optimisation	IRCC – Seed Grant	Ongoing

Visitors to the Department

Dr. N.R.Srinivasa Raghavan, Data Science & Big Data, Reliance Industries Ltd., delivered a lecture on “Much Ado About Big Data.”

Dr. Swaparva Nath, ISI, Delhi, delivered a lecture on “Social Algorithms and Internet Economics”.

Dr. Yogeshwaran D, EC Senior Researcher, EE, Technion, delivered a lecture on “Random Geometric Complexes.”

Mr. Avinash Bhardwaj, UC Berkeley, delivered a lecture on “Network Design with Stochastic Arc Capacities.”

Mr. Ashwin Kannan, Penn State University, delivered a lecture on “Algorithms for variational in equalities and solvers for Quadratic Programming.”

Prof. Santanu Dey, Georgia Institute of Technology, delivered a lecture on “Analysis of MILP Techniques for the Pooling Problem.”

Dr. Gagandeep Singh, Dept. of Mathematics, Jaypee Institute of Information Technology, Noida, delivered a lecture on “Computational Analysis of waiting-time Distributions of BMAP/R/1 and BMAP/D/1 Queues Using Method of Roots.

Prof. Karthik Natarajan, Singapore University of Technology and Design, delivered a lecture “Distributional Robust Optimization: Applications in Portfolio Optimization and Predictive Choice Analytics.”

Mr. Arnab Sur, IIT Kanpur, delivered a lecture, “Study of Stationarity Concepts for a Class of Stochastic MPCC Problems.”

Dr. Ashwin Arulsevan, postdoctoral associate at Institute for Mathematics Tichinische, Universitat, Berlin delivered a lecture “On the geometric rank of the matching polytope.”

Dr. Ravibabu, National Institute of Rural Development, delivered a lecture “Public Transport for Indian Urban Agglomerations : A Case for Central Role for Surface Rail.”

Mr. Anup Biswas, Postdoctoral fellow at Technion, Israel Institute of Technology, delivered a lecture “Control of a queuing system under the moderate deviation scaling.”

Mr. Devendra Shelar, Research Associate, Department of Computer Sciences and Engineering, IIT Bombay, delivered a talk “Simulation Analysis of Suburban Train Movements and Timetable Stability”.

Prof. Vijay Subramaniam, Northwestern University, delivered a lecture “Searching And Bargaining with Middlemen”

Dr. Nandan Sudarsanam, Quantitative Researcher, Rackson Asset Management, delivered a lecture “Ensembles of Adaptive One Factor-at-a time Experiments : Methods, Evaluation and Theory”.

Mr. Vinod Cheriyan, Georgia Tech., delivered a lecture titled “Asset Price Bubbles in Experimental Markets”.

Extension Activities

Prof. K.S. Mallikarjuna Rao, taught two courses Linear Algebra and Probability & Statistics at IIM Indore during summer 2013 and August-October 2013 in the IPM Programme of IIM Indore.

Conferences/Symposia/Workshops/Seminars (Participated/Papers Presented)

Mahajan Ashutosh

“Exploiting Structure in Mixed-Integer Nonlinear Optimization”, JDA Software India, March 6-7, 2014, JDA Optimization Summit, Hyderabad

Ghosh Anusuya and Narayanan Vishnu

“Convex Sets with Semidefinite Representable Sections and Projections Performance Evaluation”, May 19 - 22, 2014, SIAM, San Diego, California, USA

Kumar Sunil K and Subash Babu, A.

“Modeling and Analysis of Rural Supply Chain Using Simulation Approach”, January 6-8, 2014, ICAIEA, College of Engineering, Anna University, Chennai, India

Gupta Akash, Hamidur Rahman, Malpure Harshal, Sukhwal Lakshya, Vanga Ratnaji, Sathish Kumar L. and Subash Babu, A.

“Enhancing corporate competitiveness through Excellence in Logistics”, January 17, 2014, SPJIMR, Mumbai.

Singh Raj Tilak and Rangaraj Narayan

“Managing product variety through customer choice modelling”, XVII Annual International Conference of Society of Operations Management, December 20-22, 2013, IIT Madras, Chennai

Sahu Puja, Tripathi Sandhya, Maiti Sasank and Gupta Manu, K.

Workshop on “High Dimensional Network Analysis” on December 16-19, 2013, at IISc, Bangalore

Das Debayan, Gautam Kaushal and Kavitha Veeraruna

“Interactions between random walk and Poisson process”, December 6-10, 2013, Eight LPS. ISI, Bangalore

Ranade Abhiram, Shelar Devendra, Gupta Peeyush, Gopalakrishnan, R., and Rangaraj Narayan

“Time-tabling for Suburban Rail Services in India”, July 1-4, 2013, *EURO 2013 Conference* in Rome, Italy.

Narayanan Vishnu

“Facial Structure and Representation of Integer Hulls of Convex Sets”, *16th Conference on IPCO*, March 18-20, 2013, Valparaiso, Chile.

Santuka, R., Mahajan, A. and Rangaraj, N.

“Cutting stock problem with set-up cost”, *OPTSUM 2014*, Hyderabad, India, JDA Software India, March 2014.

Tripathi, J.N., Mahajan, A., Mukherjee, J., Nagpal, R.K., Malik, R. and Gupta, N.

“Decoupling Network Optimization in High Speed Systems by Mixed-Integer Programming”, *IEEE International Symposium on Circuits and Systems (ISCAS)*, Melbourne, Australia, 2014

Punjabi, M., Awate, P. G., Gajbhiye, R.K., Soman, S. A. and Prasad, K.

“Short Term Portfolio Optimization for Load Serving Entity considering Multiple Exchanges and Ramping Constraints”, *The Fifth Conference on Innovative Smart Grid Technologies (ISGT 2014)*, Washington, D.C., 2014.

Veevaruna Kavitha, Hemachandra, N. and Das, D.

“Fairness via priority scheduling”, *51st Annual Allerton Conference on Communication, Control, and Computing*, University of Illinois at Urbana-Champaign, Allerton Retreat Center, USA, pp. 138-145, October 2013.

Veevaruna Kavitha, Capdevielle, V. and Gupta Manu, K.

“Small Cell Networks: Speed Based Power Allocation”, *51st Annual Allerton Conference on Communication, Control, and Computing*, University of Illinois at Urbana-Champaign, Allerton Retreat Center, Monticello, Illinois, pp. 1380-1387, October 2013.

Veevaruna Kavitha, Bodas, T. and Manjunath, D.

“On-Demand OFDMA: Control, Fairness and Non-Cooperation”, *11th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt)*, Japan, 2013, pp. 224-231.

Ghosh, A. and Narayanan, V.

“New sufficient conditions for semidefinite representability of convex sets”, *International Conference on Operations Research for Data Analytics & Decision Analysis*, University of Kashmir, India, October 2013.

Rao Mallikarjuna, K.S.

“Evolutionary stability against multiple mutations”, *Workshop on Applications of Game Theory*, TIFR, Mumbai, May 3-4, 2013.

A New Approach to Stationarity in Mathematical Programming with Complementarity Constraints”, *CIMPA-UNESCO India Research School 2013*, University of Delhi, November 25 - December 6, 2013.

Conferences/Symposia/Workshops/ Seminars (Coordinated/ Chaired by Faculty)

Winter School on Control and Optimization, jointly held by IEOR and SysCon, IITB, January 13-17, 2014

Mallikarjuna Rao, K.S.

Local Organizer, Educational Interfaces Between Mathematics and Industry, Institute of Chemical Technology, Mumbai, January 23-24, 2014.

Faculty Members and their Specializations

1. Ashutosh Mahajan

Theory, Algorithms and Software for Mixed-Integer Linear and Nonlinear Optimization.

2. Veeraruna Kavitha

Stochastic processes, Performance Analysis, Queuing Theory, Polling systems, Optimal control, Game theory, Stochastic approximation, Wireless communications

3. Vishnu Narayanan

Integer Programming, Convex Optimization, and Polyhedral Theory

4. K.S. Mallikarjuna Rao

Game theory, Stochastic Control and Probability

5. Jayendran Venkateswaran

Modeling & Distributed Simulation (Discrete-event, System Dynamics), Integrated Supply Chain Analysis

6. N. Hemachandra

Methodologies like Markov decision models, Queuing models, Game theory, etc. Applications of such methodologies to Communication networks, Supply chains, Financial engineering, Logistics and Power systems.

7. Narayan Rangaraj

Optimization and Operations Research, Logistics and Supply Chain Management, Railway Operations, Transportation.

8. P.G. Awate

Scheduling, Inventory Management, Neural Networks, Knowledge-based Systems

Associated Faculty: Teaching and Research

A. Subash Babu, Department of Mechanical Engineering

P. Chaporkar, Department of Electrical Engineering

Associated Faculty: Research

G. K. Adil, Shailesh J. Mehta School of Management

R. Banerjee, Department of Energy Sciences and Engineering

V. S. Borkar, Department of Electrical Engineering

A. A. Diwan, Department of Computer Science & Engineering

D. Manjunath, Department of Electrical Engineering

K. Moudgalya, Department of Chemical Engineering

A. Ranade, Department of Computer Science & Engineering

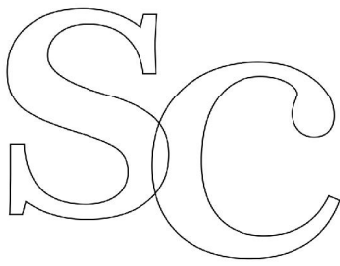
S.A. Sabnis, Department of Mathematics

S. A. Soman, Department of Electrical Engineering

A. Subramanyam, Department of Mathematics

K. Suresh Kumar, Department of Mathematics

V. M. Tom, Department of Civil Engineering



Systems & Control Engineering

Introduction

The Systems and Control Engineering formed in 1977, is a unique interdisciplinary program in the Country that offers post-graduate education (M. Tech./Ph. D.) in the broad area of Systems and Control.

The group has eight core faculty members and about 11 associated faculty members from other academic units of the institute. The average doctoral strength is around 20 and the M. Tech. intake every year is around 20.

The research focus of the core group is in the areas of nonlinear control, robotics, path-planning, embedded control, coordination of autonomous vehicles, multi-agent systems, sliding mode control and applications, fractional-order modelling and control, optimization and optimization-based control, and stochastic processes. In addition, research in the areas of process control, identification, behavioural theory, matrix computation, automotive control are being pursued by the associate faculty members.

Academic Programme

During the academic year 2013-2014, 10 students joined the M.Tech. programme and 5 joined the Ph.D programme. This year 13 M.Tech. and 6 Ph.D. degrees were awarded.

Student Intake

M.Tech	:	10
Ph. D.	:	5
Dual-Degree	:	2

Degrees Awarded:

M.Tech.	:	13
Ph. D.	:	6

R & D Activities

Sponsored Research Projects

New	:	3
Ongoing	:	4
Completed	:	4

Sr. No.	Project Title	Sponsoring Agency	Project Status
1	Constrained attitude control of satellites	Indian Space Research Organisation (ISRO)	Ongoing
2	Path planning of an autonomous vehicle using Omni directional camera	IRCC, IIT Bombay	Completed
3	Localizing and following a predefined path by an autonomous mobile vehicle using panoramic image formation	Department of Science & Technology (DST)	New
4	Decentralized Control of Multi-satellite formation flying	ISRO	Completed
5	Analysis and implementation of cooperative control behavior of adistributed multi-vehicle system	IRCC, IIT Bombay	Ongoing
6	R&D in collaborative missions-Phase 1	DST	Completed

Sr. No.	Project Title	Sponsoring Agency	Project Status
7	Undergraduate Student Competition, AUVSI' ROBOSUB	IRCC, IITB	Ongoing
8	Single Board Heater System	Ministry of Human Resource Development	Completed
9	Games Control and Optimization with Coupling Constraints	DST	New
10	Towards a Convex-Analytic view of Information Structures	IRCC, IITB	New
11	Control of indirectly and intermittently actuated systems	IRCC, IITB	Ongoing

Visitors to the Department

Prof. Alain Sarlette, University of Ghent, Belgium, delivered lectures on “Symmetrization and collective dynamics on groups for control and algorithmic applications,” January 21-29, 2014.

Prof. Respondek W., INSA de Rouen, France visited Syscon during March 2014

Dr. Girish Chowdhar, Department of Mechnacial and Aerospace Engineering, Oklahoma State University, USA, delivered a talk on “Information Enabled Adaptive Autonomy for Unmanned Aerial Vehicles,” January 6, 2014.

Dr. Rajnikant Sharma, Electrical and Computer Engineering Department, Utah State University, USA, delivered a talk on “Cooperative Localization,” December 30, 2013.

Conferences/Symposia/Workshops/Seminars (Participated/ Papers Presented)

Bandyopadhyay B

Participated in *3rd International Conference on Advances in Control and Optimization of Dynamical Systems (ACODS)* held at IIT Kanpur, March 2014.

Participated in *11th IEEE International Conference on Industrial Informatics (INDIN)*, Bochum Germany, July 2013.

Served as Member of National Organizing Committee of *10th IFAC International Symposium on Dynamics and Control of Process Systems* held at IIT Bombay, Mumbai, India, 2013.

Nataraj P. S. V.

Organised a National Workshop on GPU Programming and Applications (GPA-2014), February 2014, IIT Bombay.

Kulkarni Ankur A.

Attended IEEE Conference on Decision and Control, Florence, Italy, December 2013.

Attended Joint Telematics Group Summer School at IIT Madras in June 2013

Chatterjee D

Served as an Associate Editor for *European Control Conference 2014*.

Participated in the *3rd IITB Winter School on Optimization & Control* held in January 2014.

Banavar R. N.

Under TEQIP-2 (along with VJTI) organised an *International Workshop on Perspectives in Dynamical Systems and Control*, at IIT Bombay.

Awards and Distinctions

Bandyopadhyay B.

Selected as the Convener, Sectional Committee (Electrical Engineering) INAE 2013.

Kulkarni Ankur A.

Received INSPIRE Faculty Award, Department of Science and Technology, Government of India, 2013.

Invited Lectures

Banavar R. N.

Visited Institute of Automatic Control, TUM, Munich from June 1-30, 2013.

Chatterjee D.

Invited as Visiting Faculty with the Indian Institute of Management, Indore, December 2013 - January 2014.

Bandyopadhyay B.

Delivered a talk on “Continuous integral sliding mode control: A second order sliding mode approach” in *3rd International Conference on Advances in Control and Optimization of Dynamical Systems (ACODS)* held at IIT Kanpur during March 13–15, 2014.

Delivered a talk on “Modeling and control of large nuclear reactor” in *5th International Conference on Computer Applications in Electrical Engineering - Recent Advances (CERA)* held at IIT Roorkee during October 3-5, 2013.

Srikant S.

Delivered lecture series on “Career in Research” at VJTI, Mumbai.

Kulkarni Ankur A.

Delivered a lecture on “Navigating the deletion channel”, at TIFR, Mumbai, June 2013.

Faculty Members and their Specialization

Core Faculty:**1. R.N. Banavar**

Optimal control, Geometric mechanics and nonlinear control, Lagrangian and Hamiltonian mechanics.
Application areas - Mechanical (robotics), aerospace (launch vehicles, spacecrafts) and electrical power system networks.

2. B. Bandyopadhyay

Large Scale Systems, System Reduction, Nuclear Reactor Control, Sliding Mode Control (Continuous & Discrete), Power Systems - Stability & Control, Modeling, Control & Implementation of Smart Structures, Space Launch Vehicles - Stability & Control, Gas Turbines - Stability & Control, Flexible manipulators, Stability & Control Multirate Output Feedback based Control (POF / FOS).

3. P.S.V. Nataraj

Robust Stability and Control especially using quantitative feedback theory (QFT) techniques, Nonlinear System Analysis and Control, and Reliable Computing using interval analysis techniques.

4. Arpita Sinha

Cooperative control of Multi-agent systems, Resource Allocation, Team theory and its application, Game theory.

5. Leena Vachhani

Reconfigurable hardware, Embedded control systems, Robotic path planning algorithms, Hardware/software co-design.

6. Debasish Chatterjee

Constrained and optimization based control, in particular, stochastic model-predictive/receding-horizon control; switched and hybrid systems; control under communication and computation constraints; stochastic control; applications of stochastic process in engineering systems

7. Srikant Sukumar

Nonlinear and adaptive control, non-autonomous controller and state observer design, decentralized control, cooperative and network control, hybrid systems, mathematical control theory.
Application areas: Spacecraft attitude control, bio-mechanical systems, dynamics and control, power systems, autonomous vehicles and robotics, formation flying and consensus theory.

8. Ankur A. Kulkarni

Game theory, stochastic control, optimization, economics, information theory, combinatorics and systems biology.

Associated Faculty**9. Hemendra Arya**

Department of Aerospace Engineering
Composite structures, Systems Design & Engineering
Mechatronics

10. Kannan Moudgalya

Dept. of Chemical Engg.
Process Control, Simulation, Software Engg

11. Sachin C. Patwardhan

Dept. of Chemical Engg.
Control relevant dynamic modeling of linear and nonlinear systems, Nonlinear model predictive control, On-line fault diagnosis and fault tolerant control, Nonlinear state estimation and particle filtering, Online parameter estimation and adaptive predictive control

12. Sharad Bhartiya

Dept. of Chemical Engg.
Modeling, Identification and control of hybrid systems, Analysis of biological regulatory networks

13. Mani Bhushan

Dept. of Chemical Engg.
Fault detection and diagnosis, Sensor network design, constrained state estimation, Optimal alarm management, Statistical data analysis applications to pollution source identification and fermentation operations.

14. Madhu N. Belur

Dept. of Electrical Engg.

Systems & Control theory, Behavioral theory of Systems and Control, Optimal control, Numerical aspects, Hybrid systems

15. H.K. Pillai

Dept. of Electrical Engg.

Control theory; Behavioural theory of Systems; Multidimensional systems; optimal control; Coding theory; Optimization techniques.

16. Debraj Chakraborty

Dept. of Electrical Engg

Optimal Control, Differential Games, Nonlinear Feedback Theory, Control of Biological Systems and Diseases.

17. Vivek S. Borkar

Dept. of Electrical Engg.

Stochastic Control, Learning Control Theory, Random Processes.

18. P.S. Gandhi

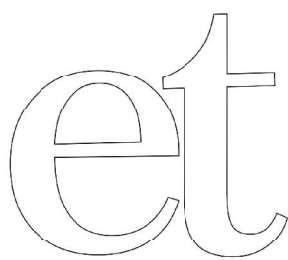
Dept. of Mechanical Engg.

Nonlinear Dynamical Systems and Control, Mechatronics, Micro Electromechanical Systems (MEMS), Robotic systems, kinematics and dynamics, appropriate technology for India.

19. S. Suryanarayanan

Dept. of Mechanical Engg.

Applications of tools from systems/control theory towards the design of mechatronic systems. Current problems of interest include controller design for large wind turbines, active flow control, controllers for automotive systems, energy management strategies for hybrid power devices.



Educational Technology

Introduction

The Inter-Disciplinary Programme in Educational Technology (IDP-ET) started in the Institute in year 2010-11. The IDP-ET has core faculty members as well as faculty members from various departments of the Institute. The IDP-ET has conducted research in areas such as pedagogies and tools for technology-enhanced learning, organized short intensive courses on effective teaching-learning and educational research methodologies through QIP, CEP and the Teach 10000 Teachers project, played a significant role in the organization of IEEE conference on Technology for Education (T4E), carried out sponsored projects for the National Mission on Education through ICT (NMEICT) and provided consultancy to industries working in the education sector.

Academic Programme

The IDP in Educational Technology (IDP-ET) offers a Ph.D. programme in Educational Technology. Currently, 20 students are enrolled in the Ph.D programme, and three more have been admitted as of May 2014. These Ph.D. students include engineering college teachers from colleges in and around Mumbai. The IDP-ET continues to offer core courses and electives in educational technology content and methods, which have been undertaken by B.Tech, M.Tech and Ph.D students from other academic programmes within the Institute.

Sponsored Projects

List of the sponsored projects are given below:

Sr. No.	Project Title	Sponsored by	Status
1	OSCAR++ (Open Source Courseware Animations Repository)	Ministry of Human Resource Development (MHRD)	Completed
2.	Developing suitable pedagogical methods for various classes, intellectual calibers and research in e-learning	MHRD under the National Mission on Education through Information and Communication Technologies.	Ongoing

R & D Activities

The main areas of focus of the R&D activities of the IDP-ET are:

- Technology-enhanced learning environments for pan-domain cognitive abilities such as, engineering design, problem-posing, estimation, algorithmic thinking, modeling, data representation & analysis.
- Frameworks for teacher use of educational technology tools and strategies
- Development of AI & ICT based tools for teaching-learning goals such as automated content generation and assessment.

Areas of development focus for the IDP-ET are:

- Educational products and tools – scientific visualizations, spoken-tutorials, virtual labs, tutoring systems, and assessment instruments.
- Creation of online courses and multimedia textbooks
- Guidelines for teachers - on classroom practice, effective strategies, large classes, incorporation of ICT tools, teaching in new situations such as online education and flipped classrooms

Conferences/Symposia/Workshops/Seminars (Participated/ Papers presented)

Murthy Sahana

Presented a paper on “Program visualization: Effect of viewing vs. responding on student learning,” at the *21st International Conference on Computers in Education (ICCE 2013)*, Bali, during November 18-22, 2013, Indonesia.

Iyer Sridhar

Presented a paper on “Effect of think-pair-share in a large CS1 class: 83% sustained engagement,” at *ACM conference on International Computing Education Research (ICER 2013)*, San Diego, during August 12-14, 2013, USA.

Presented a paper on “A model for active learning in Synchronous Remote Classrooms: Evidence from a large-scale implementation,” at *International Conference on Computers in Education (ICCE 2013)*, Bali, November 18-22, 2013, Indonesia.

Banerjee Gargi, Patwardhan Mrinal and Mavinkurve Madhuri

Presented a paper on “Teaching with visualizations in classroom setting: Mapping instructional strategies to instructional objectives,” in *IEEE 5th International Conference on Technology for Education (T4E 2013)*, Kharagpur, India, December 18-20, 2013.

Conferences and Workshops (Co-ordinated/Chaired)

Iyer Sridhar

Program Co-chair, *IEEE International Conference on Technology for Education T4E 2013*, December 18-20, 2013, Kharagpur.

Participated in *IDP-ET Workshop series on effective teaching-learning*, “Think-Pair-Share, an active learning strategy: Experiences from CS101 and a how-to for your course”, December 5, 2013.

Murthy Sahana and Iyer Sridhar

Co-ordinated one-week QIP course on “Effective Teaching-Learning Strategies for Quality Engineering Education”, June 24-28, 2013.

Murthy Sahana

Participated in “Peer-instruction: An interactive learning strategy to promote conceptual reasoning in your course,” February 27, 2014.

Invited Lectures

Murthy Sahana

Delivered a lecture on “Visualizations in Facilitating Learning: Some myths and realities,” at *National Symposium on Future Directions for Technology in Education*, SNDT Women’s University, March 21, 2014, Mumbai.

Delivered keynote address at *AICTE National Seminar on Academic Excellence through Quality Technical Education - Opportunities & Challenges*, Thakur College of Engineering & Technology, January 23, 2014, Mumbai.

Delivered a lecture on “Effective teaching-learning strategies from Physics Education Research,” as part of UGC Refresher course for B.Sc Physics Instructors. Mumbai University, during November 13-14, 2013, Mumbai.

Visitors to the IDP

Dr. Michael Hewner, Rose-Hulman Institute of Technology delivered a seminar on “Student conceptions in the field of computer science.”

Prof. Eric Mazur, Harvard University, delivered a Workshop on “Peer Instruction”, a seminar on “Problem-based Learning” and an Institute Colloquium on “Interactive Teaching, Flipped Classrooms and Peer Instruction”.

Dr. Gwen van der Velden, University of Bath, delivered a seminar on “E-learning issues in the UK”.

Dr. Ashok Basawapatna, University of Colorado delivered a lecture on “Scalable game design”.

Prof. Aman Yadav, Purdue University, delivered a seminar on “ABCs of active learning teaching practice in engineering education: Project-based learning and case-based instruction”.

Honorary Work

Iyer Sridhar

Program Chair, *IEEE International Conference on Technology for Education T4E 2013*, Kharagpur, December 18-20, 2013.

Executive Committee member, 2014-17, Asia Pacific Society of Computers in Education.

Kannan Moudgalya

Steering Committee member, *IEEE International Conference on Technology for Education T4E 2013*, Kharagpur, December 18-20, 2013.

Murthy Sahana

Executive Committee member, 2014-17, Asia Pacific Society of Computers in Education.

Steering Committee member, IEEE International Conference on Technology for Education T4E 2013, Kharagpur, December 18-20, 2013.

Faculty members and their Specialisations

1. P. J. Bhat

Educational Technology in Biosciences

2. V.M. Gadre

Video Coding for the purpose of Distance Education – technology of coding and transmission

3. U.N. Gaitonde

Instructional design in Mechanical Engineering and Thermodynamics

4. Sridhar Iyer

Learner-centric tutoring systems, Pedagogy for online learning, Technology-enabled learning environment for thinking skills

5. Anirudha Joshi

Visual Design, Usability Studies, Human-Computer Interface Design, Interface Evaluation, Interface Design for Indian languages, New Media Design

6. Kannan Moudgalya

IT literacy, bridging digital divide, virtual labs, open source software, open source hardware, synchronous and asynchronous education, educational methodologies, mining for textbook generation.

7. Sahana Murthy

Technology-enabled learning environment for thinking skills, pedagogies for effective use of ICT, Use of technological tools in physics education

8. K. Narayanan

Economics of Education Economics impacts of Technology-enabled Education, Socioeconomic empowerment through technology education

9. Santosh Noronha

Design and development of remote triggered experiments, Employing multivariate statistical/pattern recognition methods for use in evaluating research methodologies

10. M. B. Patil

Design and deployment of virtual laboratories and remote triggered experiments

11. D. B. Phatak

Educational Technology for Countrywide Education, particularly in Computer Science and Engineering

12. Ravi Poovaiah

Designing collaborative environments for learning and social interactions, Designing for children- with a focus on 'play and learn', Information design, structuring and visualisation, Interface design and Designing interactions, Temporal and spatial aspects of visual language

13. C. S. Solanki

Educational technology for photovoltaics

14. B. L. Tembe

New instructional design paradigms for thermodynamics and statistical mechanics, Application of methods of educational technology in chemical education

Central library

Introduction

Central Library, the knowledge hub of IIT Bombay is undergoing a major transformation in terms of enhanced knowledge base, upgraded technology, variety of user spaces and quality of ambiance that will not only reflect the latest trends in delivery of user-focused and innovative library services but will also meet the current and future needs of its users.

Central Library manages knowledge, both in print and digital formats, ensures seamless discovery and access to these scholarly resources, and provides faculty, students, and staff with professional support to find, evaluate, manage, and use such resources. Our collection of about 4.43 lakh items were used by more than 11000 members and others who made 429799 visits to the library during the year. In addition, over 2.0 million downloads were made from 20,000 e-journals, e-books, and databases. The Institutional Repository of IITB publications which now has over 15000 records attracted more than 91000 hits during the year. The library home page received over 3,75,830 hits during

the year. The library extensively uses social media for improved communication and interaction and has created a blog to post current and interesting information and news items. Users can also follow us on the facebook and twitter. All the library resources can be accessed through On-line-Public-Access Catalogue which received 327964 hits during the year.

Collection Development and Access Management

Collection building - a core activity of the library, has been undergoing a transformation. From print-only environment where all our acquisitions were in hard copy format, it has shifted to print-and-online and to online-only formats. The library currently subscribes to over 80% of its journals in online only format which is likely to increase further. It also acquired 1439 e-books during the year, though most of the books are still preferred in print-only. The library collection comprising of books, journals, theses, reports, standards, pamphlets and other reading material as on March 2013 stands as follows:

<i>Collection</i>	<i>Added during 2013-14</i>	<i>Total as on March 31, 2014</i>
Books, theses, CDs, Videos	3053	238407
E-Books	893	2953
TLL & BC (Book bank) collection	86	11972
Bound volumes of journals	102	118433
Reports, pamphlets, standards	161	67821
Photocopies, films	07	4417
Total	4905	439708
Subscription to journals	—	1450
Online-only 1215		
Print-and-online 74		
Print-only 161		

Acquisition, processing and servicing of material in print-and-online and online-only formats poses several challenges to the library, and requires efficient Internet connectivity, efficient discovery tool, active license agreements, users sensitization, and follow up with publishers and service providers to ensure uninterrupted access. All the e-books can be browsed and accessed through library's Web OPAC. Appropriate links from library's homepage have also been provided to access all e-journals and databases.

Library Services

• Membership, Reference, Consultation & Circulation

Central Library is open from 09:00 to 23:00 hrs on all working days and from 10:00 to 17:00 hrs on holidays (except three National Holidays, Holi, and Deepavali festivals). It remains open till 01:00 hrs on all days during examinations. The library membership increased by about 11544 and includes students, faculty, staff, alumni, retired faculty and officers, corporates and industrial houses, and educational institutes. The library allows self check-out of books as well as online renewal of borrowed books. It handled 207905 loan transactions of books and other documents to its members during the year. In addition to members, 955 visitors including students, research scholars, scientists, engineers and faculty members from several academic and R&D institutions used the library. Reference service continued to help users to make full use of library resources and services. It renders necessary assistance to users in locating information or document of their choice. "Ask the Librarian" link provided from the library home page encourages users to avail the reference service virtually.

• Sharing of Resource and Photocopying service

The library maintains excellent relations with libraries of IITs, IISc, and several other organizations for exchange of books, journals, photocopies and videocassettes for the mutual benefit of the users. It loaned 37 and borrowed 5 books to / from other libraries. It provided 3729 pages of photocopies on payment or on exchange including 48 organizations who maintain deposit account with us. The library also received 327 pages of photocopies from other institution. The library supplied 943 pages of photocopies to the institute faculty free of charge, and 27642 pages to other users/visitors on payment.

• Book Bank (TLL and BC Collections)

The library's book bank comprising mainly of prescribed text books for undergraduate courses, was used by 879 students belonging to Scheduled Castes,

Scheduled Tribes and economically weaker sections of the society. They borrowed 2811 books from this collection during the year.

• Information Alert Services

The library continues to alert the users about the latest information of their interest by:

List of Additions, new arrivals
Lest-you-miss
News items display
Useful articles Display
Faculty publications display
Display of Scholarship and fellowship information

Display of Forthcoming conferences, other national and international events, employment opportunities, and prospectus of foreign universities

Digital Library

Central Library is a part of the institute-wide network and has adequate computing infrastructure including 80 computers and servers to cater to the needs of the users. It uses LibSuite – a library management system for its house keeping operations and OPAC search. The library has recently started experimenting with KOHA – an open source software and has automated Serials (Journals) Control activities using the software. The software appears to be a promising product and requires more experimentation before it could be considered to be used for all library activities. The library homepage (<http://www.library.iitb.ac.in>) - which was re-designed using Word Press content management system, serves as a popular interface between users and the library. The library has created a blog to post current and interesting information and news items (<http://iitblibrary.wordpress.com/>). Users can also follow us on the facebook and twitter.

• OPAC (On-line Public Access Catalogue)

The OPAC is one of the most heavily used databases of the library and is accessible 24x7 via library web page. Besides listing all the documents available in the library, it allows on-line renewal and reservation, circulation, fine collection, and indicates status of a particular book. E-Books can also be searched through OPAC.

• E-Resources

The Central Library provides web-based access to over 20,000 full text journals and 12 databases 24 x 7 on institute-wide network. It acquired a discovery tool, Knimbus to help users search information across several e-resources and databases using single search query. Some of the important e-resources, databases are listed below :

Full-text Resources

ABI Inform	http://proquest.umi.com/pqweb?RQT=302&cf=1
ACM Digital Library	http://portal.acm.org/portal.cfm
ACS Journals	pubs.acs.org/journals
ACS Legacy Archives (23 journals 1879-1995)	http://pubs.acs.org/archives/promo/index.html
AIAA Journals	http://www.library.iitb.ac.in/dres/AIAA.html
AIP Journals	http://www.library.iitb.ac.in/dres/AIP.html
American Economic Association	http://http://www.aeaweb.org
American Geophysical Union	http://www.library.iitb.ac.in/index.php?option=com_content&task=view&id=157&Itemid=
AMS Journals	http://www.ams.org/journals/
Annual Reviews	http://www.annualreviews.org/
ASBMB (JBC/MCP)	http://http://www.asbmb.org/
ASCE Journals	http://www.pubs.asce.org/journals/jrns.html
ASCE Proceedings	http://www.ascelibrary.org/ascecp
ASME Journals (+ AMR)	http://www.asme.org/publications/journals
ASTM Journals	http://journalsip.astm.org
ASTM Standards	http://enterprise.astm.org
BioOne 1 (82 high impact bioscience journals and 1 book)	http://www.bioone.org
Blackwell/Wiley Journals	http://www.library.iitb.ac.in/index.php?option=com_content&task=view&id=140&Itemid=1
Cambridge University Press Journals	http://journals.cambridge.org
Capitaline	http://www.capitaline.com/user/framepage.asp?id=1
CMIE Databases	On Intranet
CRISIL Research	http://www.crisil.com
Duke Mathematical Journal (Volume 1 – 100)	http://www.projecteuclid.org
EBSCO Databases	http://search.ebscohost.com/
EdITLib: Education and Information Technology Digital Library	http://http://www.editlib.org/
Emerald Full text	http://www.emeraldinsight.com/
Euromonitor GMID	http://www.euromonitor.com/gmid

GSA Journals	http://www.library.iitb.ac.in/index.php?option=com_content&task=view&id=174&Itemid=1
Geological Society Journals	http://www.library.iitb.ac.in/index.php?option=com_content&task=view&id=178&Itemid=1
ICE (24 journals)	http://www.icevirtuallibrary.com/content/journals
IEEE/IEE Electronic Library Online	http://ieeexplore.ieee.org
ICSD Inorg Crystal Str DB	http://icsd.fiz-karlsruhe.de/icsd/StartActionPath.do
IEC Standards	http://bis.library.iitb.ac.in/iec/
INFORMS (12 journals package)	http://journals.informs.org
INSIGHT	http://www.insight.asiancerc.com/
JSTOR Journals Archive	http://www.jstor.org
IOP Electronic Journals	http://www.iop.org/EJ/subs/-view=journal
Journal of Geophysical Research (7 journals) Space Physics Space Physics Solid Earth Oceans Atmospheres Planets Biogeosciences	http://www.agu.org/journals/ja http://www.agu.org/journals/jb http://www.agu.org/journals/jc http://www.agu.org/journals/jd http://www.agu.org/journals/je http://www.agu.org/journals/jf http://www.agu.org/journals/jg
IOM - Maney Journals	http://www.library.iitb.ac.in/index.php?option=com_content&task=view&id=139&Itemid=1
JoVE : Journal of Visualized Experiments	http://www.jove.com/
Material Science and Engineering Collection (Trans Tech)	http://www.scientific.net
Molecular & Cellular Proteomics	http://www.asmb.org/Page.aspx?id=644
Multi Science Journals	http://multi-science.metapress.com/home/main.mpx
NGP Journals (Nature 27 Journals)	http://www.nature.com/nature/index.html
Now Publishers, Foundation and Trends in Computer Science monograph series	http://www.nowpublishers.com/journals/CGV/latest
Optics Infobase, Optical Society of America (14 journals)	http://www.opticsinfobase.org
Oxford Subject Collections - Humanities & Social Sciences Mathematics & Physical Sciences	http://www.oxfordjournals.org/
Proceedings of the Royal Society (A)	http://rspa.royalsocietypublishing.org
Project MUSE	http://muse.jhu.edu

Proquest Dissertations and Theses Database fromDatabasesLayer?accountid=27542	http://search.proquest.com/pqdtglobal/dissertations/
Psycarticles	http://csaweb106v.csa.com/ids70/quick_search.php?SID=2qh6a3sa5h775hqbsid1a0eip6
PV-Tech	http://www.pv-tech.org
RSC Journals + Archives	http://www.rsc.org/publishing/journals
Sage Subject Collections - Psychology, Sociology, Urban Studies & Planning Collections	http://online.sagepub.com/
Science Direct	http://www.sciencedirect.com/
Science of Synthesis	http://www.science-of-synthesis.com/prod/user/index.html
Science Online (AAAS, USA)	http://www.sciencemag.org
SIAM Journals Online	http://epubs.siam.org/
SIAM's Archive (LOCUS)	http://locus.siam.org/
Springer verlag Link (Lecture Notes Series)	http://www.springlink.com/
SPIE Journals Package	http://journals.spiedigitallibrary.org/journals.aspx
TRB Publications	http://www.trb.org/Main/Home.aspx
Taylor & Francis Journals	http://http://www.tandfonline.com/
Wiley Journals	http://www.library.iitb.ac.in/index.php?option=com_content&task=view&id=140&Itemid=1
World Scientific Journals	http://www.library.iitb.ac.in/index.php?option=com_content&task=view&id=144&Itemid=1

Addition of New Resources : The library added following new e-resources during the year 2014.

Acta Numerica	http://journals.cambridge.org/action/displayJournal?jid=ANU http://journals.cambridge.org/action/displayJournal?jid=ANU
Advanced Engineering Materials	http://onlinelibrary.wiley.com/journal/10.1002/%28ISSN%291527-2648 http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1527-2648
Advanced Synthesis & Catalysis	http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1615-4169
Algebra and Number Theory	http://msp.org/ant/about/cover/cover.html http://msp.org/ant/about/cover/cover.html
Applied Cognitive Psychology	http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1099-0720
Applied Organometallic Chemistry	http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1099-0739

BioScope : South Asian Screen Studies	http://bio.sagepub.com/content/current http://bio.sagepub.com/content/current
ChemBioChem	http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1439-7633
ChemInform	http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1522-2667
Chemistry-An Asian Journal	http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1861-471X
ChemMedChem	http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1860-7187
ChemPhysChem	http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1439-7641
Chirality	http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1520-636X
Derrida Today	http://www.eupublishing.com/journal/drt http://www.eupublishing.com/journal/drt
Environment and Development Economics	http://journals.cambridge.org/action/displayJournal?jid=EDE http://journals.cambridge.org/action/displayJournal?jid=EDE
Environmental Engineering Science	http://www.liebertpub.com/overview/environmental-engineering-science/15/
Izvestiya – Mathematics	http://iopscience.iop.org/1064-5632 http://iopscience.iop.org/1064-5632/
Journal of Advanced Manufacturing Systems (JAMS)	http://www.worldscientific.com/worldscinet/jams http://www.worldscientific.com/worldscinet/jams
Journal of Atmospheric and Oceanic Technology with Archives	http://journals.ametsoc.org/loi/atot
Journal of Climate	http://www2.ametsoc.org/ams/index.cfm/publications/journals/journal-of-climate/
Journal of Group Theory	http://www.degruyter.com/view/j/jgth http://www.degruyter.com/view/j/jgth
Journal of Heterocyclic Chemistry	http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1943-5193
Journal of Immunology	http://www.jimmunol.org/content/by/year
Journal of International Development	http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1099-1328 http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1099-1328
Journal of Vibration Control (JVC)	http://jvc.sagepub.com/

Journal of Visualized Experiments (JOVE) All Parts	http://www.jove.com/
Language	http://www.linguisticsociety.org/lsa-publications/language http://www.linguisticsociety.org/lsa-publications/language
Linguistic Inquiry	http://www.mitpressjournals.org/loi/ling http://www.mitpressjournals.org/loi/ling
Novel : A Forum on Fiction	http://novel.dukejournals.org/ http://novel.dukejournals.org/
Probability in the Engineering and Informational Sciences	http://journals.cambridge.org/action/displayJournal?jid=PES http://journals.cambridge.org/action/displayJournal?jid=PES
Review of Income and Wealth	http://onlinelibrary.wiley.com/journal/10.1111/%28ISSN%291475-4991 http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1475-4991
The Journal of Experimental Medicine (JEM)	http://jem.rupress.org/content/current
Tissue Engineering Part A, B & C	http://www.liebertpub.com/overview/tissue-engineering-parts-a-b-and-c/595/
WIREs Climate Change	http://wires.wiley.com/WileyCDA/WiresJournal/wisId-WCC.html

Databases

Chemical Abstracts – 12th & 13th Collective Index Chemical Abstracts on CD (2003)	On library intranet
Indian Standards	On library Desktop(Stand-alone)
Indian Patents	On library intranet
IndiaStat	http://www.indiastat.com/default.aspx
Inorganic Crystal Structure Database	http://icsdweb.fiz-karlsruhe.de/index.php
INSPEC	http://www.engineeringvillage2.org
Knimbus Discovery Tool	http://www.knimbus.com/knimbus/user/auth.do
MathSciNet	http://www.ams.org/mathscinet
Powder Diffraction Files	On library intranet
Reaxys	https://cn-www.reaxys.com/reaxys/secured/search.do
Scifinder Scholar	http://web.scifinder/scholar/index.html
Turnitin (Plagiarism prevention service)	https://turnitin.com/login_page.asp?err=1&lang=en_us
SCOPUS	http://www.scopus.com
Web of Science and Journals Citation Report	http://isiknowledge.com/

- **Electronic Theses & Dissertations**
(<http://etd.library.iitb.ac.in>)

Central Library supports electronic submission of theses and dissertations by the postgraduate and doctoral students. It maintains a full-text database of over 5000 items submitted since 1999-2000 on Intranet. During the year, 678 M. Tech. dissertations and 198 Ph. D. theses were submitted online.

- **Institutional Archive**
(<http://dspace.library.iitb.ac.in/jspui/>)

Central Library has been active in supporting open access to the scholarly information and set up an archive of publications brought out by the institute using open source software, DSpace. The archive has over 15000 items and is being updated to cover more publications which are permissible within the copyright regulations. The archive accessible through the library homepage, is the single largest source of IITB publications and received more than 91,000 hits during the year.

Users Education, Conferences, Seminars

During the year, Central Library organized programmes on Turnitin (a Plagiarism prevention service), SCOPUS, Reaxys, Mendeley, CRISIL Research and CMIE databases. For users desiring to learn more about any service, database or any resource, the library provides one-on-one training as well as organizes half a day sessions on particular resource. The library also

organized half-a-day interactive sessions for new faculty and research scholars to familiarize them with various resources and services. The brochure “Know Your Library” continues to be a popular medium to give detailed information about activities and services of the library.

Participation in external events

Institute Librarian Dr. D. Jotwani attended the *World Library and Information Congress, and ACM Library Advisory Board Meeting* in Singapore in August 2014. He was also invited to participate in E-Books Forum – The 4 Is of E-Books : Innovation, Integration, Insights and Investment, Bangkok, Thailand, September 18-19, 2013.

Building

The renovation of the library building is progressing well. The first phase of the work which is nearing completion includes major face lift of its entrance and circulation area, reference and periodicals reading halls, and addition of a new floor. The remaining part of the building is being taken up in Phase 2 and 3, and may take another one year or so to complete. When completed, the fully air-conditioned library will have an inviting entrance with a beautiful lobby and exhibit area, sleek circulation area, new reference and periodicals reading halls, a variety of users spaces (with increased seating capacity) for individual and group studies, a digital knowledge lab, language lab, improved staff work areas, and a large reading hall open for 24×7.



Centre for Distance Engineering Education Programme

The Centre for Distance Engineering Education Programme (CDEEP) continued its main activity of recording new courses and transmitting them to the participating remote centres. The Centre has a total of 75 Institutions connected as Remote Centers (RCs) including the two, which joined during the year 2013-2014. CDEEP also supports several projects from the Ministry of Human Resource Development (MHRD) through its infrastructure and expertise. The earlier courses recorded by CDEEP are being made available to individual users at nominal charges. In the period under consideration the Centre gave 161 courses to individuals at a nominal charge of Rs. 300/-. CDEEP has an archive of 282 courses of IIT Bombay coded courses.

The Centre provides an access to recorded courses through web, free of cost. 1700 registrations were tabled to view these recorded courses. Many students and faculty members across the country are making use of this facility.

CDEEP recorded 15 IIT Bombay semester long courses during the period under consideration, covering 11 disciplines. Many institutions, teachers and students are using these courses available to them even offline.

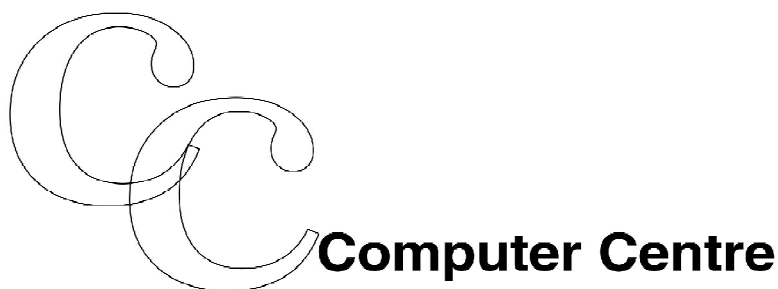
In addition, CDEEP recorded 88 events on campus including the 51st Convocation, 55th Foundation Day,

Institute Colloquia and talks by distinguished speakers.

Technology upgradation is continually pursued in the centre. As a result, there is a significant leap in the quality of audio and video through technologies, namely videoconferencing and web transmission.

CDEEP has received funds to conduct knowledge incubation for Technical Education Quality Improvement Programme (TEQIP) (KIT)/ Quality Circle at IIT's under the World Bank Assisted Technical Education Quality Improvement Programme of the Government of India. CDEEP has been conducting various workshops under TEQIP (KIT) including the important Research Scholars' and Alumni Symposium (RSAS-2014) in March 2014. Several workshops and activities under MHRD-TEQIP-KIT are planned for the Year 2014-2015.

Also, CDEEP organized a "SANGACHCHADHVAM" ('Let us move together' in Sanskrit) get together on September 27, 2013 involving all project staff, faculty, Professor In-charges and CDEEP staff involved in various activities of educational outreach in the Institute. The aim of this get-together was to bring in the spirit of collective movement towards success and achievement in all activities pertaining to educational outreach in IIT Bombay. It was well attended and follow up actions to this event are now underway.



Introduction

Computer Centre administers and manages the entire Campus Computer Network which includes Departments, Schools, Centres, Main Administrative Building, Hostels and the Guest House. Network Connectivity is also provided to the remote locations like Institute Hospital, Security Cameras, etc.

The Centre provide Web-based Email 'GPO', an institute wide directory service 'LDAP' and centralized storage 'Bighome' to every student, faculty and staff for personal use. The Centre encourages use of free and open software like GNU/Linux distributions and host mirrors of popular GNU/Linux distributions on our FTP Portal. The Centre also provides various advanced and special purpose softwares such as Ansys, Matlab, Mathematica, Maple, Techplot, etc. for all the campus users.

The faculty and staff of Computer Centre are involved in spreading computer literacy by delivering lectures in other institutions and organizing *Continuing Education Programs*. They also organize lectures and training sessions for the administrative staff to enable them to get comfortable with the World Wide Web.

Network and Connectivity

The Centre manages the campus network and is responsible for the availability of intra-campus connectivity of all the departments, hostels, residential complexes and internet connectivity of Institute with the outside world. The following activities were undertaken during last year:

The network connectivity to the new students' hostels (Hostel 10A and 15) has been completed.

The total Internet bandwidth for campus users have been increased from 2580 Mbps to 3250 Mbps. For optimum utilisation of internet, following has been implemented:

- BGP routing to connect to the three ISPs through simple load balancing using open source software.

- Internet access is by NATting via four Class C address ranges recently acquired from APNIC.
- Web access is through proxy and "direct access" where a legitimate user authenticates the IP address.
- Separate web access accounts for users, other than employees, at residences.
- Transport layer security has been purchased via digital certificate from GeoTrust.

About 700 WiFi access points have been deployed on campus to cover large part of the academic area, Guest Houses and Central Library.

High Performance Computing Facility

The old computing cluster CORONA continues to function as before with 130 user accounts. The cluster 'Spacetime Supercomputing' facility consisting of 380 nodes built using the Intel quad core processors has been operational on the ground floor of the old Computer Science and Engineering Department building.

The installation of Building Management System (BMS) for the Spacetime HPCC facility has been undertaken to bring complete automation of the peripheral equipment. It is expected that the DG-Set together with the automation offered by BMS will provide a better and smoother operation of the HPCC facility in terms of reducing the possibility of hardware failures and data being lost due to unexpected power failures. Enhancement of data storage facility is being undertaken, to improve the SAN device performance and to address the increasing number of research groups using the Spacetime resources.

National Knowledge Network

IIT Bombay continued to be a member of the National Knowledge Network (NKN) during the year. This multi-gigabit network initiative started by the National Informatics Centre (NIC) is being used by CDEEP to

conduct distance education programmes. Staff from the Computer Centre also participated in the the national level meet of the NKN.

Grid Computing Facility GARUDA

The grid computing facility GARUDA is also supported by the Computer Centre allowing the users of the Institute to access the available resources on the National Grid.

Hardware/Software Infrastructure

All service offerings at the Computer Centre are based on OPEN SOURCE Software Systems. Computer Centre has registered as official mirror for various flavors of Linux Operating Systems on its anonymous FTP server which is available to the user community at large.

The Institute continues to be a member of Microsoft Developer Network Academic Alliance (MSDNAA) software licensing programme. This allows the user community to use most of the Microsoft software products in a non-production environment. Campus-wide license of AVG anti-virus software has also been in operation.

Software packages meant for scientific and technical computation such as ANSYS, MATLAB, MATHEMATICA, MAPLE, Dytran / NasTran / Partan, Tecplot and Libraries from Numerical Algorithm Groups (NAG), AutoCAD, Labview, OriginLab etc that are available through appropriate licenses schemes are procured, upgraded and administered by Computer Centre as per the requirements of the students, faculty, scientists and staff.

The Computer Centre encourages and has installed Open Source Software Systems for Office Automation in about 800 PCs deployed in the various Administrative sections of the Institute, which has eliminated the spread of computer virus on computers to a great extent.

The Computer Centre continues to play a secondary role by providing technical support to run the IP-based Security Surveillance Systems for the Security Section. The verifocal fixed direction IP (10/100 BaseT ethernet interface) cameras ‘for indoor use only’ (25 nos) have been installed at the entry points of various departments, Main Building and Convocation Hall to monitor and record human activities as well as object movements. Similarly verifocal fixed direction IP-based Day and Night cameras (10 nos) with IP66 certified ‘for outdoor use only’ installed at the Main Gate, Y-Point

Gate, and Lakeside Gate continue to monitor and record the inward and outward traffic movements of the campus.

PTZ IP Surveillance cameras (5 nos) having automatic Pan, Tilt, Zoom for 24/7 operation, PTZ control over network. minimum 270 degree Pan with auto flip and 180 degree tilt, Day and Night functionality with 0.5 lux in color, minimum 18x optical zoom, 12x digital zoom have been installed at the Guest House, Hostel 12 & 13, QIP Building and Ananta to keep an eye over the fencing of the campus.

The computer network set up by the Computer Centre enables the Electric Maintenance Division to monitor the Power Distribution Systems, check the status of various Lifts, functioning of UPS Systems, etc. in the Institute. The Telephone Exchange also runs few IP telephones (Voice over IP) using the computer network of the Institute.

Projects for the Near Future

Expansion planned for WiFi access: Steps are being taken towards smooth integration of all communications services (phones, cellular, TV and Internet). Process for providing additional 400 wireless access points for the academic for “blanket coverage”, 200 specialised APs (access points) for the classrooms, and 300 wireless access points in the common areas of hostels and open areas in cooperation with 4G service providers, have been planned for near future.

The HPC roadmap: Current infrastructure is about six years old and upgradation of this facility is planned in west wing on the Ground Floor of the Old CSE building.

Space for about 100 racks divided into three parts viz. Central HPC facility of the Institute; Data Centre for the Computer and backup services for the different services in IITB (mail servers of departments, data from ASC, IRCC, Academic Office, etc.); and Bring Your Own Hardware facility: Resources to house high performance computing hardware acquired by different research groups through their funding sources. These will be provided housing, power, cooling and networked access.

Email and storage: Following are some of the proposed facilities that would be available in the near future for email and storage.

- An integrated mail and calendar system for the Institute
- Extend IMAP service to all departments
- Increase storage allocation for email and BigHome.
- Lifetime email to alumni and all faculty/staff.

academic report

Admission offered at IIT Bombay for the following Programmes in 2013-14 are given below.

Ph.D. (Autumn+Spring)	-	493
M.Tech.	-	760
M.Mgt.	-	87
M.Des.	-	57
M.Phil.	-	17
M.Sc.-Ph.D. (Dual Degree)	-	39
M.Sc.-M.Tech. (Dual Degree)	-	6
M.Sc.	-	189
Dual Degree (B.Tech+M.Tech)	-	177
5 Yr. Int. M.Sc.	-	30
B.Tech.	-	666
Total		2521

At the 51st Annual Convocation held on 10th August 2013, **1810** degrees were awarded : B.Tech. - **439**, Dual Degree: (B.Tech. & M.Tech.) - **228**, M.Tech. - **561**, M.Sc. 2 year - **200**, M.Sc.-Ph.D. - **6**, 5 year Int. M.Sc. - **14**, M.Des. - **50**, M.Phil. - **10**, M.Mgt. - **117**, PGDIIT - **6** and Ph.D - **175**, MS (By Research) - **4**

Medals

The President of India Medal was awarded to **Chordia Sagar Sanjay**, and Institute Gold Medal was awarded to **Sisir Yalmanchili**, Silver Medalists were Dual Degree Programme:- **Abhilash Harpale**, Aerospace Engg.; **Chopade Sujay Anil**, Chemical Engg.; **Nikhil Mittal**, Civil Engg.; **Desai Sujay Bharat**, Electrical Engg.; **Sisir Yalmanchili**, Energy Science & Engg., **Sushrut Pande**, Mechanical Engg; **Rahil H Bharani**, Metallurgical Engg. and Materials Science; **Ashutosh Satishchandra N Rao**, Engineering Physics; Bachelor of Technology Programme:- **Shah Ankit Jayesh**, Aerospace Engg.; **Yamini Krishnan**, Chemical Engg; **Shikhar Rajendra Sethi**, Civil Engg; **Gopi Sivakanth**, Computer Science & Engg; **Udit Manoj Jalan**, Electrical Engineering; **Govindaraju Pavan Bharadwaj**, Mechanical Engg.; **Rushabh Shah**, Met.Engg. & Mat. Science; **Atreya Chatterjee**, Engineering Physics; Master of Science Programme: Chemistry- 2 yr. M.Sc- **Kartik Mallick**; 5 yr. Int. M.Sc.- **Krish Sunil Hirani**; Earth Sciences- Applied Geology- **Vivan Sorab**, Applied Geophysics- **Mohammad Anees**; School of Bioscience & Bioengg- Biotechnology- **Terse Vishram Laxman**; Mathematics- **Subhadra Dasgupta**, Applied & Stat. & Informatics- **Arushi Gambhir**; Physics- **Sourav Karar**.

STATEMENT SHOWING THE TYPES OF SCHOLARSHIPS, STIPEND AND FINANCIAL ASSISTANCE AWARDED TO THE B.TECH., DUAL DEGREE, M.Sc. (INTEGRATED) STUDENTS FOR THE YEAR 2012-13

Sr. No.	Types of Scholarships	Amount	No. of students
1.	The Insitute Merit-cum-Means scholarship with benefit of free tuition	Rs. 1,000/- for 10 months Rs. 50,000/- tuition fees per annum	803
2.	The facilities of free messing (only basic menu) to SC/ST	Basic Menu Bill plus pocket allowance of Rs. 250/- p.m & exemption from payment of Hostel Room Rent	381

IIT Bombay Heritage Fund Scholarship

Sr. No.	Name of the Scholarship	Sch. Amt.
1	Raman K.Rao Scholarship	10,000
2	Indira Manudhane Sch.	10,000
3	Miss. A.J.Majumdar sch.	10,000
4	Dr. G.V.Bakore Mem. Sch.	10,000
5	Dr. Vijaya Apte Mem. Sch.	10,000
6	T.R.S. Anand and Bhanumati Anand Sch.	10,000
7	Indira Manudhane Sch.	10,000
8	IIT Alumni at Microsoft Scholarship	10,000
9	IIT Alumni at Microsoft Scholarship	10,000
10	Mr.Badruddin Sonawala Sch.	10,000
11	David J.Dunn Sch.	10,000
12	Shri C.K.Apte Scholarship	10,000
13	Mrs. Minaz Sonawalla Sch.	10,000
14	Samir Shah-Prakash Peres Mem.Sch.	10,000
15	Nagesh C.Chaudhari Sch.	10,000
16	Mr. Kasamali Virani Sch.	10,000
17	Smt.Ila Chandrakant Sch.	10,000
18	Lionel J.D'Luna Sch.	10,000
19	Mr.S.J. &Mrs. S.S.Kulkarni Sch.	10,000
20	Mr. S.S.Shiralkar Sch.	10,000
21	Mr.Shantilal H.Goradia Sch.	10,000
22	Usha Purkayastha Sch.	10,000
23	Gajendra Chandra Malakar Sch.	10,000
24	IITBHF Scholarship	10,000
25	Himangshushekhar Purkayastha Sch.	10,000

Sr. No.	Name of the Scholarship	Sch. Amt.
26	Ashish Prasad Nandi Majumdar Sch.	10,000
27	Bibha Nandi Sch.	10,000
28	Prof.G.N.Revankar Sch.	10,000
29	Dr.Chandrakant Thanawala Sch.	10,000
30	George Tharakan Scholarship	10,000
31	Ruyintan E.Mehta Sch.	10,000
32	Ruyintan E.Mehta Sch.	10,000
33	Sandra Lee Purkayastha Sch.	10,000
34	IITB Alumni at Microsoft Scholarship	10,000
35	IITB Alumni at Microsoft Scholarship	10,000
36	IITB Alumni at Microsoft Scholarship	10,000
37	IITB Alumni at Microsoft Scholarship	10,000
38	Dwarka Nath Shuklo Baidya Sch.	10,000
39	Kumar & Susan Shah Scholarship	10,000
40	Subodh Ghonge Scholarship	10,000
41	Mr.G.M.Nabar Scholarship	10,000
42	Mr. & Mrs. Ranganathan Scholarship	10,000
43	Jayant Sathe Scholarship	10,000
44	Mr. Balkrishna K.Mundhe Scholarship	10,000
45	R.N. Limaye Scholarship	10,000
46	Manohar and Sunita Kamat Sch.	10,000
47	Manohar and Sunita Kamat Sch.	10,000
48	Prof.Mohan M.Kulkarni Sch	10,000
49	C. Vimla & M.R.K.Menon Sch	10,000

Sr. No.	Name of the Scholarship	Sch. Amt.
50	H.J.Talsania Scholarship	10,000
51	IITB Alumni at Microsoft Scholarship	10,000
52	additional contribution	10,000
53	Vidyadhar and Radhika Kulkarni Sch.	10,000
54	Burjor S. Dadybujror Scholarship	10,000
55	Dr. Kishor M. Kulkarni Scholarship	10,000
56	Abbas Bhatia/John A. Martin Jr. Sch	10,000
57	Kanitkar Scholarship	10,000
58	Prabhakaar D..Mahajan Scholarship	10,000
59	Rajesh Radhakrishnan Scholarship	10,000
60	Jagjivan Ujamshi Talsania Sch.	10,000
61	Vasant Himatlal Talsania Sch.	10,000
62	Anisbert & Kumarie Sequeria	10,000
63	Prabhakaar D. Mahajan Scholarship	10,000
64	Prabhakaar D. Mahajan Scholarship	10,000
65	Kanitkar Scholarship	10,000
66	Abraham Thomas Scholarship	10,000
67	Vidyadhar and Radhika Kulkarni Sch.	10,000
68	Virendra Kumar Scholarship	10,000
69	Aditya joshi Scholarship	10,000
70	Lata Vijaykar Scholarship	10,000
71	Abraham Thomas Scholarship	10,000
72	P.K.Seshambak Scholarship	10,000
73	Madho & Radha Agarwal Sch.	10,000
74	Suresh & Varsha Nihalani Sch.	10,000
75	Suresh & Varsha Nihalani Sch.	10,000

Sr. No.	Name of the Scholarship	Sch. Amt.
76	Subha & Anand Talwalkar Sch.	10,000
77	IITBHF Scholarships	10,000
78	IITBHF Scholarships	10,000
79	IITBHF Scholarships	10,000
80	IITBHF Scholarships	10,000
81	Abraham Thomas Scholarship	10,000
82	Mr. Roop Kumar Agarwal & Suraj Devi Agarwal Sch.	10,000
83	Dina Nath & Gayatri Nath	10,000
84	Dr. P. Ramadevi Menon Memorial Schol.	10,000
85	Deepak Kotwal (1970) Scholarship	10,000
86	Chamanlal and Labhkunar Kothary Schol.	10,000
87	Justin Bhansali Memorial Scholarship	10,000
88	Lakshmit and Kadayam Srinivasan sch.	10,000
89	Anonymous scholarship	10,000
90	Anonymous scholarship	10,000
91	Radha Rani Agarwal Merit Sch.	10,000
92	Anonymous scholarship	10,000
93	Anonymous scholarship	10,000
94	IITBHF Scholarship	10,000
95	Abhay Himatlal Talsania Sch.	10,000
96	Narendra Joshi Merit Scholarship	10,000
97	IITB Alumni at Microsoft Scholarship	10,000
98	IITB Alumni at Microsoft Scholarship	10,000
99	IITB Alumni at Microsoft Scholarship	10,000
100	S.Ramaritam Scholarship	10,000
101	Dilip R.Limaye Scholarship	10,000

Sr. No.	Name of the Scholarship	Sch. Amt.
102	Mrs. Jyotsna D.Pendse Merit Sch.	10,000
103	M. Radhakrishna Kamath Scholarship	10,000
104	Anonymous scholarship	10,000
105	Anonymous scholarship	10,000
106	Ele.Engg dept scholarship	10,000
107	Ele.Engg dept scholarship	10,000
108	Meneze Scholarship	10,000
109	Electrical Engg dept scholarship	10,000
110	Mukund Vijayakar Scholarship	10,000
111	Kumar and Susan Shah scholarship	10,000
112	Kumar and Susan Shah scholarship	10,000
113	IIT Alumni at Microsoft Scholarship	10,000
114	Ganesh Kundalkar Scholarship[1]	10,000
115	Ganesh Kundalkar Scholarship[2]	10,000
116	1970 Batch Legacy project Scholarship-1	10,000
117	1970 Batch Legacy project Scholarship-2	10,000
118	IITB Alumni at Microsoft Scholarship	10,000
119	IITBHF Scholarship	10,000
120	IITBHF Scholarship	10,000
121	Mukund Vijayakar Scholarship	10,000
122	Mukund Vijayakar Scholarship	10,000
123	Ravi and Asha Apte Scholarship	10,000
124	Anonymous	10,000
125	Balaji and Preeti srinivasan Scholarship	10,000

Sr. No.	Name of the Scholarship	Sch. Amt.
126	IITBHF Scholarship	10,000
127	Surendra K. Gupta Legacy scholarship	10,000
128	Gupta Family and ARC Scholarship	10,000
129	Surendra and Karen Gupta Scholarship	10,000
130	Devki & Bishan Chand Gupta Memorial Scholarship	10,000
131	Sitabai Datar Scholarship	10,000
132	Dr. Y.Srinivasa Rao Memorial Scholarship	10,000
133	Shree Ratnakar Haridwar Diwan Memorial Scholarships	10,000
134	Smt. Manik Ratnakar Diwan Memorial Scholarship	10,000
135	Ruyintan & Monica Mehta Scholarship	10,000
136	Ruyintan & Monica Mehta Scholarship	10,000
137	Prof. Madhav Garde Memorial Scholarship	10,000
138	Lata Vijaykar Scholarship	10,000
139	Lata Vijaykar Scholarship	10,000
140	Menezes Foundation Scholarship	10,000
141	Menezes Foundation Scholarship	10,000
142	Prof. M.V. Hariharan Scholarship	10,000
143	Soonu Dadyburjor Sch.	10,000
144	N.S.Rajaraman Scholarship	10,000
145	Vijaya Patil Scholarship	10,000
146	Mrs. Meenakshi Vishwanathan	10,000
147	Digamber and Nilima Scholarship	10,000
148	Shree Ratnakar Haridwar diwan Memorial Scholarships	10,000
149	IITBHF Scholarship	10,000

List of Scholarships/Fellowships

Government Fellowships/Scholarships

Sr. No.	Name of Fellowship/Scholarship	No. of Students	Monthly Fellowship
1.	(DAE) Board of Research in Nuclear Science (BRNS) : – M.Tech.	2	Rs. 20,000/-
2.	National Board of Higher Mathematics (NBHM) : Ph.D.	8	Rs. 18,000/-
3.	Atomic Energy Regulatory Board (AERB) : M.Tech.	2	Rs. 20,000/-
4.	Department of Biotechnology (DBT), Jr. Research Fellowship (JRF): Ph.D.	7 - JRF 3 - SRF	Rs. 16,000/- Rs. 18,000/-
5.	Indian Council of Medical Research (ICMR) : Ph.D.	4	Rs. 16,000/-
6.	ARCI: Ph.D.	1	Rs. 18,000/- Rs. 20,000/-
7.	DST-Inspire: Ph.D.	14 - B.Tech. 3 - M.Tech.	Rs. 16,000/- Rs. 18000/-
8.	DBT-Binc: Ph.D.	1	Rs. 16,000/-
9.	Maharashtra Pollution Control Board (MPCB) : (M.Tech.)	2	Rs. 8,000/-

Private Fellowships/Scholarships

Sr. No.	Name of Fellowship/Scholarship	No. of Students	Monthly Fellowship (in Rs)
1	Crompton Greaves: Ph.D.	9	Rs. 24,000/-
2	Microsoft Research India: Ph.D.	1	Rs. 16,000/-
3	Dr. Gargi Vishnoi Memorial Scholarship: M.Tech.	1	Rs. 2,000/-
4	IITB Monash	JRF-43 SRF-34	Rs. 25,000/- Rs. 27,000/-
5	AREVA	1	Rs. 32,000/-
6	DBT-TWAS (Foriegn National)	1	Rs. 16,000/-

**Financial Assistance to Postgraduate students Research Scholars/M.Tech./M.Des./M.Phil.
and M.Sc. (2-Year Programme Students)**

Sr. No.	Type of Scholarship	Year/ JRF/SRF	Amount per month	No. of students	
				Institute Schp.	Other Schp. (RA)
1.	Institute Teaching Asistantship * (Ph.D) (*Revised w.e.f. 01.04.07)	I & II Year JRF	Rs. 16,000/-	88	06
		III, IV & V Year SRF	Rs. 18,000/-	56	10
		I & II JRF	Rs. 18,000/-	189	02
		III & IV SRF	Rs. 20,000/-	107	01
2.	Postgraduate Assistantship to:-				
	M.Tech. Students (2 yr. programme)	I year	Rs. 8,000/-	424	80
		II year	Rs. 8,000/-	493	84
	M.Des. Students (2 yr. programme)	I year	Rs. 8,000/-	55	---
		II year	Rs. 8,000/-	53	---
	M.Phil. Students (2 yr. programme)	I year	Rs. 8,000/-	07	---
		II year	Rs. 8,000/-	11	---
3.	CSIR Fellowship to:-				
	Ph.D Students	JRF	Rs. 16,000/-	50	---
		SRF	Rs. 18,000/-	173	---
	M.Sc. + Ph.D. Dual Degree	JRF	Rs. 16,000/-	4	---
	M.Tech. + Ph.D. Dual Degree	JRF	Rs. 16,000/-	3	---
	Shyama Prasad Mukherjee Fellowship	JRF	Rs. 20,000/-	5	---
		SRF	Rs. 24,000/-	1	---
4.	QIP Scholarship to:-				
	M.Tech. Students	I year	Rs. 4,000/-	4	---
		II year		7	---
	Ph.D. Students		Rs. 9,000/-	33	---
5.	UGC Scholarship to:-				
	Ph.D. Students	JRF-HSS	Rs. 16,000/-	82	---
		SRF-HSS	Rs. 18,000/-	65	---
	M.Phil. students	JRF	Rs. 16,000/-	2	---

Sr. No.	Type of Scholarship	Year/ JRF/SRF	Amount per month	No. of students	
				Institute Schp.	Other Schp. (RA)
6.	UGC – Engg. & Tech.	JRF	Rs. 18,000/-	7	---
		SRF	Rs. 20,000/-	1	---
7.	UGC – M.Sc + Ph.D		Rs. 16,000/-	2	---
8.	Rajiv Gandhi National Fellowship (For ST)	JRF	Rs. 16,000/-	1	---

Sr.	Roll No.	Name	Thesis Title	Supervisor / Co-Supervisor / External Supervisor
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RECIPIENTS OF THE DEGREE OF DOCTOR OF PHILOSOPHY

Department: Aerospace Engineering

1.	6401001	D. Siva Krishna Reddy	Effect of Chemical Reaction Rates on Aero-heating Prediction in Re-entry Flows.	Prof. Krishnendu Sinha Prof. Viren Menezes
2	8401003	Mohammad Akram Rafiuddin	Measurement of Laminar Burning Velocity of Fuel-Air Mixtures at Elevated Temperatures Using Preheated Meso-Scale Diverging Channels.	Prof. Sudarshan Kumar
3	5401801	Hemant R. Sonawane	Infrared Signature Suppression and Susceptibility Studies of Aircraft.	Prof. S. P. Mahulikar
4	7401004	Sonawane Chandrakant Rameshchandra	Steady /Unsteady Incompressible Flow Computations over Static and Moving Grids.	Prof. Mandal J.C.
5	8401004	Vanteru Mahendra Reddy	Flameless Combustion with Liquid Fuels.	Prof. Sudarshan Kumar
6	6401701	Ramkrishna Suryanarayanmurthy Dinavahi	Optimal Force Inputs for Environmental Vibration Testing of Full Scale Slender Aerospace Vehicles.	Prof. Joshi Ashok Prof. Mujumdar P. M. Dr. Y. Krishna
7	6401004	Murugan K.N.	Aeroacoustic Characteristics of Compressible Subsonic Elliptical Jets.	Prof. Sharma S.D. Prof. Avijit Chatterjee

Department : Chemical Engineering

1	6402601	Saptarshi Chattopadhyay	Aerodynamic Properties and Integrity of Nanometer Sized Liposome During Aerosolisation	Prof. Chandra V. Prof. Bellare J.
2	6402009	Amit Dhruvkishore Saran	Quantum Rods and Dots: Green Synthesis, Quantum Modeling and Applications in Biosensing, Cell-Differentiation and Non-Linear Optics	Prof. Bellare J. Prof. Mehra A.
3	5402707	Samik Nag	Blast Furnace Burden Distribution Based on Physical and Mathematical Models	Prof. Khakhar D.V. Debashish Bhattacharjee
4	7402012	Amol Ashok Pawar	Aerosol Synthesis of Nanoparticles with Controlled Properties for Drug Delivery	Prof. Chandra V
5	6402603	Rajkumar Subhash Patil	Studies in Dynamics of Electrode-Electrolyte Interfaces	Prof. Juvekar V.A. Prof. Rochish Thaokar
6	7402605	(Ms) Priya Gambhire	Electrohydrodynamic Instabilities at Fluid-Fluid Interfaces	Prof. Rochish Thaokar

Sr.	Roll No.	Name	Thesis Title	Supervisor / Co-Supervisor / External Supervisor
7	7402602	(Ms) Patil Yogita Prabhakar	Giant Vesicle Extrusion Through Nanopores for Preparation of Liposomes Used in Drug Delivery	Prof. Sameer Ralph Jadhav
8	8402405	Siddharth Gadkari	Viscous Jets and Filaments in Electric Fields: Stability Analysis and Role of Viscoelasticity	Prof. Rochish Thaokar Prof. P.Sunthar
9	6402602	Prashant Satish Chikramane	Homeopathy and Nanomedicine: A Rigorous Scientific Study of Super-Avogadro Dilutions	Prof. Bellare J. Prof. Suresh A.K.
10	6402705	Rajesh Kumar	Reactive Stripping for the Catalytic Exchange of Hydrogen Isotopes	Prof. Sanjay Mahajani Dr. Sadhana Mohan
Department : Chemistry				
1	8403309	Amit Das	Mixed Valency and Electronic Structures of Ruthenium Complexes of Redox Non-Innocent Ligands	Prof. Goutam K. Lahiri
2	8403323	(Ms) Sinjan Choudhary	Biophysical Studies on Drug-Protein Interactions, Protein Folding Intermediates and Protein-Solvent Interactions	Prof. Nand Kishore
3	5403313	Kalanidhi Palanichamy	Synthetic Studies on Platencin, N-Methylwelwitindolinone C, Cu-Catalyzed Cycloadditions and Sugar-Quinone Based Nucleosides	Prof. Kaliappan K P
4	7403009	Arunasish Layek	Synthesis, Carrier Recombination, and Spectrally Resolved Photoluminescence Imaging of Individual Semiconductor Nanocrystals	Prof. A.Chowdhury
5	7403309	E. Siva Subramaniam Iyer	Proton Transfer Dynamics in Nanochannels of Nafion	Prof. A. Datta
6	6403322	Suman De	Optoelectronic Properties of Spontaneously formed Individual Luminescent Domains in InGaN/ GaN Quantum Well based Light Emitting Diodes	Prof. A.Chowdhury
7	7403001	(Ms) Rama Kanwar Khangarot	Synthetic Utility of Sugar-Derived Cyclic Nitrones	Prof. Kaliappan K P
8	8403330	(Ms) Dipanwita De	Proton Transfer and Solvation Dynamics in Surfactant Assemblies, Proteins and Protein-Surfactant Aggregates	Prof. A. Datta

Sr.	Roll No.	Name	Thesis Title	Supervisor / Co-Supervisor / External Supervisor
9	6403325	(Ms) Susmita Naik	Bi-, Tri-, Tetra- and Pentadentate Phosphorous (III)-Based Amino (phosphine / phosphonite) Ligands: Synthesis, Reactivity and Transition Metal Chemistry	Prof. M. S. Balakrishna
10	5403004	(Ms) Nimita Gopal Krishna	Diversity-Oriented Approach towards Constrained Alpha-Amino Acid Derivatives and Biologically Relevant Molecules	Prof. Sambasivarao Kotha
11	7403003	(Ms) Debjani Si	Synthetic Studies on Cladospolides, Discodermolide and Dolabriferol	Prof. Kaliappan K P
12	7403011	Arghya Dey	Hydrogen Bonding in Fluorine Substituted Aromatic Molecules : Spectroscopic and ab initio Investigation	Prof. G. Naresh Patwari
13	7403602	Avijit Ghosh	Synthesis and Studies of Metalloporphyrins, Metalloporphyrin Arrays and Phosphorus(V) Corroles	Prof. M. Ravikanth
14	4403304	(Ms) Arti Tiwari	Design and Synthesis of Spirocyclics, Propellanes, and Cyclophanes via Olefin Metathesis	Prof. Sambasivarao Kotha
15	6403320	Pawan Kumar	Phosphorus (III) Based Pincer and Hemilabile Ligands: Synthesis and Transition Metal Chemistry	Prof. M. S. Balakrishna
16	7403701	Jayaraman D.	Molecular Hosts for the Recognition of Ions and Molecules: Synthesis, Characterization and Binding Studies.	Prof. C. P. Rao Dr. S. Krishnamohan
17	7403312	Badri Nath Jha	Role of iron pentacarbonyl in transformation of acetylenes to N, O and Te containing five membered heterocycles and some other organic molecules	Prof. P. Mathur
18	7403313	Radhe Shyam Ji	Reactions of ferrocenylacetylene, 1-ferrocenyl-4-phenyl-1, 3-butadiyne and 1,1'-bis(trimethylsilylethynyl) ferrocene with metal carbonyls and in presence of sulfur, CS ₂ and P ₄ S ₁₀	Prof. P. Mathur
19	7403302	Dhirendra Kumar Rai	Reactions of group VIII metal carbonyl complexes and clusters with phenylethynyl, phosphorus and formyl substituted ferrocenylacetylenes	Prof. P. Mathur
20	6403326	Asim Kumar Chowdhury	Strategic Utility of Orthoester Claisen Rearrangement of Vicinal Diol Based Allyl Alcohols in Stereoselective Synthesis of Natural Products	Prof. Rodney Fernandes

Sr.	Roll No.	Name	Thesis Title	Supervisor / Co-Supervisor / External Supervisor
21	7403305	Chavan Vijay Prakash	Synthetic Studies on Juglomycins, Pyranonaphthoquinones and Asteriscunolides	Prof. Rodney Fernandes
22	9403801	(Ms) Sowmya	Phosphorus (III) Based Multidentate Ligands with Ferrocenyl backbone : Syntheses, Organometallic Chemistry and Catalytic Studies	Prof. M. S. Balakrishna
23	8403604	(Ms) Yogita Pareek	Porphyrin, Mettalloporphyrin and Expanded Porphyrin Based Arrays and New Core-Modified Expanded Benziporphyrins	Prof. M. Ravikanth
Department : Civil Engineering				
1	7404702	Dhirendra Kumar Jha	Stress Analysis and Free Vibration of Functionally Graded Plates with Higher Order Shear and Normal Deformations Theories.	Prof. Kant Tarun
2	9404303	Snehalkumar Vasantlal Mevada	Seismic Response Control of Asymmetric Buildings.	Prof. Jangid R.S.
3	8404703	Jaykumar Chandrakant Shukla	Seismic Hazard Estimation and Ground Response Analysis for Gujarat Region.	Prof. Choudhury Deepankar Prof. D L Shah
4	8404003	(Ms) Poulomi Ganguli	Multivariate Frequency Analysis and Predictive Uncertainty Assessment of Droughts using Copulas.	Prof. M.J.Reddy
5	9404003	Jagabandhu Dixit	Spatial Distribution of Free-Field Motion and Liquefaction Potential at Mumbai City.	Prof. Dewaikar D.M. Prof. Jangid R.S.
6	9404604	Venkata Uday Kala	Cracking Characteristics of Fine-Grained Soils.	Prof. Singh D.N.
7	8404802	Sunil Mahadeorao Rangari	Seismic Uplift Capacities of Horizontal and Inclined Strip Anchors in Cohesionless Soil.	Prof. Choudhury Deepankar Prof. Dewaikar D.M.
8	7404004	Trudeep Nitinchandra Dave	Performance Evaluation of EPS Geofoam Inclusion to Reduce Static and Dynamic Earth Pressures on Rigid Retaining Walls.	Prof. S. Dasaka Murthy
9	8404302	Pronab Roy	Reliability-Based Code Calibration for Nuclear Pipe Bends.	Prof. Ghosh Siddhartha
10	9404011	Kadali Srinivas	Laboratory Simulation of Soil-Contaminant Interaction.	Prof. Singh D.N.

Sr.	Roll No.	Name	Thesis Title	Supervisor / Co-Supervisor / External Supervisor
11	9404802	(Ms) Asha B. S.	Performance Studies of Natural Prefabricated Vertical Drains in Ground Improvement.	Prof. Mandal J.N.
12	7404203	Gokarna Bahadur Motra	Optimal Control of Seismically Excited Building Connected by Magnetorheological Dampers.	Prof. N.K.Chandiramani
13	8404801	Shirish Shivaji Vichare	Mechanics Across Length Scales: Three Case Studies in Solid Mechanics.	Prof. M.M.Inamdar
Department : Computer Science and Engineering				
1	8405001	Mitesh Manmal Khapra	Reusing Resources for Multilingual Computation.	Prof. Bhattacharya P.
2	4405703	Manish Anand Bhide	Efficient Execution of Category based Queries over Dynamic Data.	Prof. Ramamritham Krithi Dr.Prasan Roy
3	3405002	Manish Shrivastava	Harnessing Morphology for Part-of-Speech Tagging of Hindi.	Prof. Bhattacharya P.
4	5429701	Manuj Sharma	Dynamic Spectrum Access in Wireless Networks Based on Stochastic Models	Prof. A.Sahoo
5	6429801	(Ms) M. Vijayalakshmi	Design of a Multifaceted Forecast Engine.	Prof. B. L. Menezes
6	9405003	Gabale Vijay Purushottam	A Low Cost Low Power Wireless Network to Enable Voice Communication in Developing Regions.	Prof. Bhaskar Raman Prof. Kameswari Chebrolu
7	4429802	(Ms) Madhumita Anjan Chatterjee	Policy Based Framework for Trust Management and Evolution of Peer to Peer Groups	Prof. B. L. Menezes Prof. Sivakumar G.
8	7405006	Ladha Shamsuddin Nasiruddin	Visually Appealing and Intelligent Projection with Natural Interaction.	Prof. Sharat Chandran Prof. Kate Smith-Miles
9	7405008	Soumitra Kumar Pal	Scheduling Light-trails on WDM Paths and Rings: An Application of Component Coloring of Graphs.	Prof. Ranade A.
Department : Earth Sciences				
1	4406301	Archisman Sen	40 Ar/ 39 Ar Geochronology and Geochemistry of the Sindreh and Tavidar Volcanics of Southern Rajasthan.	Prof. Pande Kanchan Prof. Sheth C Hetu
2	9406004	(Ms) Pooja Vinod Kshirsagar	Volcanology and Petrology of Deccan Magmatism in Parts of Kachchh, Saurashtra and Mumbai.	Prof. Sheth C Hetu

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3	9406402	Vikram Vishal	An Investigation on Carbon Dioxide Sequestration in Indian Coal Seams.	Prof. Singh Trilok Nath
4	6406001	Venkata Praveen Kumar Kunagu	External Source Field Characterization and Electromagnetic Induction Response of the Deep Earth using CHAMP Satellite Magnetic Data.	Prof. E. Chandrasekhar
5	9406605	(Ms) Twinkle Damodharan	Delineation of Crustal Structure in the Bay of Bengal and Adjoining Eastern Continental Margin of India based on Integrated Analysis of Geophysical Data.	Prof. M. Radhakrishna
6	7406002	(Ms) Nithya M	Application of Imaging Spectroscopy and Thermal Inertial Studies in Mineral Exploration and Lithological Discrimination: An Investigation from Mamandur Polymetal Prospect, Tamil Nadu, India.	Prof. D. Ramakrishnan
7	10406602	Sundaralingam K	Strain Analysis, Kinematic Interpretation and Tectonic Evolution of Salem-Attur Shear Zone around Salem, Tamil Nadu, India.	Prof. Biswal T.K.
8	7406701	V. R. Balasubramaniam	Surface and Cross-hole Tomography Investigations using Step Frequency Ground Penetrating Radar for Near Surface Imaging.	Prof. E. Chandrasekhar
Department : Electrical Engineering				
1	5407009	Navan Ramesh Raju	Fabrication, Characterization and Simulation of Organic Transistors and Circuits.	Prof. Rao Ramagopal Prof. M.Shojaii Baghini
2	7407008	Sunil Hiro Karamchandani	tuPOY: Thermally Unstable Intelligent Textile Through n-Polymerization and Esterification for Sensing and Radiating Applications.	Prof. Desai U.B. Prof. Merchant S N
3	8407301	Thumar Vinaykumar Mohanlal	Resource Allocation in OFDM Based Cognitive Radio Networks	Prof. Desai U.B. Prof. Merchant S N
4	5407401	(Ms) Veena Karjigi	Segment based Classification of Place of Articulation in Unvoiced Stops.	Prof. Preeti Rao
5	7407007	Debasattam Pal	Algebro-Geometric Analysis of Multidimensional (n-D) Systems.	Prof. Pillai Harish
6	407304	Parveen Kumar	Spectral Mapping Using Multivariate Polynomial Modeling for Voice Conversion.	Prof. Pandey P.C.

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7	5407802	(Ms) Ranjan Bala Jain	On Tele-Traffic Analysis in OFDMA based Cellular Wireless System.	Prof. Karandikar Abhay
8	8407608	Save Yogesh Dilip	Solution of Network Coupled Partial Differential Equations Through Electrical Analogy.	Prof. Narayanan H. Prof. Patkar Sachin
9	7407702	Navalkar Prashant Vithal	Phasor Measurement Unit Based Linear State Estimator - Diagnostics and Application to Secure Remote Backup Protection of Transmission Lines.	Prof. Soman S.A.
10	6407803	Qutubuddin Saiffee	New Results and Design Approaches in Three-Dimensional Multirate Systems.	Prof. Gadre V.M.
11	8407009	Sandeep Anand	Interface Circuits and Controllers for Effective Utilization of Solar Photovoltaics	Prof. Fernandes B.G.
12	8407601	Raval Harshil Narendrabhai	Organic Semiconducting Materials and Devices for Ionizing Radiation Dosimetry Applications.	Prof. Rao Ramagopal
13	6407013	Sree Raj E.S.	Design of Isolated Renewable Hybrid Power System and Control of its Selected Components.	Prof. Chatterjee Kishore Prof. Bandyopadhyay Santanu
14	6407702	Joshi Rajesh Bhalchandra	A Novel Architecture for End-to-end QoS Over Internet	Prof. Girish Saraph
15	8407008	(Ms) Rallabandi Vandana Prabhakar	Segmented Rotor Switched Reluctance Motors for Electric Vehicle Applications.	Prof. Fernandes B.G.
16	8407602	Suresh Gundapaneni	Investigation of Junction-Less Transistor (JLT) for CMOS Scaling.	Prof. Anil K.G Prof. Swaroop Ganguly
17	8407402	Amit Bakshi	Application of Analytical and Numerical Techniques for Determining Short-Circuit Strength of Windings in Large Power Transformers.	Prof. Kulkarni S V
18	6407004	(Ms) Marshnil Dave	Design and Analysis of Energy-Efficient Signaling Schemes for Long On-Chip Wires	Prof. Sharma Dinesh Prof. M.Shojaei Baghini
19	7407801	Nukala N V Surendra Babu	Cascaded Two Level Inverter based Multilevel STATCOM.	Prof. Fernandes B.G.
20	9407302	Sreeni K G	Point Cloud Rendering for Haptic Applications.	Prof. Chaudhuri Subhasis
21	9407601	(Ms) M R Renu	Selection of Prior and Convergence Analysis of Iterative Methods for Blind Deconvolution.	Prof. Chaudhuri Subhasis Prof. V Raj Babu

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Department : Humanities and Social Sciences

1	9408803	(Ms) Ajotikar Anuja Prabhakar	Issues in Nominal Declension in Traditional Sanskrit Grammars with Special Reference to 1st person and 2nd person pronouns.	Prof. Kulkarni A Malhar
2	5408704	(Ms) Ravula Padmaja	Mapping the Social Network Architecture of Rural Communities : Gender and Technological Innovations in the Semi-Arid Tropics of India.	Prof. Parthasarathy D. Ma. Cynthia S. Bantilan
3	7408003	(Ms) Mohita Junnarkar	An Investigation into Eyewitness Testimony in Indian Context : An Empirical Investigation.	Prof. A. Khan
4	6408001	(Ms) Hunnargikar Leena Vijaykumar	Nature of Svarita Accent: An Empirical View of Study.	Prof. Kulkarni A Malhar
5	6408808	Dinesh Mohan Joshi	A Critical Study of Golasara of Nilakantha Somayaji	Prof. K. Ramasubramanian
6	6408007	(Ms) Merin Simi Raj	Literary Historiography of Indian English Fiction : A Critical Examination.	Prof. Sharmila
7	7408803	Santosh Kumar Sahu	Economics of Energy Use in Indian Industries.	Prof. Narayanan K.
8	4408004	(Ms) Debashree Chatterjee Sanyal	Technical Efficiency and Agglomeration : Analysis of Organised Manufacturing Sector in India.	Prof. Trivedi Pushpa
9	5408701	(Ms) Atri Mukherjee	Regional Inequality in FDI Flows to India - A State Level Analysis.	Prof. Ramanathan A Dr. Rajiv Ranjan

Department : Mathematics

1	4409003	(Ms) Sushmita Jain	Aspects of Ranking and Selection in Bivariate Exponential and Uniform Distributions	Prof. Subramanyam A.
2	7409304	(Ms) Saumya Bajpai	Finite Element Galerkin Methods for Equations of Motion Arising in the Kelvin-Voigt Model	Prof. Pani A.K. Prof. Nataraj Neela
3	8409301	(Ms) Masuti Shreedevi Kalyani Uma	Normal Hilbert Coefficients and Bigraded Rees Algebras	Prof. Verma J.K.
4	7409001	Akshay Sakhambar Rane	Asymptotic Error Analysis of Numerical Solutions of Fredholm Integral Equations with Greens Function-type Kernels and of Associated Eigenvalue Problems	Prof. Kulkarni Rekha P. Prof. Limaye B.V.

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Department : Mechanical Engineering				
1	5310033	Gada Vinesh Harakhchand	A Novel Level-set based CMFD Methodology in 2D/3D Cartesian and Cylindrical Coordinates and its Application for Analysis of Stratified-Flow and Film-Boiling.	Prof. Sharma Atul
2	8410001	Vivek Bajpai	Characterization and Modeling of Pyrolytic Carbon Micromachining for Creation of Engineered Features.	Prof. R.K.Singh
3	7410801	Prasad Kaushalkumar Kamaleshwar	CFD Study on Channel - Confined Flow Across Single and Unconfined Flow Across Three Rows of Cylinder.	Prof. Sharma Atul Prof. Amit Agrawal
4	1410303	Aboobacker Kadengal	Scaling and Modelling of Two-Phase Natural Circulation Boiling System Instabilities.	Prof. Iyer Kannan N.
5	8410006	Siddapureddy Sudheer	Characterization of Open Pool Fires and Study of Heat Transfer in Bodies Engulfed in Pool Fires.	Prof. Prabhu S V
6	8410003	Jagad Pankaj Ishwarlal	An Unstructured Mesh Finite Volume Methodology for Conjugate Heat Transfer and Fluid-Structure Interaction Problems.	Prof. Bhalchandra Puranik Prof. Date A.W.
7	8410702	Arshad Alam Mohd. Ismail Syed	Numerical Modeling and Experimental Studies in Gas Metal ARC Welding Process.	Prof. De Amitava Dr. A. Samanta
8	8410401	Mayurkumar Pravinchandra Sutaria	Casting Solidification Feed-paths: Mathematical Modelling, Computation and Application.	Prof. Ravi B.
9	9410002	(Ms) Vinaya Dinesh Pratibha Manvatkar	An Experimental and Numerical Investigation on Laser Engineered Net Shaping (LENS) Process.	Prof. De Amitava
10	6410701	Adarsh Kumar Dureja	Thermo-Mechanical Analysis of Coolant Channels for Heavy Water Reactors under Accident Conditions.	Prof. D.N. Pawaskar Prof. Seshu P.
Department : Metallurgical Engineering and Materials Science				
1	3411703	Arijit Laik	Metal-Ceramic Joining and Interfacial Reactions in Alumina-Inconel and Alumina -Stainless Steel Systems.	Prof. Kashyap B.P. Dr.G.B. Kale
2	7411007	Biradar Nagendrappa S.	Effect of Transverse Mechanical Arc Oscillation on Solidification and Liquation Cracking Tendencies in TIG Welds of AA2014 T6 and AA6061 T6 Alloys.	Prof. Raman R. Prof. S.Mishra

Sr.	Roll No.	Name	Thesis Title	Supervisor / Co-Supervisor / External Supervisor
3	6411004	(Ms) Preeti Bajpai	Processing of Glass Infiltrated Alumina Based Ceramics for Prosthodontics.	Prof. Parag Bhargava
4	6411009	Ritwik Basu	Ni-Ti Shape Memory Alloys: Microstructural Developments during Processing and their Effect on Recoverable Strain.	Prof. Prita Pant
5	6411005	Surendra Kumar Soni	Study of HWCVD a-Si:H and uc-Si:H Thin Films for Application in Solar Cells.	Prof. Dusane Rajiv O.
6	6411006	Nagsen Pandurangji Meshram	Synthesis and Characterization of Silicon Nanowires using Hot Wire Chemical Vapor Process (HWCVP).	Prof. Dusane Rajiv O.
7	7411005	Chaudhari Pradip Girdhar	Development of HW-CVD Boron Carbide Thin Films from Ortho-Carborane for Neutron Detection Application.	Prof. Dusane Rajiv O.
8	7411301	Sharanabasappa B. Patil	Approaches for Deagglomeration of Yttria Partially Stabilized Zirconia Nanopowders.	Prof. Parag Bhargava
9	9416401	(Ms) Gunjan Gupta	Development of Corrosion Resistant Conducting Polymer Coatings for Aircraft Applications.	Prof. Khanna A. S. Dr. Nick Birbillis
10	7411303	More Shahaji Bhimrao	a-Si:H/c-Si Interface Study for Development of Heterojunction Silicon Solar Cells using Hot-Wire CVD Technique.	Prof. Dusane Rajiv O.
11	8411702	Nirav Ishwarlal Jamnapara	Development of Aluminized Coatings on P91 Steels for Pb-Li Environment in Fusion Reactors.	Prof. Khanna A. S. Dr. S. Mukherjee
12	8411003	Brajesh Kumar Jha	Development of Drag Reduction Technology for Water Pipelines using Water Soluble High Molecular Weight Polymers.	Prof. Khanna A. S.
13	6411702	Prasanta Kumar Ojha	Investigation on Composition-Dependant Thermophysical Behaviour of Modified Borosilicate Glasses as Sealant for Solid Oxide Fuel Cell.	Prof. Kulkarni Ajit R.T. K. Chongdar
14	7411801	Shinde Vasudev Dhondiram	Effect of Process Parameters on Microstructure and Mechanical Properties of Varying Thickness Ductile Iron Castings.	Prof. Narsimhan K. Prof. Ravi B.

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Department : Physics				
1	6412801	(Ms) Archana Sharma	ZnO Nanoparticles: Effect of Surface on the Structural and Optical Properties	Prof. S. Dhar
2	3412301	(Ms) Padmaja Patnaik	Study of Defect States in Silicon Carbide	Prof. Mukhopadhyay G. Prof. Singh P.P.
3	8412702	Dasary Mary Raj Kumar	Microstructural, Magnetic and Magnetocaloric Studies in Gd-Si-Ge and Ni-Mn-In Based Alloys	Prof. Suresh K.G. Dr. M. Manivel Raja
4	7412603	Santidan Biswas	Phase Field Studies of Polycrystalline Materials and Nonlinear Dynamics of Excitable Systems	Prof. Anirban Sain
5	7412005	Ravi S. Manohar	Generalized Parton Distributions for Protons in Position Space	Prof. Asmita Mukherjee Pankaj Jain
6	8412601	Satyajit Jena	Study of Net-Charge Fluctuations in ALICE at LHC	Prof. B Nandi Prof. Varma Raghava
Department : Industrial Design Centre				
1	6413802	Parag Vyas	A Study of Smallest Semantic Units and Patterns that Influence User Preferences in Kundan Jewellery	Prof. Bapat V.P.
2	6413002	Sachin Datt	Epistemological Narrative Framework: A Narrative Based Approach for Designing Secondary School Science Content	Prof. Poovaiah Ravi
3	6413804	(Ms) Aneesha Sharma	“The “Phenomenon of Letting Go” in Visual Arts and Design: An Exploration into Self - Transformative Creative Experiences”	Prof. Poovaiah Ravi Sangeetha Menon
4	8413701	Pramod Sadashiv Khambete	Designing Desirable Service Experience: A Pattern Language Framework from Touch Point Ecosystem Perspective	Prof. Athavankar Uday A.
5	7413001	Bokil Prasad Prakash	Knowledge Representation of Grids in Graphic Design and its Application for Analogy-based Design	Prof. Shilpa Ranade
Department : Corrosion Science & Engineering				
1	8416601	(Ms) Narayani Rajagopalan Radha	Effect of Weathering on Polymer Degradation.	Prof. Khanna A. S.
Department : Energy Science and Engineering				
1	7417802	Aneesh Chintaman Gangal	Ammonia Borane as Hydrogen Storage Material.	Prof. Pratibha Sharma

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2	4417701	Naveen Kumar	Investigations on Start-Up of Natural Circulation Systems.	Prof. Iyer Kannan N. Prof. Doshi J.B.
3	9417301	Sudhansu Sekhar Sahoo	Heat Transfer Modelling and Analysis of Cavity Receiver Used in Linear Fresnel Reflector Solar Thermal System.	Prof. Suneet Singh Prof. Banerjee Rangan
Department : Centre for Environmental Science & Engineering				
1	7418803	Raj Kumar Pathak	Biosorption of Atrazine from Wastewater	Prof. A.K.Dikshit
2	9418301	Lokeshappa B.	Speciation and Transformation of Metals in Coal Fly Ash	Prof. A.K.Dikshit
3	8418002	Kalbar Pradip Pandurang	Life Cycle Based Decision Support Tool for Selection of Wastewater Treatment Alternatives	Prof. S.R.Asolekar Prof. Subhankar Karmakar
4	5418602	Bharat Lodha	Studies on Coupled Chemical-Biological Treatment Systems for Mineralization of Dyes	Prof. Sanjeev Chaudhari
5	6418801	(Ms) Gangamma S.	Airborne Bacteria and Endotoxin in Wastewater Treatment Plants in Mumbai: Characteristics and Associated Health Effects	Prof. R.S.Patil Prof. Suparna Mukherji
Department : Reliability Engineering				
1	7422002	Mrinmoy Mandal	Fabrication and Characterization of Multiferroic Nanodevices.	Prof. S. Duttagupta Prof. V R. Palkar
2	5422001	(Ms) Mallika Sreedharan	Reliability Considerations in Analysis of Underground Circular Openings subjected to Squeezing and Seismic Effects.	Prof. Venkatachalam G. Prof. (Ms.) A. Srividya
Department : Systems and Control Engineering				
1	4423001	Vishwesh Anant Vyawahare	Fractional-order Modeling of a Nuclear Reactor with Slab Geometry	Prof. Nataraj P.S.V.
2	2423803	Bhuptani Nilay Natvarlal	Robust and Predictive Control Approach for a Network Control System with Communication Outages and Variable Delays.	Prof. Khosla N.K. Prof. K. Arya
3	7323002	Harsha Simha M.S.	Control Issues in a Dielectrophoretic System	Prof. Banavar R.N.
4	7423002	Patil Bhagyesh Vijay	Global Optimization of Polynomial Mixed-Integer Nonlinear Problems using the Bernstein Form	Prof. Nataraj P.S.V.

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5	7423801	Patil Mukesh Damu	ICST based Automated Synthesis of Integer and Fractional-order Controllers and Prefilters for SISO and MIMO Systems	Prof. Nataraj P.S.V.
Department : Shailesh J. Mehta School of Management Specialization :				
1	8427005	Sasadhar Bera	Multistage Multiple Response Manufacturing Process Optimization	Prof. Indrajit Mukherjee
2	7427501	Arumugam V.	Technology Transfer from Indian Academic and Research Institutions to Industry	Prof. Karuna Jain
3	7427001	Mukundan R.	Study of Linkages Between Innovation and Intellectual Property	Prof. Karuna Jain Prof. Jha Shishir Kumar
4	8427001	(Ms) Ruchita Gupta	Diffusion of Mobile Telephony in India : An Empirical Study	Prof. Karuna Jain
5	8427801	Mehul Ashokbhai Raithatha	Financial Reporting by Indian Companies : Disclosures Required by Accounting Standards	Prof. Varadraj B. Bapat
Department : Biosciences & Bioengineering				
1	4430803	Pandya Utpal Tarunkumar	Body Area Network for Vital Sign Monitoring - A System Building Approach.	Prof. Desai U.B.
2	7430007	Pinaki Pramathadhip Misra	Biophysical Studies on Protein Folding, Intermediates and Biomolecular Interactions.	Prof. Nand Kishore
3	6430008	(Ms) Meghna Rajvanshi	Phenotypic Characterization of <i>Corynebacterium Glutamicum</i> under different Media conditions using Elementary Modes.	Prof. Venkatesh K.V.
4	6430010	(Ms) Bhavya Jindal	Understanding Assembly Dynamics of Bacterial Cell Division Protein FtsZ and its Interaction with a Regulator UgtP	Prof. D. Panda Prof. P.V.Balaji
5	7430306	Rahul Dileep Chaudhari	In vivo Functional Characterization of Glutathione Peroxidase from <i>Plasmodium falciparum</i>	Prof. Patankar Swati
6	7430304	Amit Kumar Jaiswal	Electrospun Nanofibrous Composite Biomaterials for Bone Regeneration.	Prof. Bellare J. Prof. Soni Vivek
7	5430006	Nitin Sagar	Compliant and Resorbable Scaffolds based on Hydroxyapatite, Carboxymethyl Chitin and Gelatin for Bone Tissue Engineering.	Prof. Bellare J. Prof. Soni Vivek

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8	6430301	(Ms) Vanita Uppada	Characterization of Fermentative Pathway in <i>Komagataella pastoris</i> (<i>Pichia pastoris</i>)	Prof. Santosh Noronha
9	8430001	Nitin Joshi	Trigger Responsive Nanoparticles for Improved Drug Delivery in Cancers.	Prof. Banerjee Rinti
10	7430006	(Ms) Deepti Dyondi	Nanoparticles and In situ Gels for Controlled Release in Bone and Cartilage Diseases.	Prof. Banerjee Rinti

Department : Centre of Studies in Resources Engineering

1	7431005	Imdad Ali Rizvi	Object-Based Image Classification of High Resolution Satellite Imagery	Prof. Mohan B.Krishna
2	7431004	Sudharsan D.	A Real-Time Decision Support System for the Evaluation of On-Farm Crop Water Requirement and Yield Modeling using Geo-ICT and Wireless Sensor Network	Prof. Adinarayana J.
3	8431001	(Ms) Sushree Sangita Mishra	Drought Vulnerability Assessment and Forecasting: Tropical Wet-Dry Climatic Region	Prof. Nagarajan R.
4	8431401	Amiya Kumar Tripathy	Data Mining and Wireless Sensor Network in Agriculture Pest/Disease Dynamics and Predictions	Prof. Adinarayana J.

Sr.	Roll No.	Name	Dissertation Title	Supervisor / Co-Supervisor / External Supervisor
RECIPIENTS OF DEGREE OF DUAL DEGREE (B.TECH + M.TECH)				
Department : Aerospace Engineering				
1	08D01012	Abhilash Harpale	Wave Propagation in Periodic Structures and Its Application to Graphene	Prof. Mira Mitra
2	08D01016	(Ms) Aditi Jain	Vibrational Energy Harvesting Using Piezoelectric Materials	Prof. Mira Mitra
3	08001002	Sanyam Suhas Mulay	Design, Fabrication and Testing of Remotely Controlled Outdoor Airship	Prof. Pant R.K.
4	08D01009	Mehta Darshit Mahesh	Surrogate Based Analysis and Design Optimization of Aerostat Envelope with Fins	Prof. Pant R.K.
5	08D01005	Govilkar Pranav Srikant	Detailed Study of Batfly Algorithm and Integration Batfly Algorithm with Levy Flights	Prof. Shimpi R.P.
6	08D01006	(Ms) Shanbhag Nidhi Ajit	Development of a Novel 'Day-Hour' Variation for the Artificial Bee Colony Algorithm	Prof. Shimpi R.P.
7	08001020	Yadati Satya Swaroop	Vision Based Target Localization Using Mini Air Vehicles	Prof. Arya Hemendra Prof. Sudhakar K.
8	08D01003	Wilson Kumar Tiru	Analysis of Double Layer Detachable Square Rack Beam Using Photoelasticity	Prof. Shimpi R.P.
9	08D01015	(Ms) Swati Agrawal	Modified Particle Swarm Optimization: Importance of the Worst Particles for Global Optimization and New Benchmark Function	Prof. Shimpi R.P.
10	08D01018	Sawan Kumar	Structural Behaviour of Bamboo and Bamboo Fiber Reinforced Composite	Prof. Shimpi R.P.
11	08D01019	Mohit Kumar Singh	Structural Analysis of Multi-layered Detachable Beams Having Teeth Like Junctions	Prof. Shimpi R.P.
12	08D01021	Magham Naveesh Reddy	Design of Reveted Joints Using Dissimilar Riveting	Prof. Shimpi R.P.
13	08D01010	Gajbhiye Rohit Shyam	Cross Sectional Analysis of Pre-Twisted Anisotropic Strips (In Presence of Intra-Laminar Cracks)	Prof. P J Guruprasad
14	08D01008	Kedar Sanjay Pandya	Ballistic Impact Behaviour of Nanoparticle Dispersed Resin and Composites	Prof. Naik N.K.

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15	08D01004	Jitendra Gothwal	Experimental Analysis of Thermo-acoustic Effect Using Rijke Tube.	Prof. Sharma S.D.
16	08D01011	Kulkarni Nandan Vinayak	Design and Development of Integrated Biogas Reformer Technology for Rural Electrification	Prof. Sudarshan Kumar Prof. Kowsik V R Bodi
17	08D01013	Gade Shripad Jayant	Cooperative Search and Rescue Using Unmanned Aerial Systems	Prof. Joshi Ashok
18	08D01014	Budania Manphul Rajendra Prasad	Investigating Thermoacoustic Behaviour of Rijke Tube	Prof. Sharma S.D.
19	08D01017	Bhupesh Doda	Mixing of Co-Axial Confined Jets with Low Annular Area Using Chevrons	Prof. Sharma S.D.
20	08D01022	Mustafa Mutiur Rahman	Vortex Method Based Analysis of Track-Based Wind Turbines	Prof. Avijit Chatterjee
21	08D01007	Raikar Chintan Subhash	Dynamic Modeling and Control of an Autonomous Underwater Vehicle (AUV)	Prof. Leena Vachhani Prof. Arya Hemendra
22	08D01020	G Sai Jaideep	CFD Study on Mini Aerial Vehicles Wings	Prof. Arya Hemendra Prof. Sudhakar K.
23	07D01017	Yohan Nikhil V Mathew	Analysis and Comparison of Micro-combustion & Microgravity Combustion Flames	Prof. Sudarshan Kumar Prof. Kowsik V R Bodi
24	08D01002	Anand Pratap Singh	Magnetically Dominated Flow Around a Circular Cylinder	Prof. Avijit Chatterjee
25	08D01001	Nithin Mannil	Cold Junction Compensation of E Type Thermocouple	Prof. Viren Menezes Prof. Arya Hemendra
Department : Aerospace Engineering (Specialization: Dynamics and Control)				
26	06D01007	Varzavand Yazdi Batliwala	Attitude Determination of a Lunar Spacecraft	Prof. Joshi Ashok
Department : Chemical Engineering				
1	08D02034	Somay Vinayak Munde	A New Gibbs Function for Phase Equilibria- Further Studies	Prof. Shankar H.S.
2	08D02013	M Bhavishya	Optimisation of Operating Conditions in Drying Multi-Component Coatings	Prof. Vinjamur Madhu
3	08D02026	Ayush Agrawal	Modeling of Adsorption Wheel	Prof. Moharir A.S.
4	08D02003	Nadkarni Ishan Shailesh	Modeling the Effect of Nanoparticles on Drug Transport in Mycobacterium Smegmatis	Prof. Sarika Mehra

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6	08D02011	Harsh Bansal	Boolean Modeling of Stress Response Network in Mycobacterium Tuberculosis	Prof. Sarika Mehra
7	08D02006	Yash Raj Gajiwala	Efficient Optimisation Approaches for Sigma Point Selection for Constrained State Estimation	Prof. Manibhushan
8	08D02020	(Ms) Astha Airan	Linear Machine: A Novel Approach to Point Location Problem	Prof. Bhartiya S. Prof. Manibhushan
9	08D02030	Rahul Prakash	Enhancement of Mass Transfer in Nanofluids	Prof. Suresh A.K. Prof. Partha S. Goswami
10	08D02010	(Ms) Bagde Pradnya Ahinsak	Preparation and Characterization of Dye Sensitized Solar Cells	Prof. Juvekar V.A. Prof. V.M.Naik
11	08D02031	Taiyeb Zahir	Characterization of GAL Regulon in Saccharomyces Cerevisiae	Prof. Venkatesh K.V.
12	08D02019	Siddharth Maholia	Modelling & Simulation of Resicle Extrusion in a Polycarbonate Membrane Pore	Prof. Sameer Ralph Jadhav
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14	08D02029	Aniket Deb	Prediction of Thermodynamic Properties for Industrially Important Polymerization Systems Using Molecular Simulation	Prof. Adhikari J.
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19	08D02005	Vishwa Ajay Mukhtyar	Advanced Optimization of Oil and Gas Wells	Prof. Yogendra Shastri Prof. Gudi R.
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22	08D02036	Romil Shankey Mathew	Techno-economic Analysis of Co2 Capture and Biofuel Production from Microalgae	Prof. Wangikar P. Prof. Yogendra Shastri
23	08002019	Baraskar Ankit Ashok	A New Data Assimilation Technique for Aerosols: Improving Estimates of GCM Predicted Aerosol Properties Over South Asia using Observations from Two Satellite Sensors	Prof. Chandra V Prof. Manibhushan
24	08D02032	Kunal Jadhav	Monte Carlo Simulation of 1D Aggregation as a Model for Liposome Formation	Prof. P.Sunthar
25	08D02012	(Ms) Pragya Maheshwari	Development of Risk Acceptance Criteria: A Socio-Economic Approach	Prof. Roy S.
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27	08D02035	(Ms) Kalikota Shravani	Stability of a Thin Liquid Sheet: Simulation	Prof. Tirumkudulu Mahesh
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Department : Chemical Engineering (Specialization: Process Systems Design & Engg.)				
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Department : Electrical Engineering (Specialization : Microelectronics)				
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22	08D10034	Uday Wakte	Development of Control Strategy for Horizontal Axis Wind Turbines Incorporating Upwind Information	Prof. Shashikanth S.
Department : Mechanical Engineering (Specialization : Computer Integrated Manufacturing)				
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24	08D10027	Khaire Anurag Shivaji	Investigating Shape Modeling Techniques in 2D and 3D Medical Applications	Prof. Ravi B.
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34	08D10026	Nitya Batra	Design & Fabrication of Efficient Micro Wind Energy System for Rural Areas	Prof. Jog S.D.
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36	08D10042	Gaurav Sharma	Modeling of Wire-EDM Slicing Process for Silicon Ingots	Prof. S. S. Joshi
37	08D10044	Shubham Gupta	Modelling of Shear Bands and Specific Cutting Energy in Ti6Al4V Alloy	Prof. S. S. Joshi

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39	08D10046	Rajesh Reddy Gontu	Theoretical Modeling of Fusion Welding	Prof. De Amitava
40	08D10041	Ramchandani Jai Suresh	Modeling of Chip-tool Interface for Oil Mist Assisted Orthogonal Learning of Ti6Al4V	Prof. S. S. Joshi
41	08D10020	Devendra Singh Baghel	Electromagnetic Assisted Incremental Forming	Prof. Date P.P.
42	08D10047	Saini Suman Krishna	Simulations of Incremental Sheet Metal Forming	Prof. Date P.P.

Department : Metallurgical Engineering and Materials Science (Specialization : Ceramics & Composites)

1	06D11042	Suresh Sonkar	Microstructural Evolution and Mechanical Properties of AZ61 Mg-alloy Processed by Severe Plastic Deformation (ECAP)	Prof. Kashyap B.P.
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15	08D11013	Rishi Kumar	Spray Drying of Nano Yttria Stabilized Zirconia Powder	Prof. Parag Bhargava
16	08D11036	Sajal Kumar Agarwal	Corrosion Studies of Aluminium Alloys for Bipolar Plates for PEM Fuel Cell	Prof. Smrutiranjana Parida
17	08D11009	Adit Sathiya	Synthesis and Characterization of Constitute Layers of Organic Solar Cells	Prof. Dipti Gupta
18	08D11016	Kumar Kislay	Synthesis of MoS ₂ Based Nanocomposites and their Application in Photocatalysis & Supercapacitance	Prof. Bahadur D.
Department : Metallurgical Engineering and Materials Science (Specialization : Metallurgical Process Engg.)				
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22	08D11032	Sankalp Agarwal	Fabrication of Phospho-Olivine Based Thin Film Electrode for In-Situ Stress Measurement During Cycling in Li-ion Battery	Prof. Amartya Mukhopadhyay
23	08D11027	Nene Omkar Arun	Carbon Nano Filler Incorporated Polypropylene Nanocomposites	Prof. Arup R. Bhattacharyya Prof. Prita Pant
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31	08D11030	Nikhil Khandelwal	Fabrication of Porous Tubular Support for Solid Oxide Fuel Cell	Prof. Prasanna T.R.S.
32	08D11020	Gogri Mirik Rajendra	Synthesis and Characterization of Absorber and Buffer Layer of Cu ₁ ZnSnS ₄ Solar Cell	Prof. Sudhanshu Mallick
33	08D11024	Ashwin Ganapathy	Source-Drain Contacts for Advanced CMOS Applications	Prof. Sudhanshu Mallick Prof. Saurabh Lodha

Department : Energy Science and Engineering

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4	08D11021	Reddy Sushil Pakala	Simulation of Heat Transfer in Open Cavities for Solar Thermal Applications	Prof. Suneet Singh
5	08D17005	Satyajit Das	Thermal Performance of Buildings	Prof. Nayak J.K.
6	08D17007	Appu Rshikesan Paduthol	Electro-thermal Modelling for Characterization of Delamination in PV Modules Using Active Thermography	Prof. Rajesh Gupta

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8	08D17006	(Ms) Priyanka Nadia Desouza	Artificial Photosynthetic Systems: Viability of Oxide Semiconductors for Water Splitting	Prof. K.R. Balasubramaniam Prof. Banerjee Rangan
9	08D17003	Rachit Shrivastava	Forecasting and Analysis of Wind for Maharashtra	Prof. Banerjee Rangan
10	08D17011	Suyash Dusad	Well to Wheels Analysis of Solar PV-Electrolysis Hydrogen Production System	Prof. Pratibha Sharma
11	08D17017	Sisir Yalamanchili	Inverse Architecture Extremely Thin Absorber Solar Cells	Prof. Shaibal Sarkar
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67	119278108	Shah Parthiv Bhupendra	Formulation of Launch Related Strategies for Mahindra REVANXR	Prof. A. Ghosh
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72	119278121	Sanju Mathew George	The Need For Social Capitalism	Prof. Varadraj B. Bapat
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75	119278125	Aniket Jain	Forecasting Demand of Cotton in India	Prof. T.T. Niranjan
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72	113100043	Chetan Kishore	Flow Characterization in Reactor Outlet Header Bends.	Prof. Arunkumar Sridharan Prof. Smrutiranjana Parida
73	10310902	Shaikh Abdulmateen Abdulgafoor	Numerical & Experimental Investigations on LN2 Operated Cryoprobe for Cryosurgical Operation.	Prof. M.D.Atrey Prof. Atul Srivastava

Sr.	Roll No.	Name	Dissertation Title	Supervisor / Co-Supervisor / External Supervisor
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75	113010003	Arpan Sircar	Turbulence Modeling of Supercritical Flows.	Prof. Iyer Kannan N.
Department : Metallurgical Engineering and Materials Science (Specialization : Corrosion Science and Engineering)				
1	113110038	Sai Karthik Nouduru	Oxidation behavior of Zr-2.5Nb Pressure Tube Material: Effect of α Phase Composition and Morphology.	Prof. Khanna A. S.
2	113110057	Amit Nautiyal	Conductive Polymer Coating on Low Carbon Steel Substrate by Electrodeposition Method.	Prof. Smrutiranjana Parida
3	113110059	Manish Sukhdeo Wasnik	Development of Surface Tolerant Coating Systems and Its Performance Evaluation.	Prof. Khanna A. S.
4	113114005	Tarun Kumar Singh	Hot Corrosion Behaviour Analysis of Superalloys GTM-SU-718 & GTM-SU-263 for Marine Gas Turbine.	Prof. Khanna A. S.
5	113114006	S. Adil Mohideen	Corrosion and Oxidation Study of Laser Remelted Conicrally Bond Coats Produced by HVOF and CGDS Process.	Prof. Khanna A. S.
6	113110046	Bhupendra Kumar Dewangan	Study of Hot Salt Stress Corrosion Cracking Behaviour of Alloy IMI 834 for Gas Turbine Application.	Prof. Raja V. S.
7	113110054	Mohammad Umar Farooq Khan	Establishing Precursor Events for Stress Corrosion Cracking Initiation in Type 304L Stainless Steels.	Prof. Raja V. S.
8	113110055	Praveen Kumar	Analysis of Flow and Fracture Behavior of Copper and Alpha-Beta Brass as a Function of Temperature and Strain Rate Before and After Gaseous Hydrogen Charging.	Prof. Kashyap B.P. Prof. Prabhu N.
9	113110036	Kaushik Parida	Use of Silicon Nanowire in Supercapacitor.	Prof. Dusane Rajiv O.
10	113110037	Navajyoti Baishya	Study of Localized Corrosion in 15-5PH Stainless Steel Weldment by Microcell Technique.	Prof. Raja V. S.
11	113110056	Bhaina Ashish Hanumant	Study Corrosion Behaviour of Amorphous Silicon Carbide Deposited Steel.	Prof. Dusane Rajiv O.

Sr.	Roll No.	Name	Dissertation Title	Supervisor / Co-Supervisor / External Supervisor
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13	113110058	Manjith Bose	Development of Metal Induced Crystallization for Low Temperature Polycrystalline Selector for RRAM.	Prof. Somnath Basu Prof. Udayan Ganguli
Department : Metallurgical Engineering and Materials Science (Specialization : Materials Science)				
14	113110044	(Ms) Shafaq Ashraf Lone	Study of Hot Salt Stress Corrosion Cracking Behaviour of S80 Steel for Gas Turbine Applications.	Prof. Raja V. S.
15	113110004	Manjesh Kumar Mishra	Studies on Effect of Thermomechanical Controlled Processing Parameters on Microstructures & Mechanical Properties of Microalloyed Steel.	Prof. Prabhu N. Prof. Kashyap B.P.
16	113110011	(Ms) Patrikar Kalyani Rajendra	Mechanical Properties of Amorphous Hydrogenated Silicon Carbide Thin Films.	Prof. Dusane Rajiv O. Prof. Prita Pant
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18	113110052	Pranay Radke	Effect of Heat Treatment on Microstructure and Mechanical Properties of Ti6Al4V.	Prof. Prita Pant
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23	113110005	Mane Rhushikesh Rangnath	Deformation Behaviour of AA2014-T6 Aluminium Alloy.	Prof. Kashyap B.P. Prof. Prabhu N.
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Sr.	Roll No.	Name	Dissertation Title	Supervisor / Co-Supervisor / External Supervisor
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32	113110013	Gonuguntla Anjibabu	High Temperature Deformation Behavior of Al-Cu-Li-Mg-Zr-Ag (AA 2195) Alloy.	Prof. Kashyap B.P. Prof. Prabhu N.
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Sr.	Roll No.	Name	Dissertation Title	Supervisor / Co-Supervisor / External Supervisor
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Department : Metallurgical Engineering and Materials Science (Specialization : Process Engineering)				
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Department : Metallurgical Engineering and Materials Science (Specialization : Steel Technology)				
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Sr.	Roll No.	Name	Dissertation Title	Supervisor / Co-Supervisor / External Supervisor
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55	113114002	Anil Kumar Kothari	Modelling studies in the Trickling Zone of the Blast Furnace.	Prof. Ballal N.B.
56	113110035	Lakhindra Marandi	Deformation Behavior and its Correlation with Microstructure Evolution in Austenitic Stainless Steel 310.	Prof. Kashyap B.P. Prof. Prabhu N.
57	113110034	Shriprakash Bharati	“Investigation of Microstructure and Corrosion Behaviour of Electro-Slag Refined 304 Austenitic Stainless Steel.	Prof. Somnath Basu Prof. Smrutiranjana Parida
Department : Energy Science and Engineering				
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Sr.	Roll No.	Name	Dissertation Title	Supervisor / Co-Supervisor / External Supervisor
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Sr.	Roll No.	Name	Dissertation Title	Supervisor / Co-Supervisor / External Supervisor
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Department : Industrial Engineering and Operations Research				
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Sr.	Roll No.	Name	Dissertation Title	Supervisor / Co-Supervisor / External Supervisor
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9	113234005	Deepak Dangi	Model Identification, Controller Design and Closed Loop Implementation of the Engine RPM Control of SR-30 Gas Turbine	Prof. Nataraj P.S.V.
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12	113230018	Neeraj Bankey	Virtual Homing & Compass Technique for a Mobile Robot using Multiple Camera & Embedded Linux	Prof. Leena Vachhani
13	113230001	Mir Mufaqam Ali	Control Synthesis for the SHWAS Underwater Glider.	Prof. Banavar R.N.

Department : Biosciences & Bioengineering

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Sr.	Roll No.	Name	Dissertation Title	Supervisor / Co-Supervisor / External Supervisor
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8	113300014	(Ms) Akanksha Singh	Multifunctional Ultrasound Responsive Smart Nanocarriers for Combination Anticancer Therapy	Prof. Banerjee Rinti
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17	113300001	Nilapratim Sengupta	Syncytial Electrical Properties and Neurotransmission in Smooth Muscle : Computational Studies	Prof. Manchanda Rohit
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19	113300009	(Ms) Iyer Shubha Vishwanathan	Computational Modeling Of Ca ²⁺ Dynamics in the Detrusor Smooth Muscle : Diffusion & Buffering	Prof. Manchanda Rohit
20	113300017	Hitendra Sahu	Sensing of Impedance Cardiogram using a Digital Synchronous Demodulator	Prof. Pandey P.C.
21	113300020	Dandade Sandeep Suresh	Computational Modelling of Active Conductances in Smooth Muscles, with Special Reference to Bladder.	Prof. Manchanda Rohit

Sr.	Roll No.	Name	Dissertation Title	Supervisor / Co-Supervisor / External Supervisor
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Department : Centre of Studies in Resources Engineering (Specialization : Geoinformatics and Natural Resources Engineering)				
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2	113310018	Mohite Jayantrao Diliprao	e-Citrus: A Prototype Crowd Sourcing System for Agricultural Advisory Services in Pest and Disease Management	Prof. Adinarayana J.
3	113310009	Vivek Singh Yadav	Geocoding of Synthetic Aperture Radar Images.	Prof. Rao Y.S.
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5	113310005	Ihtishamuddin Khan	Emergency Evacuation using Transportation Analysis and Simulation System (TRANSIMS).	Prof. Venkatachalam (Mrs)P.Prof. Surya Durbha
6	113310003	K. Srinivas Rao	Permanent Scatterer Synthetic Aperture Radar Interferometry (PSInSAR) and Small Baseline Subset (SBAS) Techniques for Monitoring of Himalayan Slopes.	Prof. Murti M.V.R. Prof. Rao Y.S.
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10	113310007	Amrites Senapati	Hyperspectral Data for Lithological Mapping of Udaipur Area, Rajasthan	Prof. Venkataraman G.
11	113310011	Nikhil Prakash	Use of Hyperion Data and Master Thermal Data for Lithological Mapping.	Prof. Alok Porwal
12	113310006	(Ms) Karale Yogita Yashawant	Studies on Investigation of Initial Abstraction Ratio to be used in SCS-CN Model for Runoff from Upper Bhima Catchment through Geo-spatial Analysis using Arc-GIS.	Prof. Gedam S.S. Prof. Nagarajan R.

Sr.	Roll No.	Name	Dissertation Title	Supervisor / Co-Supervisor / External Supervisor
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14	113310014	Ranit Saha	Design and Implementation of Radar Image Processing Software.	Prof. Rao Y.S.
15	113310015	Kalyan Kumar Marndi	Development of Virtual Laboratory on Microwave Remote Sensing.	Prof. Avik Bhattacharya Prof. Mohan B.Krishna
16	113310022	Patil Amol Ashok	Studies on Effect of Local Obstructions in Dilution of Precision in GPS Based Geo-Location Estimations.	Prof. Gedam S.S.
17	113310004	K. Anil Kumar	Segmentation and Classification of Intensity SAR Images.	Prof. Mohan B.Krishna
18	113310008	Rahul Kumar Gayakwad	Feature Fusion of Multisensor Satellite Images.	Prof. Mohan B.Krishna

**Department : Centre for Technology Alternatives for Rural Areas
(Specialization : Technology and Development)**

1	113350011	(Ms) Pavitra Sharma	Extraction of Pectin, Anti-oxidants and Dietary Fiber from Mango Peels	Prof. N. Shah
2	113354001	Shoyeb Khan	Processing Microalgae to Biodiesel	Prof. N. Shah
3	113350002	Nataraj Bhat	Life Cycle Assessment of Sugarcane Cultivation	Prof. Bakul Rao
4	113350006	(Ms) Apoorva R.	Mechanism for Local Assessment of Land Degradation: Case of Salt Affected Lands	Prof. Bakul Rao
5	113354002	Patil Sameer Bhaskarrao	Design, Fabrication and Testing of Bagasse Briquetting Machine	Prof. N. Shah
6	113350003	(Ms) Deshmukh Adavaita Nishikant	Developing Toolkit for Zero Waste Management at a Ward	Prof. Prasad M. Modak
7	113350007	(Ms) Soumya Jain	Supply Chain Analysis of Leaf Plates	Prof. Anand B. Rao
8	113350001	Kiran Augustine	Towards Panchayat Level Planning for Solar Energy Integration: An Experiment at Chendamangalam	Prof. N.C.Narayanan Prof. Anil K.G
9	113350009	Bodasingi Vamsee Krishna	Evaluation of SRI and Conventional Practices of Rice Cultivation	Prof. Bakul Rao
10	10335501	Sunil Kumar Mehta	Testing and Evaluation of a Low Cost Biogas Plant	Prof. Priyadarshani Jadhav

Sr.	Roll No.	Name	Dissertation Title	Supervisor / Co-Supervisor / External Supervisor
11	113350004	Vishal Kumar Mishra	Drinking Water Security: A Conceptual Framework for Policy Assessment Tool of Rural Drinking Water Supply Schemes at Taluka Level	Prof. Sohoni Milind
12	113350008	Belsare Hemant Khanderao	Restructuring Watershed Programmes from Water Security Perspective	Prof. Sohoni Milind Prof. T I Eldho
Department : Materials, Manufacturing and Modelling				
1	113370001	Memon Shabbir	Process & Material Parameter Optimization of Tube Hydroforming Process.	Prof. Narsimhan K.
2	113370002	Sumeet Jain S.	Vibration Analysis in High Speed Milling of Inconel – 718	Prof. S. S. Joshi
3	113370003	Patil Rahul Ambadas	Analysis of Burr Formation in Drilling of Ti-6Al-4V Alloy.	Prof. S. S. Joshi
4	113374003	Mohan Indravadan Mehta	Study on Flow Properties and Creep Failure of Rotor Grade Steel.	Prof. Kashyap B.P.
5	113374001	Dattaprasad Pandurang Lomate	Crankshaft Residual Stress FEA Modelling to Enhance the Corelation Between Physical Fatigue Test & CAE for Crankshaft Fatigue Life	Prof. Tiwari A.N. Prof. Date P.P.
6	113374002	Ratnesh Sah	Optimization of Heat Treatment Parameter to Control the Residual Stress in Steel Forging for Dimension Stability and Establish Stress Measurement Technique.	Prof. Date P.P.
7	113374004	Jadhav Pravin Popat	Correlation Between Rotary Bending Fatigue Test on Raw Material and Bending Fatigue Test on Crankshaft.	Prof. Prasad R.C.

RECIPIENTS OF DEGREE OF MASTER OF PHILOSOPHY (EXIT DEGREE)

Department: Chemistry

1	08403318	Vanga Devendar Goud	Total Syntheses of Angucyclinone Antibiotics	Prof. Kaliappan K P
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Organisation

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Registrar

Dr. Indu Saxena, (from November 1, 2013)

(Offg. Registrar)

Shri B.S. Punalkar (upto October 31, 2013)

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Bhubaneswar	9.	Shri S. K. Roongta, Chairman, Board of Governors, IIT Bhubaneswar Bhubaneswar (Odisha).	Member
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Indore	13.	Shri Ajay Piramal, Chairman, Board of Governors, IIT Indore Madhya Pradesh	Member
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Patna	15.	Shri Ajai Chowdhry, Chairman, Board of Governors, IIT Patna Bihar	Member
Ropar	16.	Prof. V. S. Ramamurthi, Chairman, Board of Governors, IIT Ropar Punjab	Member
Varanasi	17.	Dr. Lalji Singh, Chairman, BoG, IIT(BHU), Varanasi and Vice-Chancellor, Banaras Hindu University, Varanasi -221 005 (U.P)	Member
Director of each Institute (Ex-officio)			
Kharagpur	18.	Prof. Partha P. Chakrabarti, Director, IIT Kharagpur, Kharagpur – 721 302.	Member
Bombay	19.	Prof. D.V. Khakhar, Director, IIT Bombay, Mumbai – 400 076.	Member
Madras	20.	Prof. Bhaskar Ramamurthi, Director, IIT Madras, Chennai – 600 036.	Member
Kanpur	21.	Prof. Indranil Manna, Director, IIT Kanpur, Kanpur – 208 016.	Member
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Gandhinagar	26.	Prof. Sudhir K. Jain, Director, Indian Institute of Technology, Gandhinagar, Vishwakarma Govt. Engg. College (VGEC) Campus, Chandkheda, Visat-Gandhinagar Highway, Ahmedabad – 382424.	Member
Hyderabad	27.	Prof. U. B. Desai, Director, Indian Institute of Technology, Hyderabad, Ordnance Factory Estate, Yeddumailaram – 502205, Andhra Pradesh.	Member
Jodhpur	28.	Prof. C. V. R. Murty, Director, Indian Institute of Technology, Jodhpur, IIT Rajasthan Camp Office Department of Computer Science & Engineering MBM Engineering College, Jodhpur – 342 011.	Member
Indore	29.	Prof. Pradeep Mathur, Director, Indian Institute of Technology Indore, Institute of Engineering and Technology, DAVV Campus, Khandwa Road, Indore – 452 017.	Member
Mandi	30.	Prof. Timothy Gonsalves, Director, Indian Institute of Technology, Mandi, PWD Rest House, 2 nd Floor, Near Bus Stand, Mandi – 175 001. (Himachal Pradesh).	Member
Patna	31.	Prof. Partha P. Chakraborti (Addl. Charge), Director, Indian Institute of Technology, Patna, Govt. Polytechnic, Pataliputra's Colony, Patna – 800 013.	Member
Ropar	32.	Prof. M. K. Surappa, Director, Indian Institute of Technology, Ropar, Nangal Road, Rupnagar, Punjab – 140 001.	Member
Varanasi	33.	Prof. Rajeev Sangal, Director, Indian Institute of Technology (BHU), Varanasi – 221005 (UP).	Member

Chairman, University Grants Commission (Ex-officio)	34.	Prof. Ved Prakash, Chairman, University Grants Commission, Bahadurshah Zafar Marg, New Delhi – 110 002.	Member
Director-General, Council of Scientific & Industrial Research (Ex-officio)	35.	Dr. P. S. Ahuja, Director General (DG) of Council of Scientific & Industrial Research (CSIR), Govt. Of India, Anusandhan Bhawan, 2, Rafi Marg, New Delhi – 110 001.	Member
Chairman of the Council Of the Indian Institute of Science, Bangalore (Ex-officio)	36.	Dr. K. Kasturirangan, Chairman, Council of IISc. Bangalore, National Institute of Advanced Studies, Indian Institute of Science Campus, Bangalore – 560 012.	Member
Director of the Indian Institute of Science, Bangalore (Ex-officio)	37.	Prof. P. Balaram, Director, Indian Institute of Science, Bangalore – 560 012.	Member
Three Nominees of the Central Government			
To represent the Ministry concerned with Technical Education	38.	Shri Ashok Thakur, Special Secretary, Ministry of Human Resource Development, Department of Higher Education, Shastri Bhawan, New Delhi.	Member
To represent the Ministry of Finance	39.	Shri R. S. Gujral, Secretary (Expenditure), Ministry of Finance, Department of Expenditure, North Block, New Delhi – 110 001.	Member
To represent any other Ministry	40.	Shri J. Satyanarayana, Secretary, Department of Information Technology, Electronics Niketan, CGO Complex, Lodhi Road, New Delhi – 110003.	Member
Nominee of the All India Council for Technical Education (AICTE)	41.	Dr. S.S. Mantha, Chairman, All India Council for Technical Education (AICTE), 7th Floor, Chanderlok Building, Janpath, New Delhi – 110 001.	Member
Nominees of the Visitor (minimum three) (maximum five)	42.	Prof. Ashok Jhunjhunwala, Professor, Department of Elect. Engineering (Te Ne T) Group, Indian Institute of Technology – Madras Chennai – 600 036 (T.N.).	Member

	43.	Dr. T. Ramasami, Secretary, Department of Science & Technology, Ministry of Science & Technology, Technology Bhawan, New Mehrauli Road, New Delhi -110016.	Member
	44.	Prof. Ashok Mishra, Chairman – India, Intellectual Ventures India Consulting Pvt. Ltd., # 701- Raheja Paramount, 138-Residency road, Bangalore – 560025.	Member
	45.	Prof. S. K. Joshi, 250- National Physical Laboratory, Dr. K S Krishnan Marg, South Patel Nagar, Pusa, New Delhi – 110012.	Member
	46.	Prof. R. C. Budhani, Director, Director's Secretariat, National Physical Laboratory, Dr. K S Krishnan Marg, South Patel Nagar, Pusa, New Delhi – 110012.	Member
Three Members of Parliament (Two from Lok Sabha) (One from Rajya Sabha)	47.	Shri Deepender Singh Hooda, Hon'ble Member of Parliament (Lok Sabha), 9, Pandit Pant Marg, New Delhi – 110011.	Member
	48.	Shri Janardhana Swamy, Hon'ble Member of Parliament (Lok Sabha), 137, South Avenue, New Delhi – 110011.	Member
	49.	Smt. Vasanthi Stanley, Hon'ble Member of Parliament (Rajya Sabha), C-501, Swaran Jayanthi Sadan, Dr. Bishamber Dass Marg (Near R.M.L), New Delhi-110001.	Member
	50.	Smt. Amita Sharma, Additional Secretary (TE), Ministry of Human Resource Development, Department of Higher Education, Shastri Bhawan, New Delhi.	Member
	51.	Shri Yogendra Tripathi, Joint Secretary & Financial Advisor, Ministry of Human Resource Development, Department of Higher Education, New Delhi.	Member

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	Prof. Dinesh Singh, Vice Chancellor, University of Delhi, New Delhi – 110 007.	Member
State Government Nominees (Three)		
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Senate Two	Prof. S. Durani (from 1/01/2014) [Prof. N.B. Ballal (upto 31/12/2013)] Professor, Department of Chemistry IIT Bombay Mumbai 400 076.	Member
	Prof. S. Biswas, (from 1/01/2013) [Prof. D.K. Sharma (upto 31/12/2013)] Professor Department of Computer Science & Engineering IIT Bombay Mumbai - 400 076.	Member
Ex-officio	Shri B.S. Punalkar (upto 31/10/2013) Dr. Indu Saxena, (from 1/11/2013) Offg. Registrar Powai, Mumbai – 400 076.	Secretary

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Prof. D.V. Khakhar Director, IIT Bombay, Powai, Mumbai – 400 076.	Member (Ex-officio)
Smt. Amita Sharma, IAS Additional Secretary, Ministry of Human Resource Development, Deptt. of Higher Education, Government of India, Shastri Bhavan, New Delhi – 110 115.	Member
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Shri Yogendra Tripathi, IAS Joint Secretary & Financial Advisor, Ministry of Human Resource Development, Deptt. Of Higher Education, Technical Section-1, Government of India, Shastri Bhavan, New Delhi – 110 115.	Member
Prof. H.S. Pandalai Dy. Director (Finance & External Affairs), IIT Bombay, Powai, Mumbai – 400 076.	
Shri B.S. Punalkar Registrar, IIT Bombay, Powai, Mumbai – 400 076.	Secretary (Ex-officio)

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Prof. D.V. Khakhar Director, IIT Bombay, Powai, Mumbai – 400 076.	Chairman
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Superintending Engineer, Mumbai (P.W.) Circle 25 Murzban Road, Fort, Mumbai – 400 001.	Member
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Heads of Departments

Prof. Ashok Joshi (from 15.05.14)
Prof. S.D. Sharma (upto 14.05.2014)
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Prof. Rohit Manchanda (from 1.08.2014)
Prof. N.S. Puneekar (upto 31.07.2014)
Biosciences & Bioengineering

Prof. K.V. Venkatesh (from 18.11.2013)
Prof. Sachin Patwardhan (upto 17.11.2013)
Chemical Engineering

Prof. R. Murugavel
Chemistry

Prof. K.V. Krishna Rao
Civil Engineering

Prof. S. Sudarshan (from 2.04.2013)
Prof. Amitabha Sanyal (upto 1.04.2013)
Computer Science & Engineering

Prof. G. Mohan (from 7.03.2014)
Prof. Kanchan Pande (upto 6.03.2014)
Earth Sciences

Prof. Abhay Karandikar
Electrical Engineering

Prof. D. Parthasarathy (from 25.06.2014)
Prof. K. Narayanan (upto 24.06.2014)
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Prof. R.P. Vedula
Mechanical Engineering

Prof. N. Prabhu
Met. Engg. & Mat. Science

Prof. Prabhakar P. Singh
Physics

Prof. Santanu Bandyopadhyay
Energy Science and Engineering

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Prof. G.G. Ray (upto 30.09.2013)

Industrial Design Centre

Prof. Indradev Samajdar (from 30.05.2013)

Prof. Soumyo Mukherjee (upto 29.05.2013)

Centre for Research in Nanotechnology and Science & SAIF

Prof. (Ms.) P. Venkatachalam

Centre of Studies in Resources Engineering

Prof. A. K. Dikshit

Centre for Environmental Science and Engineering

Prof. G. Sivakumar

Centre for Formal Design and Verification of Software

Prof. P. M. Mujumdar

Centre for Aerospace Systems Design and Engineering

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Prof. Milind Sohoni (upto 17.03.2014)

Centre for Technology Alternatives in Rural Areas

Prof. V. M. Gadre (from 9.07.2013)

Prof. B. L. Tembe (upto 8.07.2013)

Centre for Distance Engineering Education Programme

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Shailesh J. Mehta School of Management

Convenors of Interdisciplinary Programmes

Prof. N. Hemchandra

Industrial Engineering & Operations Research

Prof. Ravi Banavar

Systems & Control Engineering

Prof. V. M. Gadre (from 9.07.2013)

Prof. B. L. Tembe (upto 8.07.2013)

Education Technology

Prof. Chandra Venkataraman

Climate Change

Sr. No.	Name	Designation	Qualification	Deptt.	Senate/Remarks
Annual Report for the year ended 31.03.2014					
1	Chandel Munish Kumar	Assistant Professor	Ph.D.(Indian Institute of Delhi)	CESE	-
2	Padhye Lokesh	Assistant Professor	Ph.D.(Geprgia Institute of Technology)	CESE	-
3	Phuleria Harish	Assistant Professor	Ph.D.(USC, LOD Angeles, USA)	CESE	-
4	Abhishek Gupta	Assistant Professor	Ph.D. (Rice University)	Mechanical Engg.	No
5	Adhikari Jhumpa	Associate Professor	Ph.D (State University of New York at Buffalo)	Chemical Engg	No
6	Adil Gajendra Kumar	Professor	Ph.D. (University of Manitoba)	SJMSOM	Member/Head
7	Adinarayana J.	Associate Professor	Ph.D. (BHU, Varanasi)	CSRE	No
8	Adsul Bharat G	Associate Professor	Ph.D (IIT Bombay)	CS & E	No
9	Agarwal Vivek	Professor	Ph.D. (University of Victoria)	Electrical Engg.	Member
10	Agrawal Amit	Associate Professor	PH.D (University of Delaware)	Mechanical Engg.	Co-opted Member
11	Alam Aftab	Assistant Professor	Ph.D.(S.N.Bose Centre for Basi Science, Jadavpur University)	Physics	-
12	Alok Porwal	Associate Professor	Ph.D. (ITC & Utrecht University, Netherland)	CSRE	No
13	Aluru Srinivas	Professor	Ph.D. (University of Iowa)	CS & E	Member
14	Anand Ruchi	Assistant Professor	Ph.D (University of Cornell)	Chemistry	No
15	Anandavardhanan U.K.	Associate Professor	Ph.D. (University of Hyderabad)	Mathematics	No
16	Ananthakumar Usha	Associate Professor	Ph.D. (IIT Bombay)	SJMSOM	No
17	Apte Varsha	Associate Professor	Ph.D.(Duke University USA)	CS & E	No
18	Arindrajit A. Chowdhury	Assistant Professor	Ph. D (Pennsylvania State University)	Mechanical Engg.	No
19	Arora Amit	Assistant Professor	Ph.D. (University of Illinois at Urbana, Champaign, USA)	CTARA	No
20	Arunachalam Arjun	Assistant Professor	Ph.D. (University of Wisconsin-Madison)	Electrical Engg.	No
21	Arya Hemendra	Associate Professor	Ph.D.(IIT Bombay)	Aerospace Engg.	Co-opted Member
22	Arya Kavi J	Associate Professor	Ph.D (University of Oxford, UK)	CS & E	No
23	Aslam Mohammed	Associate Professor	Ph.D (University of Pune)	Physics	No
24	Asolekar S. R.	Professor	Ph.D. (University of Iowa)	CESE	Member
25	Athavale Ameer	Professor	Ph.D. ((University of Indiana)	Mathematics	Member
26	Atrey Milind D.	Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	Member/ Prof. In Charge, (SINE)

Sr. No.	Name	Designation	Qualification	Deptt.	Senate/Remarks
27	Awate Suyash P.	Assistant Professor	Ph.D.(Univeristy of Utah)	CS & E	-
28	Baghini Maryam S.	Assistant Professor (Contract)	Ph.D (Sharif University of Technology)	Electrical Engg.	No
29	Bairy Ramesh T.S.	Assistant Professor	Ph.D (University of Hyderabad)	H&SS	No
30	Bajoria K.M.	Professor	Ph.D. (University of Cambridge)	Civil Engg	Member
31	Balachandran Niranjan	Assistant Professor	Ph.D. (The ohio state university)	Mathematics	No
32	Balaji P.V.	Professor	Ph.D. (IISc. Bangalore)	Bio-Science & Bio-Engineering	Member
33	Balaji R.	Assistant Professor	Ph.D. (IIT-Madras)	Civil Engg	No
34	Balakrishna M.S.	Professor	Ph.D. (IISc. Bangalore)	Chemistry	Member
35	Balan Sudesh	Assistant Professor	M.F.A.(Southern Zllinios University)	I.D.C	No
36	Balasubramaniam K. R.	Assistant Professor	Ph.D.(Carnegie Mellon University)	Energy Science & Engg.	No
37	Balasubramanian Sridhar	Assistant Professor	Ph.D. (Arizona State University, USA)	Mechanical Engg.	No
38	Ballal N.B.	Professor	Ph.D. (IIT Kanpur)	Met.Engg. & Mat.Sc.	Member
39	Banavar R.N.	Professor	Ph.D. (University of Texas)	Systems & Control	Member/Head
40	Bandyopadhyay B.	Professor	Ph.D. (IIT Delhi)	Systems & Control	Member/ Prof. In Charge, (CEP/QIP)
41	Bandyopadhyay Rajdip	Associate Professor	Ph.D. (IISc, Bangalore)	Chemical Engg	No
42	Bandyopadhyay Santanu	Professor	Ph.D. (IIT Bombay)	Energy Science & Engg.	Member/Head
43	Banerjee Anirban	Assistant Professor	Ph. D.(National Institute of Pharmaceutical Education & Research)	Bio-Science & Bio-Engineering	No
44	Banerjee Rangan	Professor, Convener ESE Group	Ph.D. (IIT Bombay)	Energy Science & Engg.	Member/Head
45	Banerjee Rinti	Professor	Ph.D.(IIT Bombay)	Bio-Science & Bio-Engineering	Member
46	Banerjee Santanu S.	Professor	Ph.D. (University of Jadavpur)	Earth Science	Member
47	Banerjee Sauvik	Associate Professor	Ph.D (University of California)	Civil Engg	No
48	Banerji Pradipta	Professor	Ph.D. (University of California)	Civil Engg	Member
49	Bapat S.L.	Professor	Ph.D. (IIT Delhi)	Mechanical Engg.	Member
50	Bapat Varadraj B.	Assistant Professor	Ph.D (IIT Bombay)	SJMSOM	No
51	Bapat Vijay P.	Professor	B.E. (Sangli) DIIT (IIT Bombay)	I.D.C	Member
52	Bardhan Ronita	Assistant Professor (Contractual Basis)	Ph.D. (The University of Tokyo)	C-USE	-

Sr. No.	Name	Designation	Qualification	Deptt.	Senate/Remarks
53	Baskar. S	Assistant Professor	IISc., Bangalore	Mathematics	No
54	Basu Somnath	Assistant Professor	Ph.D. (Royal Institute of Technology)	Met.Engg. & Mat.Sc.	No
55	Behera Manasa	Assistant Professor	Ph.D.(IIT Madras)	Civil Engg	-
56	Bellare Jayesh	Professor	Ph.D. (University of Minnesota)	Chemical Engg	Member
57	Bellur Umesh R.	Professor	Ph.D. (Syracuse)	CS & E	Member
58	Belur Madhu N.	Associate Professor	Ph.D. (Univ. of Groningen)	Electrical Engg.	No
59	Bhandakkar Tanmay K.	Assistant Professor (Contractual Basis)	Ph.D. (Brown University)	Mechanical Engg.	No
60	Bhandarkar Upendra	Associate Professor	Ph.D. (University of Minnesota)	Mechanical Engg.	No
61	Bharatiya Sharad	Professor	Ph.D. (Oklahoma State University)	Chemical Engg	Member
62	Bhardwaj Rajneesh	Assistant Professor	Ph.D. (Columbia University, NY)	Mechanical Engg.	No
63	Bhargava Parag	Professor	Ph.D. (Univ. of Birmingham & Univ. of Alabama in Guntsville)	Met.Engg. & Mat.Sc.	Member
64	Bhargava S.	Professor	Ph.D. (University of Gujarat)	SJMSOM	Member
65	Bhaskaran Murlidharan	Assistant Professor	Ph.D. (Purdue University)	Electrical Engg.	No
66	Bhat P. Jayadeva	Professor	Ph.D. (IISc. Bangalore)	Bio-Science & Bio-Engineering	Member
67	Bhat Parameshwar R.	Professor	Ph.D. (IIT Kanpur)	H&SS	Member
68	Bhattacharya Amitabh	Assistant Professor	Ph.D. (University of Illinois at Urbana Champaign, USA)	Mechanical Engg.	No
69	Bhattacharya Avik M.	Assistant Professor	Ph.D. (Telecom ParisTech, France)	CSRE	No
70	Bhattacharyya Arup R.	Professor	Ph.D. (IIT Delhi)	Met.Engg. & Mat.Sc.	Member
71	Bhattacharyya Pushpak	Professor	Ph.D.(IIT Bombay)	CS & E	Member
72	Bhattacharyya Surajit	Assistant Professor	Ph.D (IIT Kanpur)	H&SS	No
73	Bhattacharyya Tanmay	Assistant Professor	Ph. D. (Gurukula Kangri Vishwavidyalaya, Haridwar)	H&SS	No
74	Bhaumik Prasenjit	Assistant Professor	Ph.D. University of OULU	Bio-Science & Bio-Engineering	No
75	Bhushan Mani	Associate Professor	Ph.D.(IIT Bombay)	Chemical Engg	No
76	Biswal T.K.	Professor	Ph.D.(University Rajasthan)	Earth Science	Member
77	Biswas Supratim	Professor	Ph.D.(IIT Kharagpur)	CS & E	Member
78	Bodi Kowsik V R	Assistant Professor	Ph.D. (IIT Madras)	Aerospace Engg.	No
79	Borkar V. S.	Professor	Ph.D. (University of California)	Electrical Engg.	Member

Sr. No.	Name	Designation	Qualification	Deptt.	Senate/Remarks
80	Bose Manaswita	Assistant Professor	Ph.D. (IIT Science Bangalore)	Energy Science & Engg.	No
81	Chakrabarti Rajarshi	Assistant Professor	Ph.D. (IISc.)	Chemistry	No
82	Chakrabarti Soumen	Associate Professor	Ph.D. (University of California)	CS & E	No
83	Chakrabarti Subhananda	Associate Professor	Ph.D. (University of Calcutta)	Electrical Engg.	No
84	Chakraborty Debraj	Assistant Professor	Ph.D. (University of Florida)	Electrical Engg.	No
85	Chakraborty Paulomi	Assistant Professor (Contractual Basis)	Ph.D. (University of Alberta)	H&SS	No
86	Chakraborty Supratik	Professor	Ph.D. (The Leland Stanford Jr. University)	CS & E	Member
87	Chakravarthy B. K.	Professor	M.Des (IIT Bombay)	I.D.C	Member/Head
88	Chandiramani N.K.	Professor	Ph.D.(Virginia Tech.)	Civil Engg	Member
89	Chandorkar Mukul C.	Professor	Ph.D. (Univ.of Wisconsin Madison)	Electrical Engg.	Member
90	Chandran Sharat	Professor	Ph.D. (Univ.of Maryland)	CS & E	Member/ Head (ADC)
91	Chaporkar Prasanna S.	Associate Professor	Ph.D. (University of Pennsylvania – Philadelphia)	Electrical Engg.	No
92	Chatterjee Abhijit	Assistant Professor	Ph.D. (University of Delaware)	Chemical Engg	No
93	Chatterjee Avijit	Professor	Ph.D. (IIT Bombay)	Aerospace Engg.	Member/ Prof. In Charge, (Placement Office)
94	Chatterjee Debasish	Assistant Professor	Ph.D. (University of Illinois at Urbana Champaign, USA)	Systems & Control	No
95	Chatterjee Kishore	Professor	Ph.D. (IIT Kanpur)	Electrical Engg.	Member/ Associate Dean (IPS) & Chairman, AAC
96	Chaudhari Sanjeev	Professor	Ph.D. (IIT Kanpur)	CESE	Member
97	Chaudhari Subhasis	Professor	Ph.D. (University of California)	Electrical Engg.	Member/ Dy. Director (AIA)
98	Chaudhuri Parag Kumar	Assistant Professor	Ph.D. (IIT Delhi)	CS & E	No
99	Chawdhury A.A.	Assistant Professor	Ph.D. (Pennsylvania State University)	Mechanical Engg.	No
100	Chebrolu Kameswari	Assistant Professor	Ph.D. (UCSD, California)	CS & E	No
101	Choudhary Deepankar	Associate Professor	Ph.D. (IISc Bangalore)	Civil Engg	No
102	Chowdhury Arindam	Associate Professor	Ph.D. (University of Carnegie Mellon)	Chemistry	No
103	Mukherjee Conan	Assistant Professor	Ph.D. (Indian Statistical Institute, Kolkata)	H&SS	-
104	Contractor A.Q.	Professor	Ph.D. (IIT Bombay)	Chemistry	Member
105	Dalvi Girish	Assistant Professor	Ph.D. (IIT, Bombay)	I.D.C	-

Sr. No.	Name	Designation	Qualification	Deptt.	Senate/Remarks
106	Damani Om P.	Associate Professor	Ph.D. (University of Texas at Austin)	CS & E	No
107	Das Amit Kumar	Assistant Professor	Ph.D.(Carnegie Mellon University)	Civil Engg	-
108	Das Ashish	Professor	Ph.D. (I.A.S.R.I)	Mathematics	Member
109	Das Dibyendu	Associate Professor	Ph.D. (University of Bombay)	Physics	No
110	Das Pragya	Associate Professor	Ph.D. (TIFR)	Physics	No
111	Dasaka Satyanarayana M	Assistant Professor	Ph.D. (IISc. Bangalore)	Civil Engg	No
112	Dasgupta Ratul	Assistant Professor	Ph.D.(JNCASR, Bangalore)	Chemical Engg	-
113	Dash Sadhana	Assistant Professor	Ph.D. (Insitute of Physics)	Physics	No
114	Date Prashant P.	Professor	Ph.D. (IIT Madras)	Mechanical Engg.	Member
115	Datta Sambhu N.	Professor	Ph.D. (University of Virginia)	Chemistry	Member
116	De Amitava	Professor	Ph.D. (IIT Kanpur)	Mechanical Engg.	Member
117	Deb Kushal	Professor	Ph.D. (University of Hyderabad)	H&SS	Member
118	Deo Makrand C.	Professor	Ph.D. (IIT Bombay)	Civil Engg	Member
119	Desai Madhav P.	Professor	Ph.D. (University of IlliNois)	Electrical Engg.	Member
120	Desai Uday B.	Professor	Ph.D. (The John Hopkins Univ.)	Electrical Engg.	Member
121	Desai Yogesh M	Professor	Ph.D. (University of Manitoba)	Civil Engg	Member/ Dean (AA)
122	Dey Bikash Kumar	Associate Professor	Ph.D. (IISc Bangalore)	Electrical Engg.	No
123	Dhar Subhabrata	Associate Professor	Ph.D. (M.S. University, Baroda)	Physics	No
124	Dikshit Anil Kumar	Professor	Ph.D. (University of Cornell)	CESE	Member/Head
125	Diwan Ajit A.	Professor	Ph.D. (IIT Bombay)	CS & E	Member
126	Doolla Suryanarayana D.	Assistant Professor	Ph.D. (IIT Delhi)	Energy Science & Engg.	No
127	Durani Susheel J.	Professor	Ph.D. (Jammu)	Chemistry	Member
128	Durbha Surya	Assistant Professor	Ph.D. (Mississippi State University, Mississippi)	CSRE	No
129	Dusane O. R.	Professor	Ph.D. (University of Pune)	Met.Engg. & Mat.Sc.	Member/ Dean (IR)
130	Dutta Anindya	Professor	Ph.D. (University of Jadavpur)	Chemistry	Member/ Associate Dean (SA)
131	Dutta Pankaj	Assistant Professor	Ph.D. (IIT- Kharagpur)	SJMSOM	No
132	Dutta Suryendu	Assistant Professor	Ph.D. (RWTH Aachen University)	Earth Science	No
133	Duttagupta S.P.	Assistant Professor	Ph.D. (University of Rochester)	Electrical Engg.	No
134	Eldho Iype T.	Professor	Ph.D. (IIT Bombay)	Civil Engg	Member

Sr. No.	Name	Designation	Qualification	Deptt.	Senate/Remarks
135	Enamundram Chandrasekhar	Associate Professor	Ph.D. (University of Mumbai)	Earth Science	No
136	Fernandes Baylon G.	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member
137	Fernandes Rodney A.	Associate Professor	Ph.D. (University of Pune)	Chemistry	No
138	Gadre Vikram M.	Professor	Ph.D. (IIT Delhi)	Electrical Engg.	Member/Head
139	Gaitonde U.N.	Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	Member
140	Gandhi Prasanna S.	Associate Professor	Ph.D. (University of Rice)	Mechanical Engg.	No
141	Ganesh Anuradha	Professor	Ph.D. (IIT Delhi)	Energy Science & Engg.	Member
142	Ganguly Swaroop	Assistant Professor	Ph.D. (University of Texas)	Electrical Engg.	No
143	Ganguly Udayan	Assistant Professor	Ph.D. (Cornell University)	Electrical Engg.	No
144	Garg Anurag	Assistant Professor	Ph.D. (IIT, Roorkee)	CESE	No
145	Garge Shripad M.	Assistant Professor	Ph.D. (University of Allahabad)	Mathematics	No
146	Gautam Ritesh	Assistant Professor	Ph.D. (George Mason University)	CSRE	-
147	Gedam Shirishkumar S.	Associate Professor	Ph.D. (IIT Bombay)	CSRE	No
148	George Siby K.	Associate Professor	Ph.D. (NEHU Univ. Shillog)	H&SS	No
149	Gharpure Santosh J.	Associate Professor	Ph.D. (IISc Bangalore)	Chemistry	No
150	Ghorpade S.R.	Professor	Ph.D. (Purdue Univ.)	Mathematics	Member/Head
151	Ghosh Santanu K.	Assistant Professor	Ph.D. (Jadavpur University)	Bio-Science & Bio-Engineering	No
152	Ghosh Atanu	Professor	M.Tech. (IIT Delhi) P.G. Diploma in Mgmt. (IIM Ahemedabad)	SJMSOM	Member
153	Ghosh Prakashchandra	Associate Professor	Ph.D. Technical Univ. of Aachem	Energy Science & Engg.	No
154	Ghosh Prasenjit	Associate Professor	Ph.D. (University of Columbia)	Chemistry	No
155	Ghosh Siddhartha	Associate Professor	Ph.D. (Univ. of Michigan)	Civil Engg	No
156	Ghosh Subimal	Assistant Professor	Ph.D. (IISc. Bangalore)	Civil Engg	No
157	Golay Pravesh J	Assistant Professor	Ph.D. (Pune University)	H&SS	No
158	Gopal R. Patil	Assistant Professor	Ph.D. (Remsselaer Polytechnic Institute, Troy)	Civil Engg	No
159	Gopalan Prakash	Professor	Ph.D. (Purdue Univ.)	Met.Engg. & Mat.Sc.	Member
160	Gopalan Rajaraman	Assistant Professor	Ph.D. (University of Manchester, UK)	Chemistry	No
161	Goswami Partha S.	Assistant Professor	Ph.D. (IISc Bangalore)	Chemical Engg	No
162	Goyal Alok	Professor	Ph.D. (California)	Civil Engg	Member
163	Gudi Ravindra D.	Professor	Ph.D. (University of Alberta, Canada)	Chemical Engg	No

Sr. No.	Name	Designation	Qualification	Deptt.	Senate/Remarks
164	Guha Anirban	Assistant Professor	Ph.D. (IIT Delhi)	Mechanical Engg.	No
165	Gumaste Ashwin Anil	Associate Professor	Ph.D. (University of Texas)	CS & E	No
166	Gundabala Venkat	Assistant Professor	Ph.D. (University of Sheffield, UK)	Chemical Engg	No
167	Gundimeda Haripriya S.	Associate Professor	Ph.D. (Indira Gandhi Institute of Development)	H&SS	No
168	Gupta Dipti	Assistant Professor	Ph.D. (IIT Kanpur)	Met.Engg. & Mat.Sc.	No
169	Gupta Kapil	Professor	Ph.D. (Univ. of Sheffield)	Civil Engg	Member
170	Gupta Meenakshi S.	Professor	Ph.D. (IIT Kanpur)	H&SS	Member
171	Gupta Rajesh	Assistant Professor	Ph.D. (IIT Delhi)	Energy Science & Engg.	No
172	Gupta Shalabh	Assistant Professor	Ph.D. (University of California)	Electrical Engg.	No
173	Guruprasad Padubidri J.	Assistant Professor	Ph.D. (Texas A & M Univ.)	Aerospace Engg.	No
174	Gururajan M.P.	Assistant Professor	Ph.D. (IISc., Bangalore)	Met.Engg. & Mat.Sc.	No
175	Hablani Hari B.	Professor (Contract)	Ph.D. (IISc., Bangalore)	Aerospace Engg.	No
176	Hariharan A.	Assistant Professor	Ph.D. (University of Kansas, Lawrence)	Mathematics	No
177	Hemachandra N.	Professor	Ph.D. (IISc., Bangalore)	I.E. & O.R.	Member/Head
178	Himgorani Alka	Associate Professor	Ph.D. (University of California, Berkeley)	I.D.C	-
179	Inamdar Mandar M.	Assistant Professor	Ph.D (California Institute of Tech.)	Civil Engg	No
180	Innamdar Arun B.	Associate Professor	Ph.D. (IIT Bombay)	CSRE	No
181	Iyer Sridhar R.	Associate Professor	Ph.D. (IIT Bombay)	CS & E	No
182	Iyer Kannan N.	Professor	Ph.D. (University of Purdue)	Mechanical Engg.	Member
183	Jadhav G.N.	Professor	Ph.D. (IIT Bombay)	Earth Science	Member
184	Jadhav Sameer R.	Assistant Professor	Ph.D. (John Hopkins Univ.)	Chemical Engg	No
185	Jagarlapudi Saketha Nath R.	Assistant Professor	Ph.D. (IISc. Bangalore)	CS & E	No
186	Jain Karuna	Professor	Ph.D. (IIT Kharagpur)	SJMSOM	Member
187	Jain Monica	Assistant Professor (Contractual Basis)	Master of Planning (University of Southern California)	C-USE	No
188	Jana Arnab	Assistant Professor (Contractual Basis)	Ph.D. (The University of Tokyo)	C-USE	-
189	Jangid R.S.	Professor	Ph.D. (IIT Delhi)	Civil Engg	Member
190	Jha Shishir Kumar	Associate Professor	Ph.D. (Syracuse Univ.)	SJMSOM	No
191	Jog S.D.	Assistant Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	No
192	John Joseph	Professor	Ph.D. (Birmingham, UK)	Electrical Engg.	Member
193	Jonnalagadda Krishna N.	Assistant Professor	Ph.D. (University of Illinois)	Mechanical Engg.	No

Sr. No.	Name	Designation	Qualification	Deptt.	Senate/Remarks
194	Joshi Anirudha N.	Professor	M.Tech. (IIT Bombay)	I.D.C	Member
195	Joshi Ashok	Professor	Ph.D. (IIT Bombay)	Aerospace Engg.	Member
196	Joshi Purba	Assistant Professor	M.Des (IIT Bombay)	I.D.C	No
197	Joshi R.K.	Professor	Ph.D. (IIT Madras)	CS & E	Member
198	Joshi R.R	Professor	Ph.D. (IIT Bombay)	Mathematics	Member
199	Joshi Suhas	Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	Member
200	Jothiprakash V.	Associate Professor	Ph.D. (IIT Madras)	Civil Engg	No
201	Juneja Ashish	Associate Professor	Ph.D. (National University of Singapore)	Civil Engg	No
202	Kabra Dinesh	Assistant Professor	Ph.D. (JNC for Advance Scientific Res., Bangalore)	Physics	No
203	Kaliappan Krishna P.	Professor	Ph.D. (IISc., Bangalore)	Chemistry	Member/ Associate Dean(R&D)
204	Kalro Arti D.	Assistant Professor	Ph.D. (IIT Madras)	SJMSOM	No
205	Kantimay S. Das Gupta	Assistant Professor	Ph.D. (IISc., Bangalore)	Physics	No
206	Kar Sandip	Assistant Professor	Ph.D. (Jadavpur University)	Chemistry	-
207	Karandikar Abhay	Professor	Ph.D. (IIT Kanpur)	Electrical Engg.	Member/Head
208	Karmakar Subhankar	Assistant Professor	Ph.D. (IISc., Bangalore)	CESE	No
209	Kartik V.	Assistant Professor	Ph.D. (Carnegie Mellon University, USA)	Mechanical Engg.	No
210	Kasbekar S. Gaurav	Assistant Professor	Ph.D. (University of Pennsylvania)	Electrical Engg.	No
211	Kathuria Vinish Kumar	Associate Professor	Ph.D. (Indira Gandhi Inst. of Development Research)	SJMSOM	No
212	Kaulkarni Ankur	Assistant Professor (Contractual Basis)	Ph.D. (University of Illinois at Urbana Champaign, USA)	Systems & Control	No
213	Kavitha Veeraruna	Assistant Professor	Ph.D. (IISc., Bangalore)	I.E. & O.R.	No
214	Kedare Shireesh B.	Professor	Ph.D. (IIT Bombay)	Energy Science & Engg.	Member
215	Keshari Manoj K.	Associate Professor	Ph.D. (TIFR)	Mathematics	No
216	Khakhar D.V.	Professor	Ph.D. (University of Massachusetts Amherst)	Chemical Engg	Member
217	Khan Azizuddin	Assistant Professor	Ph.D. (IIT Kanpur)	H&SS	No
218	Khanna Anand S.	Professor	Ph.D. (Madras Univ.)	Met.Engg. & Mat.Sc.	Member
219	Khaparde S.A.	Professor	Ph.D. (IIT Kharagpur)	Electrical Engg.	Member
220	Khedkar Uday P.	Professor	Ph.D. (IIT Bombay)	CS & E	Member
221	Khire M.V.	Associate Professor	Ph.D. (IIT Bombay)	CSRE	No
222	Khosla N.K.	Professor	Ph.D. (IIT Kanpur)	Met.Engg. & Mat.Sc.	Member
223	Kiran Kondabagil R.	Assistant Professor	Ph.D.-Biochemistry (University of Mysore)	Bio-Science & Bio-Engineering	No

Sr. No.	Name	Designation	Qualification	Deptt.	Senate/Remarks
224	Kotha Sambasivarao	Professor	Ph.D. (University of Hyderabad)	Chemistry	Member
225	Kottantharayil Anil	Associate Professor	Ph.D. (Universität der Bundeswehr, Munich Germany)	Electrical Engg.	-
226	Kowli Anupama	Assistant Professor	Ph.D. (University of Illinois at Urbana- Champaign)	Electrical Engg.	-
227	Kulkarni A. R.	Professor	Ph.D. (IIT Kharagpur)	Met.Engg. & Mat.Sc.	Member
228	Kulkarni A.M.	Professor	Ph.D. (IISc., Bangalore)	Electrical Engg.	Member
229	Kulkarni Malhar A.	Associate Professor	Ph.D. (University of Pune)	H&SS	-
230	Kulkarni Mrinmoyi	Assistant Professor	Ph.D. (State Univ.of New York)	H&SS	No
231	Kulkarni Purushottam S.	Assistant Professor	Ph.D. (University of Massachusetts)	CS & E	No
232	Kulkarni Rekha P.	Professor	Ph.D. (IIT Bombay)	Mathematics	Member
233	Kulkarni Salil S.	Assistant Professor	Ph.D. (University of Cornell)	Mechanical Engg.	No
234	Kulkarni Srikrishna V.	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member
235	Kulkarni Suvarn S.	Associate Professor	Ph.D. (University of Pune)	Chemistry	Co-opted Member
236	Kumar Anil	Professor	Ph.D. (IISc., Bangalore)	Chemistry	Member
237	Kumar Animesh N	Assistant Professor	Ph. D. (University of California)	Electrical Engg.	No
238	Kumar Ashutosh	Assistant Professor	Ph.D. (Tata Institute of Fundamental Research)	Bio-Science & Bio-Engineering	No
239	Kumar Girish	Professor	Ph.D. (IIT Kanpur)	Electrical Engg.	Member
240	Kumar Hemant Singh	Associate Professor	Ph.D. (Freie Univ., Berlin)	Earth Science	-
241	Kumar Sudarshan	Associate Professor	Ph.D. (IISc., Bangalore)	Aerospace Engg.	No
242	Kumaresan P.	Assistant Professor	M.Des (IIT Bombay)	I.D.C	-
243	Kundu Tapanendu	Professor	Ph.D. (Jadavpur Univ.)	Physics	Member
244	Kunwar Ambarish	Assistant Professor	Ph. D. (IIT Kanpur)	Bio-Science & Bio-Engineering	No
245	Kusre Anand T	Professor (Contract)	M.Tech. (IIT Bombay) / Diploma in Business Finance	SJMSOM	Member
246	Laha Apurba	Assistant Professor	Ph.D. (IISc., Bangalore)	Electrical Engg.	No
247	Lahiri G.K.	Professor	Ph.D. (University of Jadavpur)	Chemistry	Member
248	Leena Vachhani	Assistant Professor	Ph.D. (IIT Madras)	Systems & Control	No
249	Limaye Nutan	Assistant Professor	Ph.D. (Homi Bhabha National Institute)	CS & E	No
250	Lodha Saurabh	Assistant Professor	Ph.D. (Purdue University)	Electrical Engg.	No
251	M. V. R. Murti	Associate Professor	Ph.D. (IIT Bombay)	CSRE	No
252	Mahajan A. Ashutosh	Assistant Professor	Ph.D. (Lehigh University)	H&SS	No
253	Mahajan Ashutosh A.	Assistant Professor	Ph.D. (Lehigh University)	I.E. & O.R.	-

Sr. No.	Name	Designation	Qualification	Deptt.	Senate/Remarks
254	Mahajan Avinash V.	Professor	Ph.D. (Iowa)	Physics	Member
255	Mahajan Prachi	Assistant Professor	Ph.D. (Indian Institute of Science, Bangalore, India)	Mathematics	-
256	Mahajan Swapneel	Associate Professor	Ph.D. (Cornell Univ.)	Mathematics	No
257	Mahajani Sanjay	Professor	Ph.D. (University of Bombay)	Chemical Engg	Member
258	Mahapatra S.	Assistant Professor	Ph.D. (University of Wurzburg, German)	Physics	No
259	Mahapatra Souvik	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member
260	Mahulikar S.P.	Professor	Ph.D. (Nanyang Tech. Univ., Singapore)	Aerospace Engg.	Member
261	Maiti Debabrata	Assistant Professor	Ph.D. (The Johns Hopkins University)	Chemistry	No
262	Maji Avijit	Assistant Professor	Doctor of Engg. (Morgan State University, USA)	Civil Engg	No
263	Maji Samir K.	Assistant Professor	Ph.D. (Jadavpur University)	Bio-Science & Bio-Engineering	No
264	Major Syed S.	Professor	Ph.D. (IIT Delhi)	Physics	Member
265	Majumder Abhijit	Assistant Professor	Ph.D. (IIT Kanpur)	Chemical Engg	-
266	Malani Ateeque	Assistant Professor	Ph.D. (IISc., Bangalore)	Chemical Engg	No
267	Malik Ranjan K.	Professor	Ph.D. (Wisconsin Madison Univ.)	Chemical Engg	Member
268	Mallick Sudhanshu	Assistant Professor	Ph.D. (Purude University)	Met.Engg. & Mat.Sc.	No
269	Malshe Milind S.	Professor	Ph.D. (Bombay Univ.)	H&SS	Member
270	Manchanda Rohit	Professor	Ph.D. (Oxford Univ.)	Bio-Science & Bio-Engineering	Member/Head
271	Mandal J.C.	Professor	Ph.D. (IISc., Bangalore)	Aerospace Engg.	Member
272	Mandal J.N.	Professor	Ph.D. (IISc., Bangalore)	Civil Engg	Member
273	Manik D.N.	Professor	Ph.D. (Auburn Univ.)	Mechanical Engg.	Member
274	Manjunath D.	Professor	Ph.D. (Rensselaer Polytechnic, New York)	Electrical Engg.	Member/Head (Computer Centre)
275	Mathew George	Associate Professor	Ph.D. (M.S. Univ.)	Earth Science	No
276	Mathew Tom V	Associate Professor	Ph.D (IIT Madras)	Civil Engg	No
277	Mathur Pradeep	Professor	Ph.D. (University of Keel)	Chemistry	Member
278	Mehra Anurag	Professor	Ph.D. (University of Bombay)	Chemical Engg	Member
279	Mehra Sarika	Assistant Professor	Ph.D.(University of Minessota)	Chemical Engg	No
280	Menezes Viren	Associate Professor	Ph.D. (IISc., Bangalore)	Aerospace Engg.	No
281	Menezes Bernard L	Professor	Ph.D. (University of Texas)	CS & E	Member
282	Merchant S.N.	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member
283	Mishra M.K.	Professor	Ph.D. (University of Florida)	Chemistry	Member
284	Mishra Trupti	Assistant Professor	Ph.D. (IIT Kharagpur)	SJMSOM	No

Sr. No.	Name	Designation	Qualification	Deptt.	Senate/Remarks
285	Misra D.S.	Professor	Ph.D. (IIT Kanpur)	Physics	Member
286	Mitra Mira	Assistant Professor	Ph.D. (IISc., Bangalore)	Aerospace Engg.	No
287	Mitra Mithun K.	Assistant Professor	Ph.D. (Institute of Mathematical Sciences)	Physics	-
288	Mitra Sagar	Assistant Professor	Ph.D. (IISc., Bangalore)	Energy Science & Engg.	No
289	MJNV Prasad	Assistant Professor	Ph.D. (IISc., Bangalore)	Met.Engg. & Mat.Sc.	No
290	Mohan B.K.	Associate Professor	Ph.D. (IIT Bombay)	CSRE	No
291	Mohan Gollapally	Professor	Ph.D. (ISM Dhanbad)	Earth Science	Member/Head
292	Mohanty Raja	Associate Professor	M.Des (IIT Bombay)	I.D.C	No
293	Moharir Arun S.	Professor	Ph.D. (IIT Kanpur)	Chemical Engg	Member
294	Momaya Kirankumar S.	Professor	Ph.D. (University of Toronto)	SJMSOM	Member
295	Mote Rakesh	Assistant Professor	Ph.D. (Nanyang Technological University, Singapore)	Mechanical Engg.	-
296	Moudgalya Kannan	Professor	Ph.D. (Rice Univ. Houston)	Chemical Engg	Member
297	Mujumdar P.M.	Professor	Ph.D. (IIT Bombay)	Aerospace Engg.	Member/ Dean (R&D) & Head (CASDE)
298	Mukherjee Asmita	Associate Professor	Ph.D. (TIFR)	Physics	No
299	Mukherjee Indrajit	Assistant Professor	Ph.D. (IIT Kaharagpur)	SJMSOM	No
300	Mukherjee Jayanta	Associate Professor	Ph.D (The Ohio State Univ.Columbus, USA)	Electrical Engg.	No
301	Mukherjee Soumyajit	Assistant Professor	Ph.D. (IIT Roorke)	Earth Science	No
302	Mukherjee Soumyo	Professor	Ph.D. (Univ. of Colarado)	Bio-Science & Bio-Engineering	Member
303	Mukherjee Suparna	Professor	Ph.D. (University of Michigan)	CESE	Member
304	Mukhopadhyay Amartya	Assistant Professor (Contractual Basis)	Ph.D. (University of Oxford, UK)	Met.Engg. & Mat.Sc.	No
305	Mukhopadhyay Siuli	Assistant Professor	Ph.D. (University of Florida)	Mathematics	No
306	Mukul Malay	Associate Professor	Ph.D. (University of Rochester)	Earth Science	No
307	Murthy Sahana	Assistant Professor	Ph.D. (Rutgers University)	C- DEEP	No
308	Nagaraja G.	Professor	Ph.D. (IISc., Bangalore)	CS & E	Member
309	Nagarajan R.	Associate Professor	Ph.D. (IIT Bombay)	CSRE	No
310	Nair Pradeep	Assistant Professor	Ph.D. (Purdue University)	Electrical Engg.	No
311	Namboothiri I.N.N.	Professor	Ph.D. (IISc., Bangalore)	Chemistry	Member
312	Nambudiripad N.	Associate Professor	Ph.D. (Oxford Univ.)	Physics	No
313	Nanavati Hemant J.	Professor	Ph.D. (Georgia Institute Technology)	Chemical Engg	Member
314	Nand Kishore	Professor	Ph.D. (IIT Delhi)	Chemistry	Member

Sr. No.	Name	Designation	Qualification	Deptt.	Senate/Remarks
315	Nandi Basanta Kumar	Associate Professor	Ph.D. (Utkal University)	Physics	No
316	Nanthagopalan Prakash	Assistant Professor (Contractual Basis)	Ph.D. (IIT Madras)	Civil Engg	No
317	Naraga Prabhakar	Assistant Professor	Ph.D. (IIT, Kharagpur)	Earth Science	-
318	Narasimhan K	Professor	Ph.D. (Purdue Univ.)	Met.Engg. & Mat.Sc.	Member
319	Narayanan Krishna S.	Associate Professor	Ph.D. (IIT Madras)	CS & E	No
320	Narayanan Krishnan	Professor	Ph.D. (Univ. of Delhi)	H&SS	Member/Head
321	Narayanan N C.	Associate Professor	Ph.D. (ISS, The Hague, Netherlands)	CTARA	No
322	Narayanan Vishnu	Assistant Professor	Ph.D. (University of California)	I.E. & O.R.	No
323	Nataraj Neela	Associate Professor	Ph.D. (IIT Delhi)	Mathematics	No
324	Nataraj P.S.V.	Professor	Ph.D. (IIT Madras)	Systems & Control	Member
325	Nath Rajakishore	Assistant Professor	Ph.D. (Central Univ. Hyderabad)	H&SS	No
326	Nayak Jayant K.	Professor	Ph.D. (IIT Delhi)	Energy Science & Engg	Member
327	Neergat Manoj	Associate Professor	Ph.D. (Indian Institute of Science, Bangalore)	Energy Science & Engg.	No
328	Niranjan T.T.	Assistant Professor	Ph.D. (Fellow, Management Development Institute, Gurgaon)	SJMSOM	No
329	Noronha Santosh B.	Assistant Professor	Ph.D. (Univ.of Maryland, Baltimore County)	Chemical Engg	No
330	P. Vedagiri	Assistant Professor	Ph.D. (IIT Madras)	Civil Engg	No
331	P.I. Pradeep Kumar	Associate Professor	Ph.D. (Uppasala University, Sweden)	Chemistry	No
332	Padhi Puja	Assistant Professor	Ph.D. (Univ. of Hyderabad)	H&SS	No
333	Pal Rama	Assistant Professor (Contractual Basis)	Ph.D. (Indira Gandhi Institute of Development Research)	H&SS	No
334	Panda Dulal	Professor	Ph.D. (Jadavpur Univ.)	Bio-Science & Bio-Engineering	Member
335	Panda Ranjan K.	Associate Professor	Ph.D. (University of Hyderabad)	H&SS	No
336	Panda Ratikanta	Assistant Professor	Ph.D. (University of Hyderabad)	H&SS	No
337	Pandalai Hari S.	Professor	Ph.D. (ISM)	Earth Science	Member/ Dy. Director (FEA)
338	Pande Kanchan	Professor	Ph.D. (Gujarat Univ)	Earth Science	Member
339	Pande Sanjay S.	Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	Member
340	Pandey Ashish	Assistant Professor	MBA(University Institute of Management)	SJMSOM	No
341	Pandey Prem C.	Professor	Ph.D. (University of Toronto)	Electrical Engg.	Member/ Associate Dean (AP)
342	Pani A.K.	Professor	Ph.D. (IIT Kanpur)	Mathematics	Member

Sr. No.	Name	Designation	Qualification	Deptt.	Senate/Remarks
343	Pant Prita	Associate Professor	Ph.D. (Cornell Univ)	Met.Engg. & Mat.Sc.	Co-opted Member
344	Pant R.S.	Professor	Ph.D. (U.K.)	Aerospace Engg.	Yes
345	Panwar Ajay S	Assistant Professor	Ph.D. (University of Minnesota)	Met.Engg. & Mat.Sc.	No
346	Parida Smrutiranjana	Assistant Professor	Ph.D. (University of Saarlandes, Germany)	Met.Engg. & Mat.Sc.	No
347	Parmananda Punit	Associate Professor	Ph.D. (Ohio University)	Physics	No
348	Parthasarathy D.	Professor	Ph.D. (Univ.of Hyderabad)	H&SS	Member
349	Patankar Swati	Professor	Ph.D. (Tufts Univ. Boston)	Bio-Science & Bio-Engineering	Member/ Prof. In Charge, (IIT-Monash Research Academy)
350	Patel Suresh C	Professor	Ph.D. (Univ of Wyoming)	Earth Science	Member
351	Patil Mahesh B	Professor	Ph.D. (Univ.of IlliNois)	Electrical Engg.	Member
352	Patil Rahul J	Assistant Professor	Ph.D. (University of Colorado)	SJMSOM	No
353	Patkar Sachin B	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member
354	Pattanaik Sarmistha	Assistant Professor	Ph.D. (Jawaharlal Nehru University)	H&SS	No
355	Patwardhan Anand P	Professor	Ph.D. (Carnegie Mellon Univ.)	SJMSOM	Member
356	Patwardhan S.C.	Professor	Ph.D. (IIT Bombay)	Chemical Engg	Member
357	Patwari Naresh Ganpathi	Professor	Ph.D. (IIT Bombay)	Chemistry	Member
358	Paul Debjani	Assistant Professor	Ph.D. (IISc., Bangalore)	Bio-Science & Bio-Engineering	No
359	Pawaskar Dnyanesh N.	Associate Professor	Ph.D. (Brown Univ., Providence USA)	Mechanical Engg.	No
360	Phale Prashant S.	Professor	Ph.D. (IISc. Bangalore)	Bio-Science & Bio-Engineering	Member
361	Phani Tetali	Associate Professor	M.Des. (IIT Bombay)	I.D.C	No
362	Pillai Harish K	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member
363	Pillai Sibi Raj B.	Assistant Professor	Ph.D. (Ecole Polytechnic Federale De Lausanne)	Electrical Engg.	No
364	Poopathi K.P.K.	Professor	Ph.D. (IIT Kanpur)	Mechanical Engg.	Member
365	Poovaiah B.A. Ravi	Professor	DIIT (IIT Bombay)	I.D.C	Member
366	Prabhu Nityananda	Professor	Ph.D. (University of Canegie)	Met.Engg. & Mat.Sc.	Member/ Head, Faculty Co-ordinator, (SMP)
367	Prabhu S.V.	Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	Member
368	Pradeep A.M.	Associate Professor	Ph.D. (IIT Kanpur)	Aerospace Engg.	No
369	Prasad Shiva	Professor	Ph.D. (Delhi)	Physics	Member
370	Prasanna T.R.S.	Assistant Professor	Ph.D. (MIT, Cambridge)	Met.Engg. & Mat.Sc.	No

Sr. No.	Name	Designation	Qualification	Deptt.	Senate/Remarks
371	Punekar N.S.	Professor	Ph.D. (IISc., Bangalore)	Bio-Science & Bio-Engineering	Member
372	Puranik Bhalchandra	Associate Professor	Ph.D. (University of Wisconsin Madison)	Mechanical Engg.	No
373	Purwar Rahul	Assistant Professor	Ph.D. (Hannover Medical School, Hannover, Germany)	Bio-Science & Bio-Engineering	-
374	Puthenpurakal Tony J.	Associate Professor	Ph.D. (University of Purdue)	Mathematics	No
375	Radhakrishna M.	Professor	Ph.D. (Indian School of Mines, Dhanbad)	Earth Science	Member
376	Radhakrishnan R.	Assistant Professor	Ph.D. (Centre Study of Culture & Society, Bangalore)	H&SS	No
377	Raghunathan Ravi	Associate Professor	Ph.D. (University of Yale)	Mathematics	Co-opted Member
378	Raja S. V.	Professor	Ph.D. (IISc. Bangalore)	Met.Engg. & Mat.Sc.	Member
379	Rajamanickam Venkatesh	Associate Professor	M.Des.(IIT Bombay)	I.D.C	-
380	Raje Deepashree	Assistant Professor	Ph.D. (IISc., Bangalore)	Civil Engg	No
381	Rajendran Bipin	Assistant Professor	Ph.D. (Stanford University)	Electrical Engg.	No
382	Rajwade Ajit	Assistant Professor	Ph.D. (Florida University, USA)	CS & E	-
383	Rama R	Professor	Ph.D.	CS & E	Yes
384	Ramachandran Prabhu	Assistant Professor	Ph.D. (IIT-Madras)	Aerospace Engg.	No
385	Ramadesigan Venkatasailanathan	Assistant Professor	Ph.D. (Washington University)	Energy Science & Engg.	-
386	Ramadevi Pichai	Professor	Ph.D. (University of Madras)	Physics	Member
387	Ramakrishnan D	Associate Professor	Ph.D. (M.S. University, Baroda)	Earth Science	No
388	Ramakrishnan Ganesh	Assistant Professor	Ph.D. (IIT Bombay)	CS & E	No
389	Ramamritham K. S.	Professor	Ph.D. (University of Utah)	CS & E	Member/ Head (C-USE)
390	Raman Bhaskaran	Associate Professor	Ph.D. (University of California at Berkeley)	CS & E	No
391	Raman Preeti	Assistant Professor	Ph.D. (TIFR)	Mathematics	No
392	Ramasankaran RAAJ	Assistant Professor	Ph.D. (IIT Roorkee)	CS & E	No
393	Ramasubramanian K.	Associate Professor	Ph.D. (University of Madras)	H&SS	No
394	Ramaswamy Murugavel	Professor	Ph.D. (IISc., Bangalore)	Chemistry	Member/Head
395	Rana Indra K.	Professor	Ph.D. (University of Calcutta)	Mathematics	Member
396	Ranade Abhiram G.	Professor	Ph.D. (University of Yale)	CS & E	Member
397	Ranade Shilpa	Associate Professor	M.Des. (IIT Bombay)	I.D.C	No
398	Rane Milind V.	Professor	Ph.D. (University of Maryland)	Mechanical Engg.	Member
399	Rane Mandar	Assistant Professor	M.Des. (IIT Bombay)	I.D.C	No

Sr. No.	Name	Designation	Qualification	Deptt.	Senate/Remarks
400	Rangaraj Narayan	Professor	Ph.D. (John Hopkins Univ.)	I.E. & O.R.	Member/ Dean (AP)
401	Ranjan Akhil	Professor	Ph.D. (University of Bombay)	Mathematics	Member
402	Ranjith Padinhateeri	Assistant Professor	Ph.D. (IIT Madras)	Bio-Science & Bio-Engineering	No
403	Rao Mallikarjuna K.S.	Assistant Professor	Ph.D. (IISc., Bangalore)	I.E. & O.R.	No
404	Rao Anand B	Associate Professor	Ph.D. (C.M. university, Pittsburgh)	CTARA	No
405	Rao C. Pulla	Professor	Ph.D. (IISc., Bangalore)	Chemistry	Member
406	Rao Emmela P.	Associate Professor	Ph.D. (IIT Bombay)	Civil Engg	No
407	Rao K. Krishnamurthy	Professor	Ph.D. (University of Bombay)	Bio-Science & Bio-Engineering	Member
408	Rao K.V.K	Professor	Ph.D. (IIT Madras)	Civil Engg	Member/Head
409	Rao Kumar	Assistant Professor	Ph.D. (Univ. Of Connecticut Ctorrs, CT)	Physics	No
410	Rao Nageshwara S. V. D.	Associate Professor	Fellow of IIM Ahmedabad	SJMSOM	No
411	Rao Preeti S.	Professor	Ph.D. (University of Florida)	Electrical Engg.	Member
412	Rao Ramgopal V.	Professor	Ph.D. (University of Germany)	Electrical Engg.	Member
413	Rao Sapar Narayan	Professor	Ph.D. (IIT Madras), Dip.in Business Finance	SJMSOM	Member
414	Rao Sumant M.	Associate Professor	M.Des. (Uisual Communication)	I.D.C	No
415	Rao Y.S.	Associate Professor	Ph.D. (IIT Bombay)	CSRE	No
416	Rastogi A Kumar	Professor	Ph.D. (University of Birmingham)	Civil Engg	Member
417	Ravi Bhallamudi	Professor	Ph.D. (IISc., Bangalore)	Mechanical Engg.	Member
418	Ravikanth M.	Professor	Ph.D. (IIT Kanpur)	Chemistry	Member
419	Ray Gaur G.	Professor	Ph.D. (University of Calcutta)	I.D.C	Member
420	Reddy Manne Janga	Assistant Professor	Ph.D. (IISc., Bangalore)	Civil Engg	No
421	Robinson Rowena	Professor	Ph.D. (University of Cambridge)	H&SS	Member
422	Roy Bhaskar	Professor	Ph.D. (IIT Kharagpur)	Aerospace Engg.	Member
423	Roy Sandip	Associate Professor	M.S. (SUNY, Buffalo)	Chemical Engg	No
424	S. Maheswaran	Assistant Professor	Ph.D. (University of Manches)	Chemistry	No
425	Sabnani Nina	Associate Professor	M.A (Syracuse Univ, Newyork,USA)	I.D.C	No
426	Sabnis Sanjeev V.	Professor	Ph.D (University of Madras)	Mathematics	Member
427	Sadhu Nachiketa	Assistant Professor	M.Sc. (University of Calcutta)	I.D.C	No
428	Saha Dipankar	Assistant Professor	Ph.D. (University of Michigan)	Electrical Engg.	No

Sr. No.	Name	Designation	Qualification	Deptt.	Senate/Remarks
429	Saha Koushik	Assistant Professor	Ph.D. (Indian Statistical Institute)	Mathematics	-
430	Saha Sandip Kumar	Assistant Professor	Ph.D. (IISc., Bangalore)	Mechanical Engg.	No
431	Sahoo Anirudha	Associate Professor	Ph.D. (Texas A&M Univ.)	CS & E	No
432	Sain Anirban	Associate Professor	Ph.D. (IISc., Bangalore)	Physics	No
433	Saini Supreet	Assistant Professor	Ph.D. (University of Illinois) at Urbana Champaign, USA	Chemical Engg	No
434	Samajdar Indradev	Professor	Ph.D. (University of Drexel)	Met.Engg. & Mat.Sc.	Member/ Head of (CRNTS) & SAIF
435	Sandesh M. Ramu	Assistant Professor	M.Des. (IIT Bombay)	I.D.C	No
436	Santanu Dey	Assistant Professor	Ph.D. (Indian Statistical Institute)	Mathematics	No
437	Santhanam Rekha	Assistant Professor	Ph.D. (University of Illinois at Urbana Champaign, USA)	Mathematics	No
438	Sanyal Amitabha	Professor	Ph.D. (IIT Kanpur)	CS & E	Member
439	Saraph Girish P.	Associate Professor	Ph.D. (University of Maryland)	Electrical Engg.	No
440	Saraswati Pratul K.	Professor	Ph.D. (IIT Bombay)	Earth Science	Member
441	Sarawagi Sunita	Associate Professor	Ph.D. (University of California)	CS & E	No
442	Sarda N.L.	Professor	Ph.D. (IIT Bombay)	CS & E	Member
443	Sarin Pradeep	Assistant Professor	Ph.D. (Massachusetts Instt. of Tech.)	Physics	No
444	Sarkar Arindam	Assistant Professor (Contractual Basis)	Ph.D. (University of Texas at Austin)	Chemical Engg	No
445	Sarkar Shaibal K	Assistant Professor	Ph.D. (Weizmann Instiute of Science)	Energy Science & Engg.	No
446	Sarma Vaijayanthi Mala	Associate Professor	Ph.D. (Massachusetts Instt.of Tech.)	H&SS	No
447	Sasidhar Y.U	Professor	Ph.D. (IIT Madras)	Chemistry	Member
448	Saxena Sumit	Assistant Professor (Contractual Basis)	Ph.D. (New Jersey Institute of Technology, USA)	Met.Engg. & Mat.Sc.	No
449	Sebastian C.D.	Associate Professor	Ph.D (Banaras Hindu Univ.)	H&SS	No
450	Sen Shamik R.	Assistant Professor	Ph.D. (University of Philadilphia)	Bio-Science & Bio-Engineering	No
451	Senthil Kumar M.	Professor	Ph.D. (IIT Madras)	Physics	Member
452	Seshu Pasumarthy S	Professor	Ph.D. (IIT Madras)	Mechanical Engg.	Member
453	Seth Jyoti R.	Assistant Professor	Ph.D. (The University of Texas at Austin)	Chemical Engg	-
454	Sethi Virendra	Professor	Ph.D. (University of Wisconsin, Madison)	CESE	Member
455	Shah Narendra G	Professor	Ph.D. (ATU France)	CTARA	Member
456	Sharma Dinesh	Assistant Professor	Ph.D. (Fellow Program in Management)	SJMSOM	No

Sr. No.	Name	Designation	Qualification	Deptt.	Senate/Remarks
457	Sharma Atul	Associate Professor	Ph.D. (IIT Kanpur)	Mechanical Engg.	No
458	Sharma Dinesh K.	Professor	Ph.D. (Bombay Univ.)	Electrical Engg.	Member
459	Sharma Nishant	Associate Professor	Ph.D. (enrolled with IIT Guwahati)	I.D.C	No
460	Sharma Pratibha	Associate Professor	Ph.D. (University of Rajasthan)	Energy Science & Engg.	No
461	Sharma S.D.	Professor	Ph.D. (IIT Bombay)	Aerospace Engg.	Member/Head
462	Sharma Vishnu D.	Professor	Ph.D. (BHU)	Mathematics	Member
463	Shastri Sudha	Associate Professor	Ph.D. (IIT Delhi)	H&SS	No
464	Shastri Yogendra	Assistant Professor	Ph.D. (University of Illinois at Chicago, Chicago IL)	Chemical Engg	No
465	Shaw Tara Shankar	Assistant Professor	Ph.D. (University, New York)	H&SS	-
466	Shekar Bharath Chandra	Assistant Professor	Ph.D. (Collorado School of Mines)	Earth Science	-
467	Sheth Hetu C.	Associate Professor	Ph.D. (IIT Bombay)	Earth Science	No
468	Shevgaonkar R.K.	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member
469	Shukla Alok	Professor	Ph.D. (Utah State University)	Physics	Member
470	Shukla Anshuman	Assistant Professor	Ph.D. (IIT Kanpur)	Electrical Engg.	No
471	Shukla Shobha	Assistant Professor	Ph. D. (Sunny – Buffal)	Met.Engg. & Mat.Sc.	No
472	Singh Ramesh Kumar	Assistant Professor	Ph.D. (Georgia Institute of Technology)	Mechanical Engg.	No
473	Singh A.K.	Professor	Ph.D.(IIT Kanpur)	Chemistry	Member
474	Singh Ashish	Assistant Professor	Ph.D. (Indira Gandhi Institute of Development Research)	SJMSOM	-
475	Singh B.P.	Professor	Ph.D. (IIT Kanpur)	Physics	Member
476	Singh D.N.	Professor	Ph.D. (IIT Kanpur)	Civil Engg	Member
477	Singh Dharamveer	Assistant Professor (Contractual Basis)	Ph.D. (University of Oklahoma)	Civil Engg.	No
478	Singh H.B.	Professor	Ph.D. (University of Aston)	Chemistry	Member
479	Singh Prabhakar P.	Professor	Ph.D. (University of North Carolina, USA)	Physics	Member/Head
480	Singh Suneet	Assistant Professor	Ph.D. (University of IlliNois)	Energy Science & Engg.	No
481	Singh Triok Nath	Professor	Ph.D. (BHU)	Earth Science	Member
482	Singh Virendra	Associate Professor	Ph.D. (NARA Institute of Science)	Electrical Engg.	No
483	Singh Vishwakarma H.	Professor	Ph.D. (University of Gorakhpur)	Chemistry	Member
484	Sinha Aniruddha	Assistant Professor (Contractual Basis)	Ph.D. (Ohio State University)	Aerospace Engg.	-
485	Sinha Arpita	Assistant Professor	Ph.D. (IISc., Bangalore)	Systems & Control	No

Sr. No.	Name	Designation	Qualification	Deptt.	Senate/Remarks
486	Sinha Krishnendu	Associate Professor	Ph.D. (University of	Aerospace Engg.	No
487	Sinha Pooja Purang	Associate Professor	Ph.D. (IIT Delhi) Minnesota)	H&SS	No
488	Sinha Ravi	Professor	Ph.D. (North Western Univ.)	Civil Engg	Member/ Dean (ACR)
489	Sirola Vikram Singh	Associate Professor	Ph.D. (JNU)	H&SS	No
490	Sista Sivaji G.	Assistant Professor	Ph.D. (Indian Institute of Science)	Mathematics	No
491	Sivakumar G.	Professor	Ph.D. (University of IlliNois)	CS & E	Member/ Head (CEDVS)
492	Sivasubramanian K.	Associate Professor	Ph.D. (TIFR)	Mathematics	No
493	Sohoni Milind Ashok	Professor	Ph.D. (IIT Bombay)	CS & E	Member
494	Solanki Chetan Singh	Associate Professor	Ph.D. (Katholieke Universiteit Leuven)	Energy Science & Engg.	Co-opted Member
495	Soman S.A.	Professor	Ph.D. (IISc., Bangalore)	Electrical Engg.	Member
496	Sonar Rajendra M.	Associate Professor	Ph.D. (University of Pune)	SJMSOM	No
497	Sreedhara Sheshadri	Associate Professor	Ph.D. (Indian Institute of Science, Bangalore)	Mechanical Engg.	No
498	Sreekumar G.V.	Associate Professor	M.Des. (IIT Bombay)	I.D.C	No
499	Sreekumar Sharmila	Associate Professor	Ph.D. (Central Univ. of Hyderabad)	H&SS	No
500	Sridharan Arun Kumar	Associate Professor	Ph.D. (The Pennsylvania state Univ)	Mechanical Engg.	No
501	Srikant Sukumar	Assistant Professor (Contractual Basis)	Ph.D. (University of Texas of Austin)	Systems & Control	No
502	Srinivasa Raman S.	Professor	Ph.D. (University of Toledo)	Met.Engg. & Mat.Sc.	Member
503	Srinivasan G.K.	Professor	Ph.D. (University of Minnesota)	Mathematics	Member
504	Srinivasan Murali K.	Professor	Ph.D. (University of IlliNois)	Mathematics	Member
505	Srinivasan Srikanth	Assistant Professor (Contractual Basis)	Ph.D. (Institute of Maths & Sci., Chennai)	Mathematics	No
506	Srivastava Atul	Assistant Professor	Ph.D. (IIT Kanpur)	Mechanical Engg.	No
507	Srivastava Radhendushka	Assistant Professor	Ph.D. (Indian Statistical Institute)	Mathematics	-
508	Srivastava Rohit	Associate Professor	Ph.D. (Louisiana Tech.Univ., Ruston,USA)	Bio-Science & Bio-Engineering	No
509	Srivastava Sanjeeva	Assistant Professor	Ph.D. (University of Alberta)	Bio-Science & Bio-Engineering	No
510	Srividya A.	Professor	Ph.D. (IIT Bombay)	Civil Engg	Member
511	Subrahmanyam G.	Professor	Ph.D. (Ind.Agri.Res.Inst. Delhi)	Bio-Science & Bio-Engineering	Member
512	Subramanyam A.	Professor	Ph.D. (University of Poona)	Mathematics	Member
513	Subuddhi M. K.	Associate Professor	M.A.(Calcutta) M.A.(J.N.U.)	H&SS	No

Sr. No.	Name	Designation	Qualification	Deptt.	Senate/Remarks
514	Sudarshan S.	Professor	Ph.D. (University of Wisconsin)	CS & E	Member/Head
515	Sule Virendra	Associate Professor	Ph.D. (Nara Institute of Science and Technology, Japan)	Electrical Engg.	No
516	Sunoj Raghavan	Associate Professor	Ph.D. (IISc., Bangalore)	Chemistry	No
517	Sunthar P.	Associate Professor	Ph.D. (IISc., Bangalore)	Chemical Engg	No
518	Suresh A. K.	Professor	Ph.D. (University of Monash)	Chemical Engg	Member
519	Suresh G. K	Professor	Ph.D. (IIT Madras)	Physics	Member
520	Suresh Kumar K.	Associate Professor	Ph.D. (IISc., Bangalore)	Mathematics	No
521	Suresh Sumathi	Professor	Ph.D. (IISc., Bangalore)	CESE	Member
522	Suryanarayanan Shashikanth	Associate Professor	Ph.D. (University of California)	Mechanical Engg.	No
523	Talwar Neelima	Professor	Ph.D. (University of Baroda)	H&SS	Member
524	Tandalia Parag	Assistant Professor	Ph.D. (IISc., Bangalore)	Mechanical Engg.	No
525	Tathagat A. Tulsi	Assistant Professor	Ph.D. (IISc., Bangalore)	Physics	No
526	Tatiparti Sankara S. V.	Assistant Professor	Ph.D. (University of Florida)	Energy Science & Engg.	No
527	Tayalia Prakriti	Assistant Professor (Contractual Basis)	Ph.D. (Harvard University)	Bio-Science & Bio-Engineering	No
528	Tembe Bhalachandra L.	Professor	Ph.D. (SUNY, USA)	Chemistry	Member
529	Tewari Asim	Associate Professor	Ph.D. (Georgia Institute of Technology, Atlanta, USA)	Mechanical Engg.	No
530	Thaokar Rochish	Associate Professor	Ph.D. (IISc., Bangalore)	Chemical Engg	No
531	Tirumkudulu Mahesh S.	Associate Professor	Ph.D. (City Univ.of New York, USA)	Chemical Engg	No
532	Tomy C.V.	Professor	Ph.D. (TIFR, Mumbai)	Physics	Member
533	Tripathy Mukta	Assistant Professor (Contractual Basis)	Ph.D. (University of Illinois at Urbana, Champaign, USA)	Chemical Engg	No
534	Trivedi Ashutosh	Assistant Professor	Ph.D. (University of Warwick)	CS & E	No
535	Trivedi Pushpa L.	Professor	Ph.D. (Mumbai University)	H&SS	Member
536	Tulapurkar Ashwin	Associate Professor	Ph.D. (Tata Institute of Fundamental Research)	Electrical Engg.	No
537	Umasankar S.	Professor	Ph.D. (IIT Kanpur)	Physics	Member
538	Varma Raghava	Professor	Ph.D. (IIT Kanpur)	Physics	Member
539	Vasa Parinda	Assistant Professor	Ph.D. (TIFR)	Physics	No
540	Vedula Rajendra P.	Professor	Ph.D. (University of Arizona)	Mechanical Engg.	Member/Head
541	Velaga Nagendra Rao	Assistant Professor	Ph.D. (Loughborough University)	Civil Engg	No
542	Vellaisamy P.	Professor	Ph.D. (IIT Kanpur)	Mathematics	Member

Sr. No.	Name	Designation	Qualification	Deptt.	Senate/Remarks
543	Velmurugan Rajbabu	Assistant Professor	Ph.D. (Georgia Institute of Tech.) USA	Electrical Engg.	No
544	Venkatachalam Parvatham	Professor	Ph.D. (University of Cambridge)	CSRE	Member/Head
545	Venkataraman Chandra	Professor	Ph.D. (University of California)	Chemical Engg	Member
546	Venkataramani N.	Professor	Ph.D. (IIT Bombay)	Met.Engg. & Mat.Sc.	Member/ Dean (IPS)
547	Venkatesh K.V.	Professor	Ph.D. (University of Purdue)	Chemical Engg	Member/Head
548	Venkateswaran Jayendran	Assistant Professor	Ph.D. (University of Arizona)	I.E. & O.R.	No
549	Verma A.K.	Professor	Ph.D. (IIT Kharagpur)	Electrical Engg.	Member
550	Verma J.K.	Professor	Ph.D. (University of Purdue)	Mathematics	Member/ Dean (FA)
551	Vijayakumaran Saravanan	Assistant Professor	Ph.D. (University of Florida)	Electrical Engg.	No
552	Vinjamur Madhu	Associate Professor	Ph.D. (University of Drexel)	Chemical Engg	No
553	Viswanadham B.V.S.	Professor	Dr.Ing. (University of Ruhr)	Civil Engg	Member/ Associate Dean(IPS)
554	Viswanathan Ganesh A	Assistant Professor	Ph.D. (University of Houston)	Chemical Engg	No
555	Viswanathan N.N.	Associate Professor	Ph.D. (IISc., Bangalore)	Met.Engg. & Mat.Sc.	No
556	Viswanathan S.	Professor	Ph.D. (University of Chicago)	CS & E	Member
557	Vitta Satish	Professor	Ph.D. (University of Cambridge)	Met.Engg. & Mat.Sc.	Member
558	Vutukuru Mythili	Assistant Professor	Ph.D. (Massachusetts Institute)	CS & E	-
559	Wangikar Pramod P.	Professor	Ph.D. (University of Iowa)	Chemical Engg	Member
560	Yajnik U.A.	Professor	Ph.D. (University of Texas)	Physics	Member/ Dean (SA)

Sr. No.	Name	Position	Qualification	Department
Group 'A' Officers – Alphabetical Order				
Annual Report from 01/05/2012 to 31/03/2013				
1	Adagale D.B.	Assistant Registrar	B.A., L.L.B., M. A. (History)	Audit Section
2	Ainapure S.V.	Medical Officer (SG)	M.D. (Bombay)	IIT Hospital
3	Appaji B.B.	Senior Sports Officer	Ph.D. (Gwalior)	Student's Gymkhana
4	Bajre Kamal Kumar	Deputy Registrar	MPM (Pune University)	Administration
5	Bhagwat A. S.	Principal	Diploma in Higher Education, M. Sc	Campus School & Jr. College
6	Bhaldar I.H.	Asst. Workshop Supdt. (SG)	B.E. (Shivaji University)	Mechanical Engg.
7	Bhorkade G.K.	Dy. Registrar	M.Sc.(Mangalore Univ.), Dip in Comp.Sc., Amravati Univ., Maha.State Certi in IT MKCL	Materials Management Division
8	Chaurasia Dharmendra S	Senior Programmer	B.E. Electronics (Mumbai University)	ASC
9	Chilap Gopal R.	Manager	B.Com. (Mumbai), Diploma in Printing Technology & Graphics Arts	Printing Press
10	Dabholkar Nayan S.	Chief Manager, Hospitality	B.A., Dip.in Hotel Management & Catering and Dip.in Business Management., M.A. Madurai Kamraj Univ., MBA - (Madurai Kamraj University)	Guest House
11	Dalvi Nitin J.	Computer Engineer	MCA(Mumbai)	Computer Centre
12	Das Kumar Ranjit	Assistant Librarian	Ph.D. (Dr. B.R. Ambedkar University, Agra)	Central Library
13	Dhankar Rajesh	Security Officer	DIP COMPUT, B.A. Rajasthan	Security Officer
14	Edwin M.	Sports Officer (SG)	Ph.D. (Gwalior)	Student's Gymkhana
15	Engole Laxman P.	Assistant Librarian	M.A. (Mumbai)	Central Library
16	Jena A.K.	Chief Technology Officer	M.E. (IISc. Bangalore)	Computer Centre
17	Jha S.N.	Senior Sports Officer	Ph.D. (Gwalior)	Student's Gymkhana
18	Jha Sanjay S.	Security Officer	PGDF&S (Annamalai University)	Security Officer
19	Joglekar C.P.	Co-ordinator,	Master in Personnel Management (MPM)	P.T & D Cell
20	Kairali Dhanya	Senior Programmer	B.Tech. (University of Calicut)	ASC
21	Kale Sheetal N.	Medical Officer	M.B.B.S. (Nagpur University)	IIT Hospital
22	Korade Umesh R.	Assistant Registrar	B.Sc. (Shivaji Univ.), M.B.A. (Shivaji University)	Academic Section
23	Kowe Vijay G.	Assistant Registrar	MBA (Nagpur University)	Academic Section
24	Udaykumar Rashmi	Public Relations Officer	Master of Mass Communication (Guru Jambheshwar University)	Publications & Public Relations Section
25	Madhukar P. Shinde	Assistant Registrar (Contract)	LLB (Mumbai)	Administration
26	Maharana Jyoti Prasad	Systems Manager	Ph.D (IIT Bombay)	Computer Centre

Sr. No.	Name	Position	Qualification	Department
27	Mamdapur V.B.	Supdt. Engineer	B.E. (Pune) and M.Tech. (IIT Bombay)	Estate Office
28	Mehta Sunil Kumar	Assistant Training & Placement Officer	B.E.(Mech. Engg), Gulbarga University	Placement Office
29	Meshram Arvind	Chief Medical Officer	M.B.B.S. (Delhi), M.Phil (BITS Pilani)	IIT Hospital
30	Nagwekar Ashish M.	Computer Engineer	B.E (Mumbai University)	Computer Centre
31	Naika Manju	Assistant Librarian	M.Phil (Annamalai University)	Central Library
32	P. G. Ramesh	Dy. Registrar	Ph. D. in Public Administration (Madurai Kamaraj Univ.)	Accounts Section
33	Patil Arvind S.	Technical Officer	M.Tech. (IIT Kharagpur)	C- DEEP
34	Patil Priyaben	Senior Programmer	B.E. (Gujarat)	ASC
35	Patil S.G.	Chief Medical Officer	MBBS (Mumbai)	IIT Hospital
36	Patil Yogesh S.	Assistant Registrar	P.G. Diploma PM & IR (Annamalai University)	Administration
37	Patki Savita V.	Assistant Registrar	Diploma in Business Management, (The Institute of Financial Analysts of India University, Tripura)	Dean R & D Office
38	Prajakta V. Juwekar	Assistant Registrar	M.Com(Education Management) (Annamalai University)	Administration
39	Prasad Ajay	Assistant Registrar	MCA (Birla Institute of Tech, Mesre Ranchi)	Accounts Section
40	R. Premkumar	Registrar	Ph.D. (Vikram University, Ujjain)	Registrar Office
41	Rachakonda Sheetal	Assistant Nursing Superintendent	P.G.Diploma (Hospital Management), (Madurai Kamraj University)	IIT Hospital
42	Rao Raghavendra M.N.	Manager	Diploma in Elect. Engg. (Board of Tech. Education)	Telephone Exchange
43	Reddy P.M.	Sports Officer (SG)	Ph.D. (Gwalior)	Student's Gymkhana
44	Ringnekar Nila D.	Sr. Medical Officer	MBBS (North Maharashtra Univ., Jalgaon)	IIT Hospital
45	Romani Indrajit A.	Assistant Registrar	M.Com (Mumbai University)	Accounts Section
46	Sahoo Biswakesan	Executive Engineer(Elect)	M.E. Burla/Sambalpur Univ.	Electrical Maintenance
47	Sawalkar D. K.	Assistant Registrar	MBA (Marathwada University)	Estate Office
48	Saxena Indu	Deputy Registrar	Ph.D. (Jamnalal Bajaj Instt.)	Administration
49	Sengupta K.	Sports Officer (SG)	Ph.D. (Gwalior)	Student's Gymkhana
50	Shah Nisha	Incharge (Hospital), CMO (NFSG)	MBBS (Nagpur), MD (Pde)(Nagpur), Executive Master of Business Administration (EMBA), National Institute of Business Management, Chennai	IIT Hospital
51	Shetye Asmita S.	Project Manager	B.E Electronics (Mumbai University)	ASC (Application Software Cell)

Sr. No.	Name	Position	Qualification	Department
52	Siriah Pankaj Gopal	Computer Engineer(SG)	M.Tech. (IIT Bombay)	Computer Sc. & Engineering
53	Solanki Manohar R.	Senior Programmer	M.Sc.(Mumbai University)	ASC
54	Sonawane Yogesh	Asstt. Workshop Supdt.	M.A. (Pune University)	Mechanical Engg.
55	Srikant Banumathy	Sr. Medical Officer	P.G.Diploma, (Annamalai University)	IIT Hospital
56	Sundaresan Sivakami	Assistant Registrar	P.G.Diploma (Annamalai University)	Dean (R & D)
57	Tagare Amita A.	Counsellor	M.A. (Pune University)	Dean SA Office
58	Tirmare P.V.	Computer Engineer	M. Tech (Dr. Babasaheb Ambedkar Technological Univ.)	Computer Centre
59	Unnithan K.R.P	Executive Engineer	B.E. Civil Engineering (Mumbai University)	Estate Office
60	Verma Hari Shankar	Assistant Registrar	M.A. (Kanpur Univesity)	Academic Section
61	Verma Narsingh	Executive Engineer	M.Tech. (IIT Bombay)	Estate Office
62	Vichare Sunil Y.	Computer Engineer	B.E (Pune University)	Computer Centre
63	Vinjamur Sugandhi	Senior Programmer	MCA (Osmania University)	ASC
64	Vinodkumar R. Prasad	Assistant Registrar	Ph.D. (Mumbai)	Academic Section
65	Yadav S.S.	Senior Sports Officer	Ph.D. (Gwalior)	Student's Gymkhana
66	Yadav Pritesh Ghisalal	Asst. Sports Officer	P.G.Diploma (Computer Applicaition), (Rajeev Gandhi Computer Sakhart Mission)	Student's Gymkhana

Scientific/Design Staff - Alphabetical Order

1	Aiyar R.P.R.C.	Prin.Res.Scientist	Ph.D. (IIT Bombay)	CRNTS
2	Gandhi Mayuri	Research Scientist	Ph.D. (IIT Bombay)	CRNTS
3	Kalwankar Arun	Producer-cum-Designer	Dip.in Fine Arts (Drg.&Ptg.)	C-DEEP
4	Mombasawala L. S.	Sr.Research Engineer	M.Tech. (IIT Bombay)	CRNTS
5	Mukherji Shyamalee	Sr.Research Engineer	Ph.D. (IIT Bombay)	CSRE
6	Vijayalakshmi S.	Research Scientist	Ph.D. (IIT Bombay)	CRNTS

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
BALANCE SHEET AS AT 31/03/2014

		(Amount-Rs)	
<u>Particulars</u>	<u>Schedule</u>	<u>Current Year 2013-14</u>	<u>Previous Year 2012-13</u>
<u>CORPUS/CAPITAL FUND AND LIABILITIES</u>			
CORPUS/CAPITAL AND OTHER FUNDS	1	9,246,088,521	10,279,431,452
RESERVES AND SURPLUS :	2	-222,059,519	477,918,846
EARMARKED/ENDOWMENT FUNDS	3	4,258,047,613	1,467,490,187
SECURED LOANS AND BORROWINGS:	4	-	-
UNSECURED LOANS AND BORROWINGS	5	-	-
DEFERRED CREDIT LIABILITIES:	6	-	-
CURRENT LIABILITIES AND PROVISIONS	7	5,150,350,041	4,286,381,925
TOTAL(A)		18,432,426,656	16,511,222,409
<u>ASSETS</u>			
FIXED ASSETS	8	8,624,630,555	7,480,396,880
INVESTMENTS FROM EARMARKED/ENDOWMENT FUNDS	9	0	0
INVESTMENTS - OTHERS	10	6,447,497,141	5,994,404,575
CURRENT ASSETS, LOANS, ADVANCES ETC.	11	3,360,298,959	3,036,420,955
TOTAL(B)		18,432,426,656	16,511,222,409
SIGNIFICANT ACCOUNTING POLICIES	24		
CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS	25		

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
INCOME & EXPENDITURE FOR THE YEAR ENDED 31/03/2014

(Amount-Rs)

<u>Particulars</u>	<u>Schedule</u>	Current Year 2013-14	Previous Year 2012-13
<u>INCOME</u>			
INCOME FROM SALES/SERVICES	12	120,661,964	65,302,542
GRANTS/SUBSIDIES(Irrevocable Grants and Subsidies Received)	13	2,599,344,145	2,900,800,772
FEES/SUBSCRIPTIONS	14	425,170,926	638,568,040
INCOME FROM INVESTMENTS	15	0	0
INCOME FROM ROYALTY, PUBLICATION ETC.	16	0	0
INTEREST EARNED	17	782,403,208	688,014,891
OTHER INCOME	18	412,130,827	264,031,081
INCREASE/(DECREASE) IN STOCK OF FINISHED GOODS & WORK IN PROGRESS	19	0	0
TOTAL(A)		4,339,711,070	4,556,717,326
<u>EXPENDITURE</u>			
ESTABLISHMENT EXPENSES	20	2,387,228,248	2,174,975,454
OTHER ADMINISTRATIVE EXPENSES ETC.	21	1,797,593,565	1,741,104,670
EXPENDITURE ON GRANTS SUBSIDIES ETC	22	0	0
INTEREST	23	0	0
TRANSFER TO DONATION FUND		247,297,088	80,670,901
TRANSFER TO IRCC FUND		329,182,888	289,595,959
DEPRECIATION(SCHEDULE 8)		344,486,687	282,118,071
TOTAL(B)		5,105,788,476	4,568,465,055
BALANCE BEING EXCESS OF INCOME OVER EXPENDITURE (A-B)		-766,077,406	-11,747,729
ADJUSTED FROM CAPITAL FUND (DEPRECIATION)		344,486,687	282,118,071
ADJUSTED FROM CAPITAL FUND (WRITE OFF)		1,833,800	9,851,103
TRANSFER TO GENERAL RESERVE		0	0
BALANCE BEING SURPLUS/(DEFICIT) CARRIED TO CORPUS/CAPITAL FUND		-419,756,919	280,221,445
SIGNIFICANT ACCOUNTING POLICIES	24		
CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS	25		

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
RECEIPTS AND PAYMENTS FOR THE PERIOD FROM 01/04/2013 TO 31/03/2014

Receipts	Amount in Rs.	Payments	Amount in Rs.
I Opening Balances		I Expenses	
a) Cash in hand	1,024,802	a) Establishment Expenses	1,746,540,025
b) Bank Balances	265,553,304	b) Administrative Expenses	2,081,907,487
II Grant Received		II Investments and deposits made	
a) From Government of India	4,625,400,000	a) Out of Earmarked / Endowment Fund	
b) Grant in aid due in 2012-13 received in 2013-14	880,919,000	b) Out of Own Funds	6,698,794,270
c) From State Government		III Expenditure	
d) From other sources		a) On Fixed Assets and Capital	1,833,127,264
III Investment Encashed	5,781,912,617	b) Work-in-progress	135,708,497
IV Interest Received		IV Other Payments	
a) On Bank Deposits	829,213,989	a) Grant from other organisations	245,815,297
b) Loans, Advances etc		b) Advances Account	990,213,774
V Other Income		c) Other Adjustable Account	788,725,365
a) Fees from Students	263,358,928	d) Refundable Deposits	93,189,565
b) Other Receipts from Students	74,078,305	f) Recoverable Deposits	2,741,870
c) All India Entrance Examination Receipts	666,829,516	g) Sundry Creditors	140,351,427
d) Continuing Education Programme	6,352,849	h) Endowment Scholarship	256,748
e) Miscellaneous Receipts	112,755,054	i) Surplus 2011-12 transfer to Endowment	280,221,445
VI) Project and Consultancy	9,715,416,882	V) Donation Account	107,154,757
VII) Donation Account	212,703,437	VI) Other Payment (Project)	8,876,255,685
VIII) Any Other Receipts		VII) Closing Balances	
a) Grants from other Organisations	255,045,862	a) Cash in hand	667,994
b) Advances Account	105,409,528	b) Bank Balances	222,977,237
c) Other Adjustable Accounts	164,468,354		
d) Refundable Deposits	126,404,879		
e) Endowment Scholarship	164,000		
f) Recoverable Deposits	6,432,300		
g) Sundry Debtors	139,838,962		
h) Accrued Interest	2,158,400		
i) Support from IRCC for Eqp and Furniture	0		
j) Guest House Receipts	9,207,738		
TOTAL	24,244,648,707	TOTAL	24,244,648,707

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
BALANCE SHEET AS AT 31/03/2014

		(Amount-Rs)	
<u>Particulars</u>	<u>Schedule</u>	<u>Current Year 2013-14</u>	<u>Previous Year 2012-13</u>
<u>CORPUS/CAPITAL FUND AND LIABILITIES</u>			
CORPUS/CAPITAL AND OTHER FUNDS	1	9,246,088,521	10,279,431,452
RESERVES AND SURPLUS :	2	-222,059,519	477,918,846
EARMARKED/ENDOWMENT FUNDS	3	4,258,047,613	1,467,490,187
SECURED LOANS AND BORROWINGS:	4	-	-
UNSECURED LOANS AND BORROWINGS	5	-	-
DEFERRED CREDIT LIABILITIES:	6	-	-
CURRENT LIABILITIES AND PROVISIONS	7	5,150,350,041	4,286,381,925
TOTAL(A)		18,432,426,656	16,511,222,409
<u>ASSETS</u>			
FIXED ASSETS	8	8,624,630,555	7,480,396,880
INVESTMENTS FROM EARMARKED/ENDOWMENT FUNDS	9	0	0
INVESTMENTS - OTHERS	10	6,447,497,141	5,994,404,575
CURRENT ASSETS, LOANS, ADVANCES ETC.	11	3,360,298,959	3,036,420,955
TOTAL(B)		18,432,426,656	16,511,222,409
SIGNIFICANT ACCOUNTING POLICIES	24		
CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS	25		

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
INCOME & EXPENDITURE FOR THE YEAR ENDED 31/03/2014

(Amount-Rs)

<u>Particulars</u>	<u>Schedule</u>	Current Year 2013-14	Previous Year 2012-13
<u>INCOME</u>			
INCOME FROM SALES/SERVICES	12	120,661,964	65,302,542
GRANTS/SUBSIDIES(Irrevocable Grants and Subsidies Received)	13	2,599,344,145	2,900,800,772
FEES/SUBSCRIPTIONS	14	425,170,926	638,568,040
INCOME FROM INVESTMENTS	15	0	0
INCOME FROM ROYALTY, PUBLICATION ETC.	16	0	0
INTEREST EARNED	17	782,403,208	688,014,891
OTHER INCOME	18	412,130,827	264,031,081
INCREASE/(DECREASE) IN STOCK OF FINISHED GOODS & WORK IN PROGRESS	19	0	0
TOTAL(A)		4,339,711,070	4,556,717,326
<u>EXPENDITURE</u>			
ESTABLISHMENT EXPENSES	20	2,387,228,248	2,174,975,454
OTHER ADMINISTRATIVE EXPENSES ETC.	21	1,797,593,565	1,741,104,670
EXPENDITURE ON GRANTS SUBSIDIES ETC	22	0	0
INTEREST	23	0	0
TRANSFER TO DONATION FUND		247,297,088	80,670,901
TRANSFER TO IRCC FUND		329,182,888	289,595,959
DEPRECIATION(SCHEDULE 8)		344,486,687	282,118,071
TOTAL(B)		5,105,788,476	4,568,465,055
BALANCE BEING EXCESS OF INCOME OVER EXPENDITURE (A-B)		-766,077,406	-11,747,729
ADJUSTED FROM CAPITAL FUND (DEPRECIATION)		344,486,687	282,118,071
ADJUSTED FROM CAPITAL FUND (WRITE OFF)		1,833,800	9,851,103
TRANSFER TO GENERAL RESERVE		0	0
BALANCE BEING SURPLUS/(DEFICIT) CARRIED TO CORPUS/CAPITAL FUND		-419,756,919	280,221,445
SIGNIFICANT ACCOUNTING POLICIES	24		
CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS	25		

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
RECEIPTS AND PAYMENTS FOR THE PERIOD FROM 01/04/2013 TO 31/03/2014

Receipts	Amount in Rs.	Payments	Amount in Rs.
I Opening Balances		I Expenses	
a) Cash in hand	1,024,802	a) Establishment Expenses	1,746,540,025
b) Bank Balances	265,553,304	b) Administrative Expenses	2,081,907,487
II Grant Received		II Investments and deposits made	
a) From Government of India	4,625,400,000	a) Out of Earmarked / Endowment Fund	
b) Grant in aid due in 2012-13 received in 2013-14	880,919,000	b) Out of Own Funds	6,698,794,270
c) From State Government		III Expenditure	
d) From other sources		a) On Fixed Assets and Capital	1,833,127,264
III Investment Encashed	5,781,912,617	b) Work-in-progress	135,708,497
IV Interest Received		IV Other Payments	
a) On Bank Deposits	829,213,989	a) Grant from other organisations	245,815,297
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V Other Income		c) Other Adjustable Account	788,725,365
a) Fees from Students	263,358,928	d) Refundable Deposits	93,189,565
b) Other Receipts from Students	74,078,305	f) Recoverable Deposits	2,741,870
c) All India Entrance Examination Receipts	666,829,516	g) Sundry Creditors	140,351,427
d) Continuing Education Programme	6,352,849	h) Endowment Scholarship	256,748
e) Miscellaneous Receipts	112,755,054	i) Surplus 2011-12 transfer to Endowment	280,221,445
VI) Project and Consultancy	9,715,416,882	V) Donation Account	107,154,757
VII) Donation Account	212,703,437	VI) Other Payment (Project)	8,876,255,685
VIII) Any Other Receipts		VII) Closing Balances	
a) Grants from other Organisations	255,045,862	a) Cash in hand	667,994
b) Advances Account	105,409,528	b) Bank Balances	222,977,237
c) Other Adjustable Accounts	164,468,354		
d) Refundable Deposits	126,404,879		
e) Endowment Scholarship	164,000		
f) Recoverable Deposits	6,432,300		
g) Sundry Debtors	139,838,962		
h) Accrued Interest	2,158,400		
i) Support from IRCC for Eqp and Furniture	0		
j) Guest House Receipts	9,207,738		
TOTAL	24,244,648,707	TOTAL	24,244,648,707

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
BALANCE SHEET AS AT 31/03/2014

		(Amount-Rs)	
<u>Particulars</u>	<u>Schedule</u>	<u>Current Year 2013-14</u>	<u>Previous Year 2012-13</u>
<u>CORPUS/CAPITAL FUND AND LIABILITIES</u>			
CORPUS/CAPITAL AND OTHER FUNDS	1	9,246,088,521	10,279,431,452
RESERVES AND SURPLUS :	2	-222,059,519	477,918,846
EARMARKED/ENDOWMENT FUNDS	3	4,258,047,613	1,467,490,187
SECURED LOANS AND BORROWINGS:	4	-	-
UNSECURED LOANS AND BORROWINGS	5	-	-
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CURRENT LIABILITIES AND PROVISIONS	7	5,150,350,041	4,286,381,925
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SIGNIFICANT ACCOUNTING POLICIES	24		
CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS	25		

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
INCOME & EXPENDITURE FOR THE YEAR ENDED 31/03/2014

(Amount-Rs)

<u>Particulars</u>	<u>Schedule</u>	Current Year 2013-14	Previous Year 2012-13
<u>INCOME</u>			
INCOME FROM SALES/SERVICES	12	120,661,964	65,302,542
GRANTS/SUBSIDIES(Irrevocable Grants and Subsidies Received)	13	2,599,344,145	2,900,800,772
FEES/SUBSCRIPTIONS	14	425,170,926	638,568,040
INCOME FROM INVESTMENTS	15	0	0
INCOME FROM ROYALTY, PUBLICATION ETC.	16	0	0
INTEREST EARNED	17	782,403,208	688,014,891
OTHER INCOME	18	412,130,827	264,031,081
INCREASE/(DECREASE) IN STOCK OF FINISHED GOODS & WORK IN PROGRESS	19	0	0
TOTAL(A)		4,339,711,070	4,556,717,326
<u>EXPENDITURE</u>			
ESTABLISHMENT EXPENSES	20	2,387,228,248	2,174,975,454
OTHER ADMINISTRATIVE EXPENSES ETC.	21	1,797,593,565	1,741,104,670
EXPENDITURE ON GRANTS SUBSIDIES ETC	22	0	0
INTEREST	23	0	0
TRANSFER TO DONATION FUND		247,297,088	80,670,901
TRANSFER TO IRCC FUND		329,182,888	289,595,959
DEPRECIATION(SCHEDULE 8)		344,486,687	282,118,071
TOTAL(B)		5,105,788,476	4,568,465,055
BALANCE BEING EXCESS OF INCOME OVER EXPENDITURE (A-B)		-766,077,406	-11,747,729
ADJUSTED FROM CAPITAL FUND (DEPRECIATION)		344,486,687	282,118,071
ADJUSTED FROM CAPITAL FUND (WRITE OFF)		1,833,800	9,851,103
TRANSFER TO GENERAL RESERVE		0	0
BALANCE BEING SURPLUS/(DEFICIT) CARRIED TO CORPUS/CAPITAL FUND		-419,756,919	280,221,445
SIGNIFICANT ACCOUNTING POLICIES	24		
CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS	25		

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
RECEIPTS AND PAYMENTS FOR THE PERIOD FROM 01/04/2013 TO 31/03/2014

Receipts	Amount in Rs.	Payments	Amount in Rs.
I Opening Balances		I Expenses	
a) Cash in hand	1,024,802	a) Establishment Expenses	1,746,540,025
b) Bank Balances	265,553,304	b) Administrative Expenses	2,081,907,487
II Grant Received		II Investments and deposits made	
a) From Government of India	4,625,400,000	a) Out of Earmarked / Endowment Fund	
b) Grant in aid due in 2012-13 received in 2013-14	880,919,000	b) Out of Own Funds	6,698,794,270
c) From State Government		III Expenditure	
d) From other sources		a) On Fixed Assets and Capital	1,833,127,264
III Investment Encashed	5,781,912,617	b) Work-in-progress	135,708,497
IV Interest Received		IV Other Payments	
a) On Bank Deposits	829,213,989	a) Grant from other organisations	245,815,297
b) Loans, Advances etc		b) Advances Account	990,213,774
V Other Income		c) Other Adjustable Account	788,725,365
a) Fees from Students	263,358,928	d) Refundable Deposits	93,189,565
b) Other Receipts from Students	74,078,305	f) Recoverable Deposits	2,741,870
c) All India Entrance Examination Receipts	666,829,516	g) Sundry Creditors	140,351,427
d) Continuing Education Programme	6,352,849	h) Endowment Scholarship	256,748
e) Miscellaneous Receipts	112,755,054	i) Surplus 2011-12 transfer to Endowment	280,221,445
VI) Project and Consultancy	9,715,416,882	V) Donation Account	107,154,757
VII) Donation Account	212,703,437	VI) Other Payment (Project)	8,876,255,685
VIII) Any Other Receipts		VII) Closing Balances	
a) Grants from other Organisations	255,045,862	a) Cash in hand	667,994
b) Advances Account	105,409,528	b) Bank Balances	222,977,237
c) Other Adjustable Accounts	164,468,354		
d) Refundable Deposits	126,404,879		
e) Endowment Scholarship	164,000		
f) Recoverable Deposits	6,432,300		
g) Sundry Debtors	139,838,962		
h) Accrued Interest	2,158,400		
i) Support from IRCC for Eqp and Furniture	0		
j) Guest House Receipts	9,207,738		
TOTAL	24,244,648,707	TOTAL	24,244,648,707

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

ENDOWMENT FUND A/C

BALANCE SHEET AS ON 31-03-2014

Sr. No.	<u>Liabilities</u>	Current year 2013-2014	Previous year 2012-2013
1	Capital Fund	712494369	432272924
2	Interest Received on Capital Investment	339897580	272947839
3	Excess of Income Over Expenditure Transferred from Income & Expenditure	75435406	66949741
	Grand Total	1127827355	772170504
	<u>Assets</u>		
1	Fixed Deposit / Canara Bank	280970682	275274682
2	Fixed Deposit / OBC	477833455	470072375
3	Fixed Deposit / Axis Bank	281965000	0
4	Accrued interest	87047370	26813044
5	Cash at Bank	10849	10403
	Grand Total	1127827355	772170504

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

ENDOWMENT FUND A/C

INCOME AND EXPENDITURE ACCOUNT FOR THE PERIOD 01/04/2013 TO 31/03/2014

Sr. No.	INCOME	Current year 2013-2014	Previous year 2012-2013
1	Interest on Investment/ Canara	28330755	24738820
2	Interest on Investment/ OBC	46624016	41135626
3	Interest on Investment/SBI	0	1077603
4	Interest on Investment/Axis Bank	216022	0
5	Prior Period Income	264837	0
	Grand Total	75435630	66952049
	EXPENDITURE		
1	Bank Charges	224	2308
2	Excess of Income Over Expenditure Transferred to Balance Sheet	75435406	66949741
	Grand Total	75435630	66952049

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

ENDOWMENT FUND ACCOUNT

Receipt and Payments Account for the period 01/04/2013 to 31/03/2014

RECEIPTS	Current year 2013-14	PAYMENTS	Current year 2013-14
1 Cash at Bank (Opening Balance)	10403	1 Fixed Deposit/ Canara Bank	55296000
2 Short Term Deposit / Canara	49600000	2 Fixed Deposit/ OBC	57761080
3 Short Term Deposit / OBC	50000000	3 Fixed Deposit/ Axis Bank	281965000
4 IIT Bombay Main A/c. Non Plan Saving	280221445	4 Bank Charges	224
5 Receipt Prior Period	264837	5 Cash at Bank (Closing Balance)	10849
6 Interest on Investment/OBC	7740856		
7 Interest on Investment/ Canara	2091353		
8 Accrued Interest	5104258		
Grand Total	395033153	Grand Total	395033153

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

ENDOWMENT FUND A/C

BALANCE SHEET AS ON 31-03-2014

Sr. No.	<u>Liabilities</u>	Current year 2013-2014	Previous year 2012-2013
1	Capital Fund	712494369	432272924
2	Interest Received on Capital Investment	339897580	272947839
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	Grand Total	1127827355	772170504
	<u>Assets</u>		
1	Fixed Deposit / Canara Bank	280970682	275274682
2	Fixed Deposit / OBC	477833455	470072375
3	Fixed Deposit / Axis Bank	281965000	0
4	Accrued interest	87047370	26813044
5	Cash at Bank	10849	10403
	Grand Total	1127827355	772170504

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

ENDOWMENT FUND A/C

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Sr. No.	INCOME	Current year 2013-2014	Previous year 2012-2013
1	Interest on Investment/ Canara	28330755	24738820
2	Interest on Investment/ OBC	46624016	41135626
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	Grand Total	75435630	66952049
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INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

ENDOWMENT FUND ACCOUNT

Receipt and Payments Account for the period 01/04/2013 to 31/03/2014

RECEIPTS	Current year 2013-14	PAYMENTS	Current year 2013-14
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2 Short Term Deposit / Canara	49600000	2 Fixed Deposit/ OBC	57761080
3 Short Term Deposit / OBC	50000000	3 Fixed Deposit/ Axis Bank	281965000
4 IIT Bombay Main A/c. Non Plan Saving	280221445	4 Bank Charges	224
5 Receipt Prior Period	264837	5 Cash at Bank (Closing Balance)	10849
6 Interest on Investment/OBC	7740856		
7 Interest on Investment/ Canara	2091353		
8 Accrued Interest	5104258		
Grand Total	395033153	Grand Total	395033153

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

ENDOWMENT FUND A/C

BALANCE SHEET AS ON 31-03-2014

Sr. No.	<u>Liabilities</u>	Current year 2013-2014	Previous year 2012-2013
1	Capital Fund	712494369	432272924
2	Interest Received on Capital Investment	339897580	272947839
3	Excess of Income Over Expenditure Transferred from Income & Expenditure	75435406	66949741
	Grand Total	1127827355	772170504
	<u>Assets</u>		
1	Fixed Deposit / Canara Bank	280970682	275274682
2	Fixed Deposit / OBC	477833455	470072375
3	Fixed Deposit / Axis Bank	281965000	0
4	Accrued interest	87047370	26813044
5	Cash at Bank	10849	10403
	Grand Total	1127827355	772170504

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

ENDOWMENT FUND A/C

INCOME AND EXPENDITURE ACCOUNT FOR THE PERIOD 01/04/2013 TO 31/03/2014

Sr. No.	INCOME	Current year 2013-2014	Previous year 2012-2013
1	Interest on Investment/ Canara	28330755	24738820
2	Interest on Investment/ OBC	46624016	41135626
3	Interest on Investment/SBI	0	1077603
4	Interest on Investment/Axis Bank	216022	0
5	Prior Period Income	264837	0
	Grand Total	75435630	66952049
	EXPENDITURE		
1	Bank Charges	224	2308
2	Excess of Income Over Expenditure Transferred to Balance Sheet	75435406	66949741
	Grand Total	75435630	66952049

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

ENDOWMENT FUND ACCOUNT

Receipt and Payments Account for the period 01/04/2013 to 31/03/2014

RECEIPTS	Current year 2013-14	PAYMENTS	Current year 2013-14
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2 Short Term Deposit / Canara	49600000	2 Fixed Deposit/ OBC	57761080
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7 Interest on Investment/ Canara	2091353		
8 Accrued Interest	5104258		
Grand Total	395033153	Grand Total	395033153

भारतीय प्रौद्योगिकी संस्थान मुंबई
INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY
सामान्य भविष्य निधि सह उपदान निधि योजना
GENERAL PROVIDENT FUND-CUM-PENSION-CUM-GRATUITY FUND SCHEME
01/04/2013 से 31/03/2014 तक की अवधि की प्राप्ति एवं भुगतान लेखा
RECEIPTS AND PAYMENTS ACCOUNT FOR THE PERIOD FROM 01/04/2013 TO 31/03/2014

प्राप्तियाँ RECEIPTS			
2012-2013 रु.Rs.	पै.Ps.	विवरण PARTICULARS	2013-2014 रु.Rs. पै.Ps.
		वर्ष के प्रारंभ में नकद एवं बैंक शेष	
7,350,276		To Cash and Bank Balance at the commencement of the year	3,591,824
		अं.भ.नि. अंशदान लेखा में To G.P.F. Subscription A/c भा.प्रौ.सं मुख्य लेखा से अंतरित (वर्ष के दौरान वेतन से की गई वसूली)	
149,055,665		Transferred from IIT Main A/c (Recoveries made from salary during the year)	148,332,483
		कर्मचारियों से सीधे प्राप्त की गई राशि	
9,150,064		Received directly from the employees	11,632,075
90,000		अन्य समायोजन Other Adjustments	298,457
158,295,729			160,263,015
		अं.भ.नि. अंशदान लेखा में To G.P.F. Advance A/c भा.प्रौ.सं मुख्य लेखा से अंतरित (वर्ष के दौरान वेतन से की गई वसूली)	
8,315,925		Transferred from IIT Main A/c (Recoveries made from salary bills during the year)	11,299,215
		नए अग्रिम के समायोजन से	
2,786,850		Adjustments from fresh advances	752,550
479,500		अन्य समायोजन Other Adjustments	301,950
11,582,275			12,353,715
		सावधिक जमा लेखा- भा.स्टे.बैं (परिपक्वता पर प्राप्त राशि)	
47,000,000		To Fixed Term Deposit A/c – SBI (Amount realised on maturity)	84,000,000
		सावधिक जमा लेखा- भा.स्टे.बैं से प्राप्त ब्याज (निवेश पर प्राप्त ब्याज)	
8,501,380		To Interest on Fixed Term Deposit A/c – SBI (Int. realised on Investment)	6,573,736
		विशेष जमा योजना लेखा पर ब्याज (निवेश पर प्राप्त ब्याज)	
1,846,156		To Interest on Special Deposit Scheme A/c (Int. realised on investment)	1,771,117
		स.भ.नि अंशदाता लेखा को देय ब्याज (भा.प्रौ.सं मुख्य लेखा से राशि अंतरित की गई)	
		To Interest payable to GPF Subscribers A/c (Amount transferred from IIT Main A/c)	
79,740,439		Pertains to 2013-14	83,047,576
1,717,380		Pertains to 2011-12	0
81,457,819			83,047,576
		0 धनादेश निरसन लेखा To Cheque Cancellation A/c	25,000
316,033,635		कुल अग्रणीत TOTAL C/F	351,625,983

2012-2013		प्राप्तियाँ RECEIPTS	2013-2014	
रु. Rs.	पै. Ps.	विवरण PARTICULARS	रु. Rs.	पै. Ps.
316,033,635		शेष अग्रानित TOTAL B/F		351,625,983
		बैंक प्रभार लेखा (भा.प्रौ.सं मुख्य लेखा से राशि अंतरित की गई)		
4,512		To Bank Charges A/c (Amount transferred from IIT Main A/c)		991
		सावधिक जमा लेखा- कैनरा बैंक (निवेश से प्राप्त राशि)		
11,176,238		To Int. on FTD A/c – Canara Bank (Int. realised on Investment)		17,221,798
		सावधिक जमा लेखा- ओबीसी बैंक (परिपक्वता पर प्राप्त राशि)		
16,500,000		To FTD A/c – Oriental Bank of Commerce (Amount realised on maturity)		30,000,000
		सावधिक जमा लेखा- ओबीसी (निवेश से प्राप्त ब्याज)		
8,866,439		To Int. on FTD A/c – Oriental Bank of Commerce (Int. realised on investment)		10,423,091
		सावधिक जमा लेखा- कैनरा बैंक (परिपक्वता पर प्राप्त राशि)		
12,500,000		To FTD A/c – Canara Bank (Amount realised on maturity)		65,000,000
		सावधिक जमा पर प्रोद्भूत ब्याज- ओबीसी (12-13 वर्ष के लिए प्राप्त ब्याज)		
2,244,789		To Accrued Int. on FTD A/c –Oriental Bank of Commerce (Int. For 12-13 realised during the year)		3,411,002
		सावधिक जमा पर प्रोद्भूत ब्याज- भा.स्टे.बैं (12-13 वर्ष के लिए प्राप्त ब्याज)		
1,857,731		To Accrued Int. on FTD A/c – SBI (Int. For 12-13 realised during the year)		1,469,409
		सावधिक जमा पर प्रोद्भूत ब्याज- कैनरा बैंक (12-13 वर्ष के लिए प्राप्त ब्याज)		
1,716,767		To Accrued Int. on FTD A/c- Canara Bank (Int. For 12-13 realised during the year)		2,301,558
		विशेष जमा योजना लेखा पर प्रोद्भूत ब्याज (12-13 के दौरान प्राप्त ब्याज)		
542,899		To Accrued Int. on Special Deposit Scheme A/c (Int. For 12-13 realised during the year)		597,189
		भा.स 8% बचत बॉण्ड 2003 लेखा पर प्राप्त ब्याज (निवेश पर प्राप्त ब्याज)		
34,300,001		To Int. on GOI 8% Saving Bonds 2003 A/c (Int. realised on Investment)	34,300,001	
		सावधिक जमा ओबीसी लेखा पर प्राप्त ब्याज का भूल से जमा		
46,188		Int on FTD OBC A/c wrongly credited	0	
34,346,189				34,300,001
		भा.स 8% बचत बॉण्ड 2003 लेखा से प्रोद्भूत ब्याज (वर्ष 12-13 के अवधि में प्राप्त ब्याज)		
6,859,999		To Accrued Int on GOI 8% Saving Bonds 2003 A/c (Int. For 12-13 realised during the year)	6,859,999	
		सावधिक जमा ओबीसी लेखा पर प्राप्त ब्याज का भूल से जमा		
0		Int on FTD OBC A/c wrongly credited	254,682	
6,859,999				7,114,681
412,649,198		कुल अग्रानीत TOTAL C/F		523,465,703

2012-2013		प्राप्तियाँ RECEIPTS	2013-2014	
रु.Rs.	पै.Ps.	विवरण PARTICULARS	रु.Rs.	पै.Ps.
412,649,198		शेष अग्रानित TOTAL B/F	523,465,703	
		प्राप्त बिल		
		(सा.भ.नि. अंशदाता लेखा को वर्ष 12-13 संदेय ब्याज,		
		इस वर्ष के दौरान समाशोधित)		
87,291		To Bills Receivable A/c		0
		(Interest payable to GPF Subscriber A/c		
		For 11-12 cleared during the year)		
412,736,489		कुल योग Grand Total	523,465,703	

2012-2013 रु.Rs. पै.Ps.		भुगतान PAYMENTS विवरण PARTICULARS		2013-2014 रु.Rs. पै.Ps.	
		भ.नि. अंशदान लेखा By G.P.F. Subscription A/c			
		1) अहरण एवं वर्ष के दौरान अंतिम भुगतान 1) Withdrawals and Final Payments made during the year		175,849,014	
199,100,686		2) अन्य समायोजन Other Adjustments		576,907	
565,500					176,425,921
199,666,186		भ.नि. अग्रिम लेखा By G.P. F. Advance A/c			
		1) वर्ष के दौरान संदत अस्थायी अग्रिम 1) Temp.advances paid during the year		13,362,560	
13,011,380		2) अन्य समायोजन Other Adjustments		26,000	
4,000					13,388,560
13,015,380					
		विशेष जमा योजना लेखा से प्राप्त ब्याज (ब्याज प्राप्त किये गए एवं भा.प्रौ.सं मुख्य लेखा में अंतरित किए गए)			
		1,846,156 By Int. on Special Deposit Scheme A/c (Interest realised and transferred to IIT Main A/c)			1,771,117
		सावधिक जमा लेखा- भा.स्टे.बैं (ब्याज प्राप्त किये गए एवं भा.प्रौ.सं मुख्य लेखा में अंतरित किए गए)			
		8,501,380 By Int. on Fixed Term Deposit A/c – SBI (Interest realised and transferred to IIT Main A/c)			6,573,736
		बैंक कमिशन प्रभार लेखा 4,512 By Bank Commission Charges A/c			991
		सावधिक जमा लेखा- कैनरा बैंक (इस वर्ष में निवेश की गई राशि) 65,000,000 By Fixed Term Deposit A/c – Canara Bank (Amt. invested during the year)			76,800,000
		देय बिल/विविध लेनदार लेखा (इस वर्ष के दौरान समाशोधित) 13,222,185 By Bills Payable/Sundry Creditors A/c (Cleared during the year)			14,639,157
		सावधिक जमा लेखा- कैनरा बैंक (राशि की प्राप्ति हुई और मुख्य लेखा में अंतरण हुआ) 11,176,238 By Int. on FTD A/c - Canara Bank (Int. realised and transferred to Main A/c)			17,221,798
		सावधिक जमा लेखा- ओबीसी (वर्ष के दौरान निवेश की गई राशि) 53,500,000 By Fixed Term Deposit A/c – Oriental Bank of Commerce (Amt. Invested during the year)			156,000,000
		सावधिक जमा पर ब्याज- ओबीसी (ब्याज प्राप्त किया गया और मुख्य लेखा में अंतरित किया गया) 8,866,439 By Interest on FTD A/c – Oriental Bank of Commerce (Interest realised and transferred to Main A/c)			10,423,091
374,798,476		कुल अग्रणीत TOTAL C/F			473,244,371

2012-2013		भुगतान PAYMENTS		2013-2014	
रु.Rs.	पै.Ps.	विवरण PARTICULARS		रु.Rs.	पै.Ps.
374,798,476		कुल अग्रानित TOTAL B/F			473,244,371
		भा.स 8%बचत बॉण्ड लेखा पर ब्याज (ब्याज प्राप्त किया गया और मुख्य लेखा में अंतरित किया गया)			
34,300,001		By Int. on GOI 8% Saving Bonds 2003 A/c (Interest realised and transferred to Main A/c)	34,300,001		
		सावधिक जमा ओबीसी पर प्राप्त ब्याज का भूल से जमा में सुधार			
46,188		Rectification of Int on FTD OBC wrongly credited	0		
34,346,189					34,300,001
		भा.स 8% बचत बॉण्ड 2003 लेखा से प्रौद्गत ब्याज			
0		By Accrued Interest on GOI 8% Savings Bonds 2003 A/c			254,682
		0 धनादेश निरसन लेखा By Cheque Cancellation A/c			25,000
		0 अंत शेष By Closing Balance			
		क) हाथ में a) Cash in Hand	0		
3,591,824		ख) बैंक में b) Cash at Bank	15,641,649		
3,591,824					15,641,649
412,736,489		कुल योग Grand Total			523,465,703

भारतीय प्रौद्योगिकी संस्थान मुंबई
INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY
सामान्य भविष्य निधि व पेंशन व उपदान निधि योजना
GENERAL PROVIDENT FUND-CUM-PENSION-CUM-GRATUITY FUND SCHEME
31.03.2014 तक यथास्थिति तुलन पत्र
BALANCE SHEET AS AT 31.03.2014

2012-2013 रु.Rs. पै.Ps.		दायित्व/LIABILITIES		2013-2014 रु.Rs. पै.Ps..	
विवरण PARTICULARS					
I. सामान्य भविष्य निधि लेखा					
General Provident Fund A/c					
01.04.2013 तक अथ शेष					
941,520,914	Opening Balance as on 01.04.2013	981,608,276			
जोड़: 2011-12 से संबंधित ब्याज					
1,717,380	Add:Differential interest for 2011-12	0			
943,238,294		981,608,276			
सा.भ.नि अभिदान लेखा					
158,295,729	GPF Subscription Account	160,263,015			
जोड़: सा.भ.निधि लेखा में ब्याज जमा					
79,740,439	Add: Int. Credited to GPF Subs A/c	83,047,576			
1,181,274,462	For 2013-14	1,224,918,867			
कम:सा.भ.नि.आहरण					
199,666,186	Less : GPF Withdrawal	176,425,921			
981,608,276			1,048,492,946		
कम: सा.भ.नि अग्रिम लेखा					
Less : GPF Advance A/c					
01.04.2013तक यथास्थिति अथ शेष					
8,478,855	Opening Balance on 01.04.2013	9,911,960			
जोड़: वर्ष के दौरान संदत्त					
13,015,380	Add: Paid during the year	13,388,560			
21,494,235		23,300,520			
कम: अग्रिम की वसूली					
11,582,275	Less: Recovery of advance	12,353,715			
9,911,960		10,946,805			
			10,946,805		
971,696,316				1,037,546,141	
II. देय बिल/विविध लेनदार लेखा					
Bills Payable / Sundry Creditors A/c					
01.04.2013तक यथास्थिति अथ शेष					
13,222,185	Opening Balance on 01.04.2013		14,639,157		
जोड़: देय बिल लेखा में जमा					
14,639,157	Add: Credited to Bills Payable A/c		12,592,508		
27,861,342			27,231,665		
कम: वर्ष के दौरान समाप्त					
13,222,185	Less: Cleared during the year		14,639,157		
14,639,157				12,592,508	
III. अदावी अभिदान लेखा हेतु जमा लेखा					
540,473	Deposit A/c for unclaimed Subscription A/c			540,473	
986,875,946	कुल योग Grand Total			1,050,679,122	

परिसम्पत्तियाँ/ASSETS			
2012-2013 रु.Rs. पै.Ps.	विवरण PARTICULARS		2013-2014 रु.Rs. पै.Ps..
	<u>I. सावधि जमा लेखा- भा.स्टै.बैं</u>		
	<u>Fixed Term Deposit A/c – SBI</u>		
	a) 01.04.2013तक यथास्थिति अथ शेष		
138,000,000	Opening Balance as on 01.04.13	91,000,000	
	b) जोड़: वर्ष के दौरान निवेशित		
0	Add: Invested during the year	0	
	c) जोड़: निम्नांकित 'd' में से पुनःनिवेश		
2,500,000	Add: Reinvested out of 'd' below	3,000,000	
140,500,000		94,000,000	
	d) कम: वर्ष के दौरान प्राप्ति		
49,500,000	Less: Realised during the year	87,000,000	
91,000,000	Total – I		7,000,000
	<u>II. विशेष जमा योजना लेखा</u>		
	<u>Special Deposit Scheme A/c</u>		
	a) 01.04.2013 तक अथ शेष		
27,144,965	Opening Balance as on 01.04.2013	27,144,965	
27,144,965	Total – II		27,144,965
	<u>III. एफ टी डी लेखा- केनरा बैंक</u>		
	<u>FTD A/c - Canara Bank</u>		
	a) 01.04.2013तक अथ शेष		
138,500,000	Opening Balance as on 01.04.2013	191,000,000	
	b) जोड़: वर्ष के दौरान निवेशित		
65,000,000	Add: Invested during the year	76,800,000	
	c) जोड़: निम्नांकित 'd' में से पुनःनिवेश		
61,000,000	Add: Reinvested out of 'd' below	0	
264,500,000		267,800,000	
	d) कम: वर्ष के दौरान प्राप्ति		
73,500,000	Less: Realised during the year	65,000,000	
191,000,000	Total – III		202,800,000
	<u>IV. एफटीडी लेखा-ओरिएण्टल बैंक ऑफ कॉमर्स</u>		
	<u>FTD A/c – Oriental Bank of Commerce</u>		
	a) 01.04.2013तक अथ शेष		
108,000,000	Opening Balance as on 01.04.2013	145,000,000	
	b) जोड़: वर्ष के दौरान निवेशित		
53,500,000	Add: Invested during the year	156,000,000	
	c) जोड़: निम्नांकित 'd' में से पुनःनिवेश		
26,000,000	Add: Reinvested out of 'd' below	47,000,000	
187,500,000		348,000,000	
	d) कम: वर्ष के दौरान प्राप्ति		
42,500,000	Less: Realised during the year	77,000,000	
145,000,000	Total – IV		271,000,000
	<u>V. भारत सरकार 8% बचत बॉण्ड 2003 लेखा</u>		
	<u>Govt. of India 8% Saving Bonds 2003 A/c</u>		
	a) 01.04.2013तक यथास्थिति अथ शेष		
514,500,000	Opening Balance as on 01.04.2013	514,500,000	
	b) जोड़: वर्ष के दौरान निवेशित		
0	Add: Invested during the year	0	
514,500,000		514,500,000	
	c) कम: वर्ष के दौरान प्राप्ति		
0	Less: Realised during the year	0	
514,500,000	Total – V		514,500,000
968,644,965	कुल अग्रणीत TOTAL C/F		1,022,444,965

2012-2013 रु.Rs. पै.Ps.		परिसम्पत्तियाँ/ASSETS	2013-2014 रु.Rs. पै.Ps..
968,644,965 कुल अग्रानीत Total B/F			1,022,444,965
VI. प्राप्त बिल/विविध देनदार लेखा			
Bills Receivable / Sundry Debtors A/c			
01.04.2013तक अथ शेष			
87,291	Opening Balance as on 01.04.2013	0	
87,291	Less: Cleared during the year	0	
0	Total – VI		0
VII. अप्राप्त आय			
Outstanding Income			
1) एफ टी डी लेखा-भा.स्टै.बैं पर प्रौढूत ब्याज			
Accrued Int. on FTD A/c – SBI			
अथ शेष			
1,857,731	Opening Balance	1,469,409	
जोड़: वर्ष के दौरान किया गया प्रावधान			
1,469,409	Add: Provision made during the year	118,952	
3,327,140		1,588,361	
कम: वर्ष के दौरान समाशोधित			
1,857,731	Less: Cleared during the year	1,469,409	
1,469,409			118,952
2) विशेष जमा योजना लेखा पर प्रौढूत ब्याज			
Accrued Interest on Spl. Deposit Scheme A/c			
अथ शेष			
542,899	Opening Balance	597,189	
जोड़: वर्ष के दौरान किया गया प्रावधान			
597,189	Add: Provision made during the year	590,403	
1,140,088		1,187,592	
कम:वर्ष के दौरान समाशोधित			
542,899	Less: Cleared during the year	597,189	
597,189			590,403
3) एफ टी डी लेखा-केनरा बैंक पर प्रौढूत ब्याज			
Accrued Int. on FTD A/c- Canara Bank			
अथ शेष			
1,716,767	Opening Balance	2,301,558	
जोड़: वर्ष के दौरान किया गया प्रावधान			
2,301,558	Add: Provision made during the year	1,692,505	
4,018,325		3,994,063	
कम:वर्ष के दौरान समाशोधित			
1,716,767	Less: Cleared during the year	2,301,558	
2,301,558			1,692,505
4) एफ टी डी लेखा-ओ.बी.सी बैंक पर प्रौढूत ब्याज			
Accrued Int on FTD A/c – Oriental Bank of Commerce			
अथ शेष			
2,244,789	Opening Balance	3,411,002	
जोड़: वर्ष के दौरान किया गया प्रावधान			
3,411,002	Add: Provision made during the year	3,330,649	
5,655,791		6,741,651	
कम: वर्ष के दौरान समाशोधित			
2,244,789	Less: Cleared during the year	3,411,002	
3,411,002			3,330,649
976,424,123	कुल अग्रानीत TOTAL C/F		1,028,177,474

2012-2013		परिसम्पत्तियाँ/ASSETS		2013-2014	
रु.Rs.	पै.Ps.	विवरण PARTICULARS		रु.Rs.	पै.Ps..
976,424,123 कुल अग्रानीत Total B/F				1,028,177,474	
		5) भारत सरकार 8% बचत बॉण्ड 2003 लेखा पर प्रोद्भूत ब्याज			
		Accrued Int on GOI 8% Saving Bonds 2003 A/c			
		अथ शेष			
6,859,999		Opening Balance	6,859,999		
		जोड़: वर्ष के दौरान किया गया प्रावधान			
6,859,999		Add: Provision made during the year	6,859,999		
13,719,998			13,719,998		
		कम: वर्ष के दौरान समाशोधित			
6,859,999		Less: Cleared during the year	6,859,999		
6,859,999				6,859,999	
VIII.अंत शेष					
Closing Balance					
		a) हस्तांगत नकद			
0		Cash in hand	0		
		b) बैंक में नकद			
3,591,824		Cash at Bank	15,641,649		
3,591,824				15,641,649	
986,875,946		कुल योगGrand Total		1,050,679,122	

भारतीय प्रौद्योगिकी संस्थान मुंबई
INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY
सामान्य भविष्य निधि व पेंशन व उपदान निधि योजना
GENERAL PROVIDENT FUND-CUM-PENSION-CUM-GRATUITY FUND SCHEME
1-4-2013 से 31-3-2014 तक आय एवं व्यय लेखा
INCOME AND EXPENDITURE ACCOUNT FOR THE PERIOD FROM 01/04/2013 TO 31/03/2014

2012-2013 रु.Rs. पै.Ps.		आय INCOME विवरण PARTICULARS		2013-2014 रु.Rs. पै.Ps.	
		सा.भ.नि अभिदाता लेखा में देय ब्याज (भा.प्रौ.सं मुख्य लेखा से अंतरित)			
81,457,819		By Interest payable to GPF Subscribers A/c (Transferred from IIT Main A/c)		83,047,576	
		सावधि जमा लेखा- भा.स्टे.बैं			
8,501,380		By Interest on FTD A/c – SBI (निवेश पर प्राप्त ब्याज) (Int. realised on Investment)		6,573,736	
		जोड: जेई (प्रोद्धत किन्तु प्राप्त नहीं हुआ)			
1,469,409		Add: JE (Accrued but not recd.)		118,952	
9,970,789				6,692,688	
		विशेष जमा योजना पर ब्याज (निवेश पर प्राप्त ब्याज)			
1,846,156		By Int. on Special Deposit Scheme A/c (Int. realised on Investment)		1,771,117	
		जोड: जेई (प्रोद्धत किन्तु प्राप्त नहीं हुआ)			
597,189		Add: JE (Accrued but not recd.)		590,403	
2,443,345				2,361,520	
		सावधि जमा लेखा-ओबीसी पर ब्याज			
8,866,439		By Int. on FTD A/c - Oriental Bank of Commerce (निवेश पर प्राप्त ब्याज) (Int. realised on Investment)		10,423,091	
		जोड: जेई (प्रोद्धत किन्तु प्राप्त नहीं हुआ)			
3,411,002		Add: JE (Accrued but not recd.)		3,330,649	
12,277,441				13,753,740	
		सावधि जमा लेखा-कैनरा बैंक पर ब्याज			
11,176,238		By Int. on FTD A/c - Canara Bank (निवेश पर प्राप्त ब्याज) (Int. realised on investment)		17,221,798	
		जोड: जेई (प्रोद्धत किन्तु प्राप्त नहीं हुआ)			
2,301,558		Add: JE (Accrued but not received)		1,692,505	
13,477,796				18,914,303	
		भारत सरकार 8% बचत बॉण्ड 2003 लेखा पर ब्याज			
34,346,189		By Int. on Govt. of India 8% Saving Bonds 2003 A/c कम: ओबीसी में भूल से जमा ब्याज)		34,300,001	
46,188		Less: Int.on OBC wrongly Credited		0	
34,300,001		(निवेश पर प्राप्त ब्याज) (Int. realised on Investment)		34,300,001	
		जोड: जेई (प्रोद्धत किन्तु प्राप्त नहीं हुआ)			
6,859,999		Add: JE (Accrued but not received)		6,859,999	
41,160,000				41,160,000	
160,787,190		कुल योग Grand Total		165,929,827	

2012-2013 रु.Rs. पै.Ps.		व्यय EXPENDITURE विवरण PARTICULARS	2013-2014 रु.Rs. पै.Ps.
		सा.भ.नि. अभिदाता लेखा में देय ब्याज To Interest payable to GPF Subscribers A/c सा.भ.नि. अभिदाता लेखा में जमा	
79,740,439		Credited to GPF Subscribers A/c : 2013-14	83,047,576
1,717,380		Pertains to 2011-12	0
81,457,819			83,047,576
		सावधि जमा लेखा- भा.स्टे.बैं पर ब्याज 8,501,380 To Interest on FTD A/c – SBI (प्राप्त ब्याज तथा मुख्य लेखा में अंतरित) (Int. realised & transferred to Main A/c) जोड: जेई (मुख्य लेखा में अंतरित किया जाएगा)	6,573,736
1,469,409		Add: JE (to be trfd to Main A/c)	118,952
9,970,789			6,692,688
		विशेष जमा योजना पर ब्याज 1,846,156 To Interest on Special Deposit Scheme A/c (प्राप्त ब्याज तथा मुख्य लेखा में अंतरित) (Int. realised & transferred to Main A/c) जोड: जेई (मुख्य लेखा में अंतरित किया जाएगा)	1,771,117
597,189		Add: JE (to be trfd to Main A/c)	590,403
2,443,345			2,361,520
		सावधि जमा लेखा- ओबीसी पर ब्याज 8,866,439 To Interest on FTD A/c – Oriental Bank of Commerce (प्राप्त ब्याज तथा मुख्य लेखा में अंतरित) (Int. realised & transferred to Main A/c)	10,423,091
		जोड: जेई (मुख्य लेखा में अंतरित किया जाएगा)	
3,411,002		Add: JE (to be trfd to Main A/c)	3,330,649
12,277,441			13,753,740
		सावधि जमा लेखा- कैनरा बैंक पर ब्याज 11,176,238 To Interest on FTD A/c - Canara Bank (प्राप्त ब्याज तथा मुख्य लेखा में अंतरित) (Interest realised & transferred to Main A/c)	17,221,798
		जोड: जेई (मुख्य लेखा में अंतरित किया जाएगा)	
2,301,558		Add: JE (to be trfd to Main A/c)	1,692,505
13,477,796			18,914,303
		भारत सरकार 8% बचत बॉण्ड 2003 लेखा पर ब्याज 34,346,189 To Int. on Govt. of India 8% Saving Bonds 2003 A/c कम: ओबीसी में भूल से जमा ब्याज का परिशोधन)	34,300,001
46,188		Less: Rectification of Int. on OBC wrongly Cr. (प्राप्त ब्याज तथा मुख्य लेखा में अंतरित)	0
34,300,001		(Interest realised & transferred to Main A/c) जोड: जेई (मुख्य लेखा में अंतरित किया जाएगा)	34,300,001
6,859,999		Add: JE (to be trfd to Main A/c)	6,859,999
41,160,000			41,160,000
160,787,190		कुल योग Grand Total	165,929,827

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GENERAL PROVIDENT FUND-CUM-PENSION-CUM-GRATUITY FUND SCHEME
01/04/2013 से 31/03/2014 तक की अवधि की प्राप्ति एवं भुगतान लेखा
RECEIPTS AND PAYMENTS ACCOUNT FOR THE PERIOD FROM 01/04/2013 TO 31/03/2014

प्राप्तियाँ RECEIPTS			
2012-2013 रु.Rs.	पै.Ps.	विवरण PARTICULARS	2013-2014 रु.Rs. पै.Ps.
		वर्ष के प्रारंभ में नकद एवं बैंक शेष	
7,350,276		To Cash and Bank Balance at the commencement of the year	3,591,824
		अं.भ.नि. अंशदान लेखा में To G.P.F. Subscription A/c भा.प्रौ.सं मुख्य लेखा से अंतरित (वर्ष के दौरान वेतन से की गई वसूली)	
149,055,665		Transferred from IIT Main A/c (Recoveries made from salary during the year)	148,332,483
		कर्मचारियों से सीधे प्राप्त की गई राशि	
9,150,064		Received directly from the employees	11,632,075
90,000		अन्य समायोजन Other Adjustments	298,457
158,295,729			160,263,015
		अं.भ.नि. अंशदान लेखा में To G.P.F. Advance A/c भा.प्रौ.सं मुख्य लेखा से अंतरित (वर्ष के दौरान वेतन से की गई वसूली)	
8,315,925		Transferred from IIT Main A/c (Recoveries made from salary bills during the year)	11,299,215
		नए अग्रिम के समायोजन से	
2,786,850		Adjustments from fresh advances	752,550
479,500		अन्य समायोजन Other Adjustments	301,950
11,582,275			12,353,715
		सावधिक जमा लेखा- भा.स्टे.बैं (परिपक्वता पर प्राप्त राशि)	
47,000,000		To Fixed Term Deposit A/c – SBI (Amount realised on maturity)	84,000,000
		सावधिक जमा लेखा- भा.स्टे.बैं से प्राप्त ब्याज (निवेश पर प्राप्त ब्याज)	
8,501,380		To Interest on Fixed Term Deposit A/c – SBI (Int. realised on Investment)	6,573,736
		विशेष जमा योजना लेखा पर ब्याज (निवेश पर प्राप्त ब्याज)	
1,846,156		To Interest on Special Deposit Scheme A/c (Int. realised on investment)	1,771,117
		स.भ.नि अंशदाता लेखा को देय ब्याज (भा.प्रौ.सं मुख्य लेखा से राशि अंतरित की गई)	
		To Interest payable to GPF Subscribers A/c (Amount transferred from IIT Main A/c)	
79,740,439		Pertains to 2013-14	83,047,576
1,717,380		Pertains to 2011-12	0
81,457,819			83,047,576
		0 धनादेश निरसन लेखा To Cheque Cancellation A/c	25,000
316,033,635		कुल अग्रणीत TOTAL C/F	351,625,983

प्राप्तियाँ RECEIPTS			
2012-2013 रु.Rs. पै.Ps.	विवरण PARTICULARS	2013-2014 रु.Rs. पै.Ps.	
316,033,635	शेष अग्रानित TOTAL B/F	351,625,983	
	बैंक प्रभार लेखा (भा.प्रौ.सं मुख्य लेखा से राशि अंतरित की गई)		
4,512	To Bank Charges A/c (Amount transferred from IIT Main A/c)	991	
	सावधिक जमा लेखा- कैनरा बैंक (निवेश से प्राप्त राशि)		
11,176,238	To Int. on FTD A/c – Canara Bank (Int. realised on Investment)	17,221,798	
	सावधिक जमा लेखा- ओबीसी बैंक (परिपक्वता पर प्राप्त राशि)		
16,500,000	To FTD A/c – Oriental Bank of Commerce (Amount realised on maturity)	30,000,000	
	सावधिक जमा लेखा- ओबीसी (निवेश से प्राप्त ब्याज)		
8,866,439	To Int. on FTD A/c – Oriental Bank of Commerce (Int. realised on investment)	10,423,091	
	सावधिक जमा लेखा- कैनरा बैंक (परिपक्वता पर प्राप्त राशि)		
12,500,000	To FTD A/c – Canara Bank (Amount realised on maturity)	65,000,000	
	सावधिक जमा पर प्रोद्भूत ब्याज- ओबीसी (12-13 वर्ष के लिए प्राप्त ब्याज)		
2,244,789	To Accrued Int. on FTD A/c –Oriental Bank of Commerce (Int. For 12-13 realised during the year)	3,411,002	
	सावधिक जमा पर प्रोद्भूत ब्याज- भा.स्टे.बैं (12-13 वर्ष के लिए प्राप्त ब्याज)		
1,857,731	To Accrued Int. on FTD A/c – SBI (Int. For 12-13 realised during the year)	1,469,409	
	सावधिक जमा पर प्रोद्भूत ब्याज- कैनरा बैंक (12-13 वर्ष के लिए प्राप्त ब्याज)		
1,716,767	To Accrued Int. on FTD A/c- Canara Bank (Int. For 12-13 realised during the year)	2,301,558	
	विशेष जमा योजना लेखा पर प्रोद्भूत ब्याज (12-13 के दौरान प्राप्त ब्याज)		
542,899	To Accrued Int. on Special Deposit Scheme A/c (Int. For 12-13 realised during the year)	597,189	
	भा.स 8% बचत बॉण्ड 2003 लेखा पर प्राप्त ब्याज (निवेश पर प्राप्त ब्याज)		
34,300,001	To Int. on GOI 8% Saving Bonds 2003 A/c (Int. realised on Investment)	34,300,001	
	सावधिक जमा ओबीसी लेखा पर प्राप्त ब्याज का भूल से जमा		
46,188	Int on FTD OBC A/c wrongly credited	0	
34,346,189		34,300,001	
	भा.स 8% बचत बॉण्ड 2003 लेखा से प्रोद्भूत ब्याज (वर्ष 12-13 के अवधि में प्राप्त ब्याज)		
6,859,999	To Accrued Int on GOI 8% Saving Bonds 2003 A/c (Int. For 12-13 realised during the year)	6,859,999	
	सावधिक जमा ओबीसी लेखा पर प्राप्त ब्याज का भूल से जमा		
0	Int on FTD OBC A/c wrongly credited	254,682	
6,859,999		7,114,681	
412,649,198	कुल अग्रानीत TOTAL C/F	523,465,703	

2012-2013		प्राप्तियाँ RECEIPTS	2013-2014	
रु.Rs.	पै.Ps.	विवरण PARTICULARS	रु.Rs.	पै.Ps.
412,649,198		शेष अग्रानित TOTAL B/F	523,465,703	
		प्राप्त बिल		
		(सा.भ.नि. अंशदाता लेखा को वर्ष 12-13 संदेय ब्याज,		
		इस वर्ष के दौरान समाशोधित)		
87,291		To Bills Receivable A/c		0
		(Interest payable to GPF Subscriber A/c		
		For 11-12 cleared during the year)		
412,736,489		कुल योग Grand Total	523,465,703	

2012-2013 रु.Rs. पै.Ps.		भुगतान PAYMENTS विवरण PARTICULARS		2013-2014 रु.Rs. पै.Ps.	
		भ.नि. अंशदान लेखा By G.P.F. Subscription A/c			
		1) अहरण एवं वर्ष के दौरान अंतिम भुगतान			
199,100,686		1) Withdrawals and Final Payments made during the year	175,849,014		
	565,500	2) अन्य समायोजन Other Adjustments	576,907		
199,666,186				176,425,921	
		भ.नि. अग्रिम लेखा By G.P. F. Advance A/c			
		1) वर्ष के दौरान संदत अस्थायी अग्रिम			
13,011,380		1) Temp.advances paid during the year	13,362,560		
	4,000	2) अन्य समायोजन Other Adjustments	26,000		
13,015,380				13,388,560	
		विशेष जमा योजना लेखा से प्राप्त ब्याज (ब्याज प्राप्त किये गए एवं भा.प्रौ.सं मुख्य लेखा में अंतरित किए गए)			
1,846,156		By Int. on Special Deposit Scheme A/c (Interest realised and transferred to IIT Main A/c)		1,771,117	
		सावधिक जमा लेखा- भा.स्टे.बैं (ब्याज प्राप्त किये गए एवं भा.प्रौ.सं मुख्य लेखा में अंतरित किए गए)			
8,501,380		By Int. on Fixed Term Deposit A/c – SBI (Interest realised and transferred to IIT Main A/c)		6,573,736	
		बैंक कमिशन प्रभार लेखा 4,512 By Bank Commission Charges A/c			991
		सावधिक जमा लेखा- कैनरा बैंक (इस वर्ष में निवेश की गई राशि)			
65,000,000		By Fixed Term Deposit A/c – Canara Bank (Amt. invested during the year)		76,800,000	
		देय बिल/विविध लेनदार लेखा (इस वर्ष के दौरान समाशोधित)			
13,222,185		By Bills Payable/Sundry Creditors A/c (Cleared during the year)		14,639,157	
		सावधिक जमा लेखा- कैनरा बैंक (राशि की प्राप्ति हुई और मुख्य लेखा में अंतरण हुआ)			
11,176,238		By Int. on FTD A/c - Canara Bank (Int. realised and transferred to Main A/c)		17,221,798	
		सावधिक जमा लेखा- ओबीसी (वर्ष के दौरान निवेश की गई राशि)			
53,500,000		By Fixed Term Deposit A/c – Oriental Bank of Commerce (Amt. Invested during the year)		156,000,000	
		सावधिक जमा पर ब्याज- ओबीसी (ब्याज प्राप्त किया गया और मुख्य लेखा में अंतरित किया गया)			
8,866,439		By Interest on FTD A/c – Oriental Bank of Commerce (Interest realised and transferred to Main A/c)		10,423,091	
374,798,476		कुल अग्रणीत TOTAL C/F		473,244,371	

2012-2013		भुगतान PAYMENTS		2013-2014	
रु.Rs.	पै.Ps.	विवरण PARTICULARS		रु.Rs.	पै.Ps.
374,798,476		कुल अग्रानित TOTAL B/F			473,244,371
		भा.स 8%बचत बॉण्ड लेखा पर ब्याज (ब्याज प्राप्त किया गया और मुख्य लेखा में अंतरित किया गया)			
34,300,001		By Int. on GOI 8% Saving Bonds 2003 A/c (Interest realised and transferred to Main A/c)	34,300,001		
		सावधिक जमा ओबीसी पर प्राप्त ब्याज का भूल से जमा में सुधार			
46,188		Rectification of Int on FTD OBC wrongly credited	0		
34,346,189					34,300,001
		भा.स 8% बचत बॉण्ड 2003 लेखा से प्रौद्गत ब्याज			
0		By Accrued Interest on GOI 8% Savings Bonds 2003 A/c			254,682
		0 धनादेश निरसन लेखा By Cheque Cancellation A/c			25,000
		0 अंत शेष By Closing Balance			
		क) हाथ में a) Cash in Hand	0		
3,591,824		ख) बैंक में b) Cash at Bank	15,641,649		
3,591,824					15,641,649
412,736,489		कुल योग Grand Total			523,465,703

भारतीय प्रौद्योगिकी संस्थान मुंबई
INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY
सामान्य भविष्य निधि व पेंशन व उपदान निधि योजना
GENERAL PROVIDENT FUND-CUM-PENSION-CUM-GRATUITY FUND SCHEME
31.03.2014 तक यथास्थिति तुलन पत्र
BALANCE SHEET AS AT 31.03.2014

2012-2013 रु.Rs. पै.Ps.		दायित्व/LIABILITIES		2013-2014 रु.Rs. पै.Ps..	
विवरण PARTICULARS					
I. सामान्य भविष्य निधि लेखा					
General Provident Fund A/c					
01.04.2013 तक अथ शेष					
941,520,914	Opening Balance as on 01.04.2013	981,608,276			
जोड़: 2011-12 से संबंधित ब्याज					
1,717,380	Add:Differential interest for 2011-12	0			
943,238,294		981,608,276			
सा.भ.नि अभिदान लेखा					
158,295,729	GPF Subscription Account	160,263,015			
जोड़: सा.भ.निधि लेखा में ब्याज जमा					
79,740,439	Add: Int. Credited to GPF Subs A/c	83,047,576			
1,181,274,462	For 2013-14	1,224,918,867			
कम:सा.भ.नि.आहरण					
199,666,186	Less : GPF Withdrawal	176,425,921			
981,608,276			1,048,492,946		
कम: सा.भ.नि अग्रिम लेखा					
Less : GPF Advance A/c					
01.04.2013तक यथास्थिति अथ शेष					
8,478,855	Opening Balance on 01.04.2013	9,911,960			
जोड़: वर्ष के दौरान संदत्त					
13,015,380	Add: Paid during the year	13,388,560			
21,494,235		23,300,520			
कम: अग्रिम की वसूली					
11,582,275	Less: Recovery of advance	12,353,715			
9,911,960		10,946,805			
			10,946,805		
971,696,316				1,037,546,141	
II. देय बिल/विविध लेनदार लेखा					
Bills Payable / Sundry Creditors A/c					
01.04.2013तक यथास्थिति अथ शेष					
13,222,185	Opening Balance on 01.04.2013		14,639,157		
जोड़: देय बिल लेखा में जमा					
14,639,157	Add: Credited to Bills Payable A/c		12,592,508		
27,861,342			27,231,665		
कम: वर्ष के दौरान समाप्त					
13,222,185	Less: Cleared during the year		14,639,157		
14,639,157				12,592,508	
III. अदावी अभिदान लेखा हेतु जमा लेखा					
540,473	Deposit A/c for unclaimed Subscription A/c			540,473	
986,875,946	कुल योग Grand Total			1,050,679,122	

परिसम्पत्तियाँ/ASSETS			
2012-2013 रु.Rs. पै.Ps.	विवरण PARTICULARS		2013-2014 रु.Rs. पै.Ps..
	<u>I. सावधि जमा लेखा- भा.स्टै.बैं</u>		
	<u>Fixed Term Deposit A/c – SBI</u>		
	a) 01.04.2013तक यथास्थिति अथ शेष		
138,000,000	Opening Balance as on 01.04.13	91,000,000	
	b) जोड़: वर्ष के दौरान निवेशित		
0	Add: Invested during the year	0	
	c) जोड़: निम्नांकित 'd' में से पुनःनिवेश		
2,500,000	Add: Reinvested out of 'd' below	3,000,000	
140,500,000		94,000,000	
	d) कम: वर्ष के दौरान प्राप्ति		
49,500,000	Less: Realised during the year	87,000,000	
91,000,000	Total – I		7,000,000
	<u>II. विशेष जमा योजना लेखा</u>		
	<u>Special Deposit Scheme A/c</u>		
	a) 01.04.2013 तक अथ शेष		
27,144,965	Opening Balance as on 01.04.2013	27,144,965	
27,144,965	Total – II		27,144,965
	<u>III. एफ टी डी लेखा- केनरा बैंक</u>		
	<u>FTD A/c - Canara Bank</u>		
	a) 01.04.2013तक अथ शेष		
138,500,000	Opening Balance as on 01.04.2013	191,000,000	
	b) जोड़: वर्ष के दौरान निवेशित		
65,000,000	Add: Invested during the year	76,800,000	
	c) जोड़: निम्नांकित 'd' में से पुनःनिवेश		
61,000,000	Add: Reinvested out of 'd' below	0	
264,500,000		267,800,000	
	d) कम: वर्ष के दौरान प्राप्ति		
73,500,000	Less: Realised during the year	65,000,000	
191,000,000	Total – III		202,800,000
	<u>IV. एफटीडी लेखा-ओरिएण्टल बैंक ऑफ कॉमर्स</u>		
	<u>FTD A/c – Oriental Bank of Commerce</u>		
	a) 01.04.2013तक अथ शेष		
108,000,000	Opening Balance as on 01.04.2013	145,000,000	
	b) जोड़: वर्ष के दौरान निवेशित		
53,500,000	Add: Invested during the year	156,000,000	
	c) जोड़: निम्नांकित 'd' में से पुनःनिवेश		
26,000,000	Add: Reinvested out of 'd' below	47,000,000	
187,500,000		348,000,000	
	d) कम: वर्ष के दौरान प्राप्ति		
42,500,000	Less: Realised during the year	77,000,000	
145,000,000	Total – IV		271,000,000
	<u>V. भारत सरकार 8% बचत बॉण्ड 2003 लेखा</u>		
	<u>Govt. of India 8% Saving Bonds 2003 A/c</u>		
	a) 01.04.2013तक यथास्थिति अथ शेष		
514,500,000	Opening Balance as on 01.04.2013	514,500,000	
	b) जोड़: वर्ष के दौरान निवेशित		
0	Add: Invested during the year	0	
514,500,000		514,500,000	
	c) कम: वर्ष के दौरान प्राप्ति		
0	Less: Realised during the year	0	
514,500,000	Total – V		514,500,000
968,644,965	कुल अग्रणीत TOTAL C/F		1,022,444,965

2012-2013 रु.Rs. पै.Ps.		परिसम्पत्तियाँ/ASSETS	2013-2014 रु.Rs. पै.Ps..
968,644,965 कुल अग्रानीत Total B/F			1,022,444,965
VI. प्राप्त बिल/विविध देनदार लेखा			
Bills Receivable / Sundry Debtors A/c			
01.04.2013तक अथ शेष			
87,291	Opening Balance as on 01.04.2013	0	
87,291	Less: Cleared during the year	0	
0	Total – VI		0
VII. अप्राप्त आय			
Outstanding Income			
1) एफ टी डी लेखा-भा.स्टै.बैं पर प्रौढूत ब्याज			
Accrued Int. on FTD A/c – SBI			
अथ शेष			
1,857,731	Opening Balance	1,469,409	
जोड़: वर्ष के दौरान किया गया प्रावधान			
1,469,409	Add: Provision made during the year	118,952	
3,327,140		1,588,361	
कम: वर्ष के दौरान समाशोधित			
1,857,731	Less: Cleared during the year	1,469,409	
1,469,409			118,952
2) विशेष जमा योजना लेखा पर प्रौढूत ब्याज			
Accrued Interest on Spl. Deposit Scheme A/c			
अथ शेष			
542,899	Opening Balance	597,189	
जोड़: वर्ष के दौरान किया गया प्रावधान			
597,189	Add: Provision made during the year	590,403	
1,140,088		1,187,592	
कम:वर्ष के दौरान समाशोधित			
542,899	Less: Cleared during the year	597,189	
597,189			590,403
3) एफ टी डी लेखा-केनरा बैंक पर प्रौढूत ब्याज			
Accrued Int. on FTD A/c- Canara Bank			
अथ शेष			
1,716,767	Opening Balance	2,301,558	
जोड़: वर्ष के दौरान किया गया प्रावधान			
2,301,558	Add: Provision made during the year	1,692,505	
4,018,325		3,994,063	
कम:वर्ष के दौरान समाशोधित			
1,716,767	Less: Cleared during the year	2,301,558	
2,301,558			1,692,505
4) एफ टी डी लेखा-ओ.बी.सी बैंक पर प्रौढूत ब्याज			
Accrued Int on FTD A/c – Oriental Bank of Commerce			
अथ शेष			
2,244,789	Opening Balance	3,411,002	
जोड़: वर्ष के दौरान किया गया प्रावधान			
3,411,002	Add: Provision made during the year	3,330,649	
5,655,791		6,741,651	
कम: वर्ष के दौरान समाशोधित			
2,244,789	Less: Cleared during the year	3,411,002	
3,411,002			3,330,649
976,424,123	कुल अग्रानीत TOTAL C/F		1,028,177,474

2012-2013		परिसम्पत्तियाँ/ASSETS		2013-2014	
रु.Rs.	पै.Ps.	विवरण PARTICULARS		रु.Rs.	पै.Ps..
976,424,123 कुल अग्रानीत Total B/F				1,028,177,474	
		5) भारत सरकार 8% बचत बॉण्ड 2003 लेखा पर प्रोद्भूत ब्याज			
		Accrued Int on GOI 8% Saving Bonds 2003 A/c			
		अथ शेष			
6,859,999		Opening Balance	6,859,999		
		जोड़: वर्ष के दौरान किया गया प्रावधान			
6,859,999		Add: Provision made during the year	6,859,999		
13,719,998			13,719,998		
		कम: वर्ष के दौरान समाशोधित			
6,859,999		Less: Cleared during the year	6,859,999		
6,859,999				6,859,999	
VIII.अंत शेष					
Closing Balance					
		a) हस्तांगत नकद			
0		Cash in hand	0		
		b) बैंक में नकद			
3,591,824		Cash at Bank	15,641,649		
3,591,824				15,641,649	
986,875,946		कुल योगGrand Total		1,050,679,122	

भारतीय प्रौद्योगिकी संस्थान मुंबई
INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY
सामान्य भविष्य निधि व पेंशन व उपदान निधि योजना
GENERAL PROVIDENT FUND-CUM-PENSION-CUM-GRATUITY FUND SCHEME
1-4-2013 से 31-3-2014 तक आय एवं व्यय लेखा
INCOME AND EXPENDITURE ACCOUNT FOR THE PERIOD FROM 01/04/2013 TO 31/03/2014

2012-2013 रु.Rs. पै.Ps.		आय INCOME विवरण PARTICULARS		2013-2014 रु.Rs. पै.Ps.	
		सा.भ.नि अभिदाता लेखा में देय ब्याज (भा.प्रौ.सं मुख्य लेखा से अंतरित)			
81,457,819		By Interest payable to GPF Subscribers A/c (Transferred from IIT Main A/c)		83,047,576	
		सावधि जमा लेखा- भा.स्टे.बैं			
8,501,380		By Interest on FTD A/c – SBI (निवेश पर प्राप्त ब्याज) (Int. realised on Investment)	6,573,736		
		जोड: जेई (प्रोद्धत किन्तु प्राप्त नहीं हुआ)			
1,469,409		Add: JE (Accrued but not recd.)	118,952		
9,970,789				6,692,688	
		विशेष जमा योजना पर ब्याज (निवेश पर प्राप्त ब्याज)			
1,846,156		By Int. on Special Deposit Scheme A/c (Int. realised on Investment)	1,771,117		
		जोड: जेई (प्रोद्धत किन्तु प्राप्त नहीं हुआ)			
597,189		Add: JE (Accrued but not recd.)	590,403		
2,443,345				2,361,520	
		सावधि जमा लेखा-ओबीसी पर ब्याज			
8,866,439		By Int. on FTD A/c - Oriental Bank of Commerce (निवेश पर प्राप्त ब्याज) (Int. realised on Investment)	10,423,091		
		जोड: जेई (प्रोद्धत किन्तु प्राप्त नहीं हुआ)			
3,411,002		Add: JE (Accrued but not recd.)	3,330,649		
12,277,441				13,753,740	
		सावधि जमा लेखा-कैनरा बैंक पर ब्याज			
11,176,238		By Int. on FTD A/c - Canara Bank (निवेश पर प्राप्त ब्याज) (Int. realised on investment)	17,221,798		
		जोड: जेई (प्रोद्धत किन्तु प्राप्त नहीं हुआ)			
2,301,558		Add: JE (Accrued but not received)	1,692,505		
13,477,796				18,914,303	
		भारत सरकार 8% बचत बॉण्ड 2003 लेखा पर ब्याज			
34,346,189		By Int. on Govt. of India 8% Saving Bonds 2003 A/c कम: ओबीसी में भूल से जमा ब्याज)	34,300,001		
46,188		Less: Int.on OBC wrongly Credited (निवेश पर प्राप्त ब्याज)	0		
34,300,001		(Int. realised on Investment)	34,300,001		
		जोड: जेई (प्रोद्धत किन्तु प्राप्त नहीं हुआ)			
6,859,999		Add: JE (Accrued but not received)	6,859,999		
41,160,000				41,160,000	
160,787,190		कुल योग Grand Total		165,929,827	

2012-2013 रु.Rs. पै.Ps.		व्यय EXPENDITURE विवरण PARTICULARS	2013-2014 रु.Rs. पै.Ps.
		सा.भ.नि. अभिदाता लेखा में देय ब्याज To Interest payable to GPF Subscribers A/c सा.भ.नि. अभिदाता लेखा में जमा	
79,740,439		Credited to GPF Subscribers A/c : 2013-14	83,047,576
1,717,380		Pertains to 2011-12	0
81,457,819			83,047,576
		सावधि जमा लेखा- भा.स्टे.बैं पर ब्याज 8,501,380 To Interest on FTD A/c – SBI (प्राप्त ब्याज तथा मुख्य लेखा में अंतरित) (Int. realised & transferred to Main A/c) जोड: जेई (मुख्य लेखा में अंतरित किया जाएगा)	6,573,736
1,469,409		Add: JE (to be trfd to Main A/c)	118,952
9,970,789			6,692,688
		विशेष जमा योजना पर ब्याज 1,846,156 To Interest on Special Deposit Scheme A/c (प्राप्त ब्याज तथा मुख्य लेखा में अंतरित) (Int. realised & transferred to Main A/c) जोड: जेई (मुख्य लेखा में अंतरित किया जाएगा)	1,771,117
597,189		Add: JE (to be trfd to Main A/c)	590,403
2,443,345			2,361,520
		सावधि जमा लेखा- ओबीसी पर ब्याज 8,866,439 To Interest on FTD A/c – Oriental Bank of Commerce (प्राप्त ब्याज तथा मुख्य लेखा में अंतरित) (Int. realised & transferred to Main A/c)	10,423,091
		जोड: जेई (मुख्य लेखा में अंतरित किया जाएगा)	
3,411,002		Add: JE (to be trfd to Main A/c)	3,330,649
12,277,441			13,753,740
		सावधि जमा लेखा- कैनरा बैंक पर ब्याज 11,176,238 To Interest on FTD A/c - Canara Bank (प्राप्त ब्याज तथा मुख्य लेखा में अंतरित) (Interest realised & transferred to Main A/c)	17,221,798
		जोड: जेई (मुख्य लेखा में अंतरित किया जाएगा)	
2,301,558		Add: JE (to be trfd to Main A/c)	1,692,505
13,477,796			18,914,303
		भारत सरकार 8% बचत बॉण्ड 2003 लेखा पर ब्याज 34,346,189 To Int. on Govt. of India 8% Saving Bonds 2003 A/c कम: ओबीसी में भूल से जमा ब्याज का परिशोधन)	34,300,001
46,188		Less: Rectification of Int. on OBC wrongly Cr. (प्राप्त ब्याज तथा मुख्य लेखा में अंतरित)	0
34,300,001		(Interest realised & transferred to Main A/c) जोड: जेई (मुख्य लेखा में अंतरित किया जाएगा)	34,300,001
6,859,999		Add: JE (to be trfd to Main A/c)	6,859,999
41,160,000			41,160,000
160,787,190		कुल योग Grand Total	165,929,827

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सामान्य भविष्य निधि सह उपदान निधि योजना
GENERAL PROVIDENT FUND-CUM-PENSION-CUM-GRATUITY FUND SCHEME
01/04/2013 से 31/03/2014 तक की अवधि की प्राप्ति एवं भुगतान लेखा
RECEIPTS AND PAYMENTS ACCOUNT FOR THE PERIOD FROM 01/04/2013 TO 31/03/2014

प्राप्तियाँ RECEIPTS				
2012-2013 रु.Rs.	पै.Ps.	विवरण PARTICULARS	2013-2014 रु.Rs.	पै.Ps.
		वर्ष के प्रारंभ में नकद एवं बैंक शेष		
7,350,276		To Cash and Bank Balance at the commencement of the year		3,591,824
		अं.भ.नि. अंशदान लेखा में To G.P.F. Subscription A/c भा.प्रौ.सं मुख्य लेखा से अंतरित (वर्ष के दौरान वेतन से की गई वसूली)		
149,055,665		Transferred from IIT Main A/c (Recoveries made from salary during the year)	148,332,483	
		कर्मचारियों से सीधे प्राप्त की गई राशि		
9,150,064		Received directly from the employees	11,632,075	
90,000		अन्य समायोजन Other Adjustments	298,457	
158,295,729				160,263,015
		अं.भ.नि. अंशदान लेखा में To G.P.F. Advance A/c भा.प्रौ.सं मुख्य लेखा से अंतरित (वर्ष के दौरान वेतन से की गई वसूली)		
8,315,925		Transferred from IIT Main A/c (Recoveries made from salary bills during the year)	11,299,215	
		नए अग्रिम के समायोजन से		
2,786,850		Adjustments from fresh advances	752,550	
479,500		अन्य समायोजन Other Adjustments	301,950	
11,582,275				12,353,715
		सावधिक जमा लेखा- भा.स्टे.बैं (परिपक्वता पर प्राप्त राशि)		
47,000,000		To Fixed Term Deposit A/c – SBI (Amount realised on maturity)		84,000,000
		सावधिक जमा लेखा- भा.स्टे.बैं से प्राप्त ब्याज (निवेश पर प्राप्त ब्याज)		
8,501,380		To Interest on Fixed Term Deposit A/c – SBI (Int. realised on Investment)		6,573,736
		विशेष जमा योजना लेखा पर ब्याज (निवेश पर प्राप्त ब्याज)		
1,846,156		To Interest on Special Deposit Scheme A/c (Int. realised on investment)		1,771,117
		स.भ.नि अंशदाता लेखा को देय ब्याज (भा.प्रौ.सं मुख्य लेखा से राशि अंतरित की गई)		
		To Interest payable to GPF Subscribers A/c (Amount transferred from IIT Main A/c)		
79,740,439		Pertains to 2013-14	83,047,576	
1,717,380		Pertains to 2011-12	0	
81,457,819				83,047,576
		0 धनादेश निरसन लेखा To Cheque Cancellation A/c		25,000
316,033,635		कुल अग्रणीत TOTAL C/F		351,625,983

2012-2013		प्राप्तियाँ RECEIPTS	2013-2014	
रु. Rs.	पै. Ps.	विवरण PARTICULARS	रु. Rs.	पै. Ps.
316,033,635		शेष अग्रानित TOTAL B/F		351,625,983
		बैंक प्रभार लेखा (भा.प्रौ.सं मुख्य लेखा से राशि अंतरित की गई)		
4,512		To Bank Charges A/c (Amount transferred from IIT Main A/c)		991
		सावधिक जमा लेखा- कैनरा बैंक (निवेश से प्राप्त राशि)		
11,176,238		To Int. on FTD A/c – Canara Bank (Int. realised on Investment)		17,221,798
		सावधिक जमा लेखा- ओबीसी बैंक (परिपक्वता पर प्राप्त राशि)		
16,500,000		To FTD A/c – Oriental Bank of Commerce (Amount realised on maturity)		30,000,000
		सावधिक जमा लेखा- ओबीसी (निवेश से प्राप्त ब्याज)		
8,866,439		To Int. on FTD A/c – Oriental Bank of Commerce (Int. realised on investment)		10,423,091
		सावधिक जमा लेखा- कैनरा बैंक (परिपक्वता पर प्राप्त राशि)		
12,500,000		To FTD A/c – Canara Bank (Amount realised on maturity)		65,000,000
		सावधिक जमा पर प्रोद्भूत ब्याज- ओबीसी (12-13 वर्ष के लिए प्राप्त ब्याज)		
2,244,789		To Accrued Int. on FTD A/c –Oriental Bank of Commerce (Int. For 12-13 realised during the year)		3,411,002
		सावधिक जमा पर प्रोद्भूत ब्याज- भा.स्टे.बैं (12-13 वर्ष के लिए प्राप्त ब्याज)		
1,857,731		To Accrued Int. on FTD A/c – SBI (Int. For 12-13 realised during the year)		1,469,409
		सावधिक जमा पर प्रोद्भूत ब्याज- कैनरा बैंक (12-13 वर्ष के लिए प्राप्त ब्याज)		
1,716,767		To Accrued Int. on FTD A/c- Canara Bank (Int. For 12-13 realised during the year)		2,301,558
		विशेष जमा योजना लेखा पर प्रोद्भूत ब्याज (12-13 के दौरान प्राप्त ब्याज)		
542,899		To Accrued Int. on Special Deposit Scheme A/c (Int. For 12-13 realised during the year)		597,189
		भा.स 8% बचत बॉण्ड 2003 लेखा पर प्राप्त ब्याज (निवेश पर प्राप्त ब्याज)		
34,300,001		To Int. on GOI 8% Saving Bonds 2003 A/c (Int. realised on Investment)	34,300,001	
		सावधिक जमा ओबीसी लेखा पर प्राप्त ब्याज का भूल से जमा		
46,188		Int on FTD OBC A/c wrongly credited	0	
34,346,189				34,300,001
		भा.स 8% बचत बॉण्ड 2003 लेखा से प्रोद्भूत ब्याज (वर्ष 12-13 के अवधि में प्राप्त ब्याज)		
6,859,999		To Accrued Int on GOI 8% Saving Bonds 2003 A/c (Int. For 12-13 realised during the year)	6,859,999	
		सावधिक जमा ओबीसी लेखा पर प्राप्त ब्याज का भूल से जमा		
0		Int on FTD OBC A/c wrongly credited	254,682	
6,859,999				7,114,681
412,649,198		कुल अग्रानीत TOTAL C/F		523,465,703

2012-2013		प्राप्तियाँ RECEIPTS	2013-2014	
रु.Rs.	पै.Ps.	विवरण PARTICULARS	रु.Rs.	पै.Ps.
412,649,198		शेष अग्रानित TOTAL B/F	523,465,703	
		प्राप्त बिल		
		(सा.भ.नि. अंशदाता लेखा को वर्ष 12-13 संदेय ब्याज,		
		इस वर्ष के दौरान समाशोधित)		
87,291		To Bills Receivable A/c		0
		(Interest payable to GPF Subscriber A/c		
		For 11-12 cleared during the year)		
412,736,489		कुल योग Grand Total	523,465,703	

2012-2013 रु.Rs. पै.Ps.		भुगतान PAYMENTS विवरण PARTICULARS		2013-2014 रु.Rs. पै.Ps.	
		भ.नि. अंशदान लेखा By G.P.F. Subscription A/c			
		1) अहरण एवं वर्ष के दौरान अंतिम भुगतान 1) Withdrawals and Final Payments made during the year		175,849,014	
199,100,686		2) अन्य समायोजन Other Adjustments		576,907	
565,500					176,425,921
199,666,186		भ.नि. अग्रिम लेखा By G.P. F. Advance A/c			
		1) वर्ष के दौरान संदत अस्थायी अग्रिम 1) Temp.advances paid during the year		13,362,560	
13,011,380		2) अन्य समायोजन Other Adjustments		26,000	
4,000					13,388,560
13,015,380					
		विशेष जमा योजना लेखा से प्राप्त ब्याज (ब्याज प्राप्त किये गए एवं भा.प्रौ.सं मुख्य लेखा में अंतरित किए गए)			
		1,846,156 By Int. on Special Deposit Scheme A/c (Interest realised and transferred to IIT Main A/c)			1,771,117
		सावधिक जमा लेखा- भा.स्टे.बैं (ब्याज प्राप्त किये गए एवं भा.प्रौ.सं मुख्य लेखा में अंतरित किए गए)			
		8,501,380 By Int. on Fixed Term Deposit A/c – SBI (Interest realised and transferred to IIT Main A/c)			6,573,736
		बैंक कमिशन प्रभार लेखा 4,512 By Bank Commission Charges A/c			991
		सावधिक जमा लेखा- कैनरा बैंक (इस वर्ष में निवेश की गई राशि) 65,000,000 By Fixed Term Deposit A/c – Canara Bank (Amt. invested during the year)			76,800,000
		देय बिल/विविध लेनदार लेखा (इस वर्ष के दौरान समाशोधित) 13,222,185 By Bills Payable/Sundry Creditors A/c (Cleared during the year)			14,639,157
		सावधिक जमा लेखा- कैनरा बैंक (राशि की प्राप्ति हुई और मुख्य लेखा में अंतरण हुआ) 11,176,238 By Int. on FTD A/c - Canara Bank (Int. realised and transferred to Main A/c)			17,221,798
		सावधिक जमा लेखा- ओबीसी (वर्ष के दौरान निवेश की गई राशि) 53,500,000 By Fixed Term Deposit A/c – Oriental Bank of Commerce (Amt. Invested during the year)			156,000,000
		सावधिक जमा पर ब्याज- ओबीसी (ब्याज प्राप्त किया गया और मुख्य लेखा में अंतरित किया गया) 8,866,439 By Interest on FTD A/c – Oriental Bank of Commerce (Interest realised and transferred to Main A/c)			10,423,091
374,798,476		कुल अग्रणीत TOTAL C/F			473,244,371

2012-2013		भुगतान PAYMENTS		2013-2014	
रु.Rs.	पै.Ps.	विवरण PARTICULARS		रु.Rs.	पै.Ps.
374,798,476		कुल अग्रानित TOTAL B/F			473,244,371
		भा.स 8%बचत बॉण्ड लेखा पर ब्याज (ब्याज प्राप्त किया गया और मुख्य लेखा में अंतरित किया गया)			
34,300,001		By Int. on GOI 8% Saving Bonds 2003 A/c (Interest realised and transferred to Main A/c)	34,300,001		
		सावधिक जमा ओबीसी पर प्राप्त ब्याज का भूल से जमा में सुधार			
46,188		Rectification of Int on FTD OBC wrongly credited	0		
34,346,189					34,300,001
		भा.स 8% बचत बॉण्ड 2003 लेखा से प्रौद्गत ब्याज			
0		By Accrued Interest on GOI 8% Savings Bonds 2003 A/c			254,682
		0 धनादेश निरसन लेखा By Cheque Cancellation A/c			25,000
		0 अंत शेष By Closing Balance			
		क) हाथ में a) Cash in Hand	0		
3,591,824		ख) बैंक में b) Cash at Bank	15,641,649		
3,591,824					15,641,649
412,736,489		कुल योग Grand Total			523,465,703

भारतीय प्रौद्योगिकी संस्थान मुंबई
INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY
सामान्य भविष्य निधि व पेंशन व उपदान निधि योजना
GENERAL PROVIDENT FUND-CUM-PENSION-CUM-GRATUITY FUND SCHEME
31.03.2014 तक यथास्थिति तुलन पत्र
BALANCE SHEET AS AT 31.03.2014

2012-2013 रु.Rs. पै.Ps.		दायित्व/LIABILITIES		2013-2014 रु.Rs. पै.Ps..	
विवरण PARTICULARS					
I. सामान्य भविष्य निधि लेखा					
General Provident Fund A/c					
01.04.2013 तक अथ शेष					
941,520,914	Opening Balance as on 01.04.2013	981,608,276			
जोड़: 2011-12 से संबंधित ब्याज					
1,717,380	Add:Differential interest for 2011-12	0			
943,238,294		981,608,276			
सा.भ.नि अभिदान लेखा					
158,295,729	GPF Subscription Account	160,263,015			
जोड़: सा.भ.निधि लेखा में ब्याज जमा					
79,740,439	Add: Int. Credited to GPF Subs A/c	83,047,576			
1,181,274,462	For 2013-14	1,224,918,867			
कम:सा.भ.नि.आहरण					
199,666,186	Less : GPF Withdrawal	176,425,921			
981,608,276			1,048,492,946		
कम: सा.भ.नि अग्रिम लेखा					
Less : GPF Advance A/c					
01.04.2013तक यथास्थिति अथ शेष					
8,478,855	Opening Balance on 01.04.2013	9,911,960			
जोड़: वर्ष के दौरान संदत्त					
13,015,380	Add: Paid during the year	13,388,560			
21,494,235		23,300,520			
कम: अग्रिम की वसूली					
11,582,275	Less: Recovery of advance	12,353,715			
9,911,960		10,946,805			
			10,946,805		
971,696,316				1,037,546,141	
II. देय बिल/विविध लेनदार लेखा					
Bills Payable / Sundry Creditors A/c					
01.04.2013तक यथास्थिति अथ शेष					
13,222,185	Opening Balance on 01.04.2013		14,639,157		
जोड़: देय बिल लेखा में जमा					
14,639,157	Add: Credited to Bills Payable A/c		12,592,508		
27,861,342			27,231,665		
कम: वर्ष के दौरान समाप्त					
13,222,185	Less: Cleared during the year		14,639,157		
14,639,157				12,592,508	
III. अदावी अभिदान लेखा हेतु जमा लेखा					
540,473	Deposit A/c for unclaimed Subscription A/c			540,473	
986,875,946	कुल योग Grand Total			1,050,679,122	

परिसम्पत्तियाँ/ASSETS			
2012-2013 रु.Rs. पै.Ps.	विवरण PARTICULARS		2013-2014 रु.Rs. पै.Ps..
	<u>I. सावधि जमा लेखा- भा.स्टै.बैं</u>		
	<u>Fixed Term Deposit A/c – SBI</u>		
	a) 01.04.2013तक यथास्थिति अथ शेष		
138,000,000	Opening Balance as on 01.04.13	91,000,000	
	b) जोड़: वर्ष के दौरान निवेशित		
0	Add: Invested during the year	0	
	c) जोड़: निम्नांकित 'd' में से पुनःनिवेश		
2,500,000	Add: Reinvested out of 'd' below	3,000,000	
140,500,000		94,000,000	
	d) कम: वर्ष के दौरान प्राप्ति		
49,500,000	Less: Realised during the year	87,000,000	
91,000,000	Total – I		7,000,000
	<u>II. विशेष जमा योजना लेखा</u>		
	<u>Special Deposit Scheme A/c</u>		
	a) 01.04.2013 तक अथ शेष		
27,144,965	Opening Balance as on 01.04.2013	27,144,965	
27,144,965	Total – II		27,144,965
	<u>III. एफ टी डी लेखा- केनरा बैंक</u>		
	<u>FTD A/c - Canara Bank</u>		
	a) 01.04.2013तक अथ शेष		
138,500,000	Opening Balance as on 01.04.2013	191,000,000	
	b) जोड़: वर्ष के दौरान निवेशित		
65,000,000	Add: Invested during the year	76,800,000	
	c) जोड़: निम्नांकित 'd' में से पुनःनिवेश		
61,000,000	Add: Reinvested out of 'd' below	0	
264,500,000		267,800,000	
	d) कम: वर्ष के दौरान प्राप्ति		
73,500,000	Less: Realised during the year	65,000,000	
191,000,000	Total – III		202,800,000
	<u>IV. एफटीडी लेखा-ओरिएण्टल बैंक ऑफ कॉमर्स</u>		
	<u>FTD A/c – Oriental Bank of Commerce</u>		
	a) 01.04.2013तक अथ शेष		
108,000,000	Opening Balance as on 01.04.2013	145,000,000	
	b) जोड़: वर्ष के दौरान निवेशित		
53,500,000	Add: Invested during the year	156,000,000	
	c) जोड़: निम्नांकित 'd' में से पुनःनिवेश		
26,000,000	Add: Reinvested out of 'd' below	47,000,000	
187,500,000		348,000,000	
	d) कम: वर्ष के दौरान प्राप्ति		
42,500,000	Less: Realised during the year	77,000,000	
145,000,000	Total – IV		271,000,000
	<u>V. भारत सरकार 8% बचत बॉण्ड 2003 लेखा</u>		
	<u>Govt. of India 8% Saving Bonds 2003 A/c</u>		
	a) 01.04.2013तक यथास्थिति अथ शेष		
514,500,000	Opening Balance as on 01.04.2013	514,500,000	
	b) जोड़: वर्ष के दौरान निवेशित		
0	Add: Invested during the year	0	
514,500,000		514,500,000	
	c) कम: वर्ष के दौरान प्राप्ति		
0	Less: Realised during the year	0	
514,500,000	Total – V		514,500,000
968,644,965	कुल अग्रणीत TOTAL C/F		1,022,444,965

2012-2013 रु.Rs. पै.Ps.		परिसम्पत्तियाँ/ASSETS	2013-2014 रु.Rs. पै.Ps..	
968,644,965 कुल अग्रानीत Total B/F		विवरण PARTICULARS	1,022,444,965	
VI. प्राप्त बिल/विविध देनदार लेखा				
Bills Receivable / Sundry Debtors A/c				
01.04.2013तक अथ शेष				
87,291	Opening Balance as on 01.04.2013	0		
87,291	Less: Cleared during the year	0		
0	Total – VI		0	
VII. अप्राप्त आय				
Outstanding Income				
1) एफ टी डी लेखा-भा.स्टै.बैं पर प्रौढूत ब्याज				
Accrued Int. on FTD A/c – SBI				
अथ शेष				
1,857,731	Opening Balance	1,469,409		
जोड़: वर्ष के दौरान किया गया प्रावधान				
1,469,409	Add: Provision made during the year	118,952		
3,327,140		1,588,361		
कम: वर्ष के दौरान समाशोधित				
1,857,731	Less: Cleared during the year	1,469,409		
1,469,409			118,952	
2) विशेष जमा योजना लेखा पर प्रौढूत ब्याज				
Accrued Interest on Spl. Deposit Scheme A/c				
अथ शेष				
542,899	Opening Balance	597,189		
जोड़: वर्ष के दौरान किया गया प्रावधान				
597,189	Add: Provision made during the year	590,403		
1,140,088		1,187,592		
कम:वर्ष के दौरान समाशोधित				
542,899	Less: Cleared during the year	597,189		
597,189			590,403	
3) एफ टी डी लेखा-केनरा बैंक पर प्रौढूत ब्याज				
Accrued Int. on FTD A/c- Canara Bank				
अथ शेष				
1,716,767	Opening Balance	2,301,558		
जोड़: वर्ष के दौरान किया गया प्रावधान				
2,301,558	Add: Provision made during the year	1,692,505		
4,018,325		3,994,063		
कम:वर्ष के दौरान समाशोधित				
1,716,767	Less: Cleared during the year	2,301,558		
2,301,558			1,692,505	
4) एफ टी डी लेखा-ओ.बी.सी बैंक पर प्रौढूत ब्याज				
Accrued Int on FTD A/c – Oriental Bank of Commerce				
अथ शेष				
2,244,789	Opening Balance	3,411,002		
जोड़: वर्ष के दौरान किया गया प्रावधान				
3,411,002	Add: Provision made during the year	3,330,649		
5,655,791		6,741,651		
कम: वर्ष के दौरान समाशोधित				
2,244,789	Less: Cleared during the year	3,411,002		
3,411,002			3,330,649	
976,424,123	कुल अग्रानीत TOTAL C/F		1,028,177,474	

2012-2013		परिसम्पत्तियाँ/ASSETS		2013-2014	
रु.Rs.	पै.Ps.	विवरण PARTICULARS		रु.Rs.	पै.Ps..
		976,424,123 कुल अग्रानीत Total B/F			1,028,177,474
		5) भारत सरकार 8% बचत बॉण्ड 2003 लेखा पर प्रोद्भूत ब्याज			
		Accrued Int on GOI 8% Saving Bonds 2003 A/c			
		अथ शेष			
6,859,999		Opening Balance	6,859,999		
		जोड़: वर्ष के दौरान किया गया प्रावधान			
6,859,999		Add: Provision made during the year	6,859,999		
13,719,998			13,719,998		
		कम: वर्ष के दौरान समाशोधित			
6,859,999		Less: Cleared during the year	6,859,999		
6,859,999					6,859,999
		<u>VIII.अंत शेष</u>			
		<u>Closing Balance</u>			
		a) हस्तागत नकद			
0		Cash in hand	0		
		b) बैंक में नकद			
3,591,824		Cash at Bank	15,641,649		
3,591,824					15,641,649
986,875,946		कुल योगGrand Total			1,050,679,122

भारतीय प्रौद्योगिकी संस्थान मुंबई
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सामान्य भविष्य निधि व पेंशन व उपदान निधि योजना
GENERAL PROVIDENT FUND-CUM-PENSION-CUM-GRATUITY FUND SCHEME
1-4-2013 से 31-3-2014 तक आय एवं व्यय लेखा
INCOME AND EXPENDITURE ACCOUNT FOR THE PERIOD FROM 01/04/2013 TO 31/03/2014

2012-2013 रु.Rs. पै.Ps.		आय INCOME विवरण PARTICULARS		2013-2014 रु.Rs. पै.Ps.	
		सा.भ.नि अभिदाता लेखा में देय ब्याज (भा.प्रौ.सं मुख्य लेखा से अंतरित)			
81,457,819		By Interest payable to GPF Subscribers A/c (Transferred from IIT Main A/c)		83,047,576	
		सावधि जमा लेखा- भा.स्टे.बैं			
8,501,380		By Interest on FTD A/c – SBI (निवेश पर प्राप्त ब्याज) (Int. realised on Investment)		6,573,736	
		जोड: जेई (प्रोद्धत किन्तु प्राप्त नहीं हुआ)			
1,469,409		Add: JE (Accrued but not recd.)		118,952	
9,970,789				6,692,688	
		विशेष जमा योजना पर ब्याज (निवेश पर प्राप्त ब्याज)			
1,846,156		By Int. on Special Deposit Scheme A/c (Int. realised on Investment)		1,771,117	
		जोड: जेई (प्रोद्धत किन्तु प्राप्त नहीं हुआ)			
597,189		Add: JE (Accrued but not recd.)		590,403	
2,443,345				2,361,520	
		सावधि जमा लेखा-ओबीसी पर ब्याज			
8,866,439		By Int. on FTD A/c - Oriental Bank of Commerce (निवेश पर प्राप्त ब्याज) (Int. realised on Investment)		10,423,091	
		जोड: जेई (प्रोद्धत किन्तु प्राप्त नहीं हुआ)			
3,411,002		Add: JE (Accrued but not recd.)		3,330,649	
12,277,441				13,753,740	
		सावधि जमा लेखा-कैनरा बैंक पर ब्याज			
11,176,238		By Int. on FTD A/c - Canara Bank (निवेश पर प्राप्त ब्याज) (Int. realised on investment)		17,221,798	
		जोड: जेई (प्रोद्धत किन्तु प्राप्त नहीं हुआ)			
2,301,558		Add: JE (Accrued but not received)		1,692,505	
13,477,796				18,914,303	
		भारत सरकार 8% बचत बॉण्ड 2003 लेखा पर ब्याज			
34,346,189		By Int. on Govt. of India 8% Saving Bonds 2003 A/c कम: ओबीसी में भूल से जमा ब्याज)		34,300,001	
46,188		Less: Int.on OBC wrongly Credited		0	
34,300,001		(निवेश पर प्राप्त ब्याज) (Int. realised on Investment)		34,300,001	
		जोड: जेई (प्रोद्धत किन्तु प्राप्त नहीं हुआ)			
6,859,999		Add: JE (Accrued but not received)		6,859,999	
41,160,000				41,160,000	
160,787,190		कुल योग Grand Total		165,929,827	

2012-2013 रु.Rs. पै.Ps.		व्यय EXPENDITURE विवरण PARTICULARS	2013-2014 रु.Rs. पै.Ps.
		सा.भ.नि. अभिदाता लेखा में देय ब्याज To Interest payable to GPF Subscribers A/c सा.भ.नि. अभिदाता लेखा में जमा	
79,740,439		Credited to GPF Subscribers A/c : 2013-14	83,047,576
1,717,380		Pertains to 2011-12	0
81,457,819			83,047,576
		सावधि जमा लेखा- भा.स्टे.बैं पर ब्याज 8,501,380 To Interest on FTD A/c – SBI (प्राप्त ब्याज तथा मुख्य लेखा में अंतरित) (Int. realised & transferred to Main A/c) जोड: जेई (मुख्य लेखा में अंतरित किया जाएगा)	6,573,736
1,469,409		Add: JE (to be trfd to Main A/c)	118,952
9,970,789			6,692,688
		विशेष जमा योजना पर ब्याज 1,846,156 To Interest on Special Deposit Scheme A/c (प्राप्त ब्याज तथा मुख्य लेखा में अंतरित) (Int. realised & transferred to Main A/c) जोड: जेई (मुख्य लेखा में अंतरित किया जाएगा)	1,771,117
597,189		Add: JE (to be trfd to Main A/c)	590,403
2,443,345			2,361,520
		सावधि जमा लेखा- ओबीसी पर ब्याज 8,866,439 To Interest on FTD A/c – Oriental Bank of Commerce (प्राप्त ब्याज तथा मुख्य लेखा में अंतरित) (Int. realised & transferred to Main A/c)	10,423,091
		जोड: जेई (मुख्य लेखा में अंतरित किया जाएगा)	
3,411,002		Add: JE (to be trfd to Main A/c)	3,330,649
12,277,441			13,753,740
		सावधि जमा लेखा- कैनरा बैंक पर ब्याज 11,176,238 To Interest on FTD A/c - Canara Bank (प्राप्त ब्याज तथा मुख्य लेखा में अंतरित) (Interest realised & transferred to Main A/c)	17,221,798
		जोड: जेई (मुख्य लेखा में अंतरित किया जाएगा)	
2,301,558		Add: JE (to be trfd to Main A/c)	1,692,505
13,477,796			18,914,303
		भारत सरकार 8% बचत बॉण्ड 2003 लेखा पर ब्याज 34,346,189 To Int. on Govt. of India 8% Saving Bonds 2003 A/c कम: ओबीसी में भूल से जमा ब्याज का परिशोधन)	34,300,001
46,188		Less: Rectification of Int. on OBC wrongly Cr. (प्राप्त ब्याज तथा मुख्य लेखा में अंतरित)	0
34,300,001		(Interest realised & transferred to Main A/c) जोड: जेई (मुख्य लेखा में अंतरित किया जाएगा)	34,300,001
6,859,999		Add: JE (to be trfd to Main A/c)	6,859,999
41,160,000			41,160,000
160,787,190		कुल योग Grand Total	165,929,827

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INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY
अंशदायी भविष्य निधि व उपदान निधि योजना
CONTRIBUTORY PROVIDENT FUND-CUM-GRATUITY FUND SCHEME
01.04.2013 से 31.3.2014 तक की अवधि हेतु प्राप्तियां एवं भुगतान
RECEIPTS AND PAYMENTS ACCOUNT FOR THE PERIOD FROM 01/04/2013 TO 31/03/2014

2012-2013		प्राप्तियां/RECEIPTS		2013-2014	
रु.Rs.	पै.Ps.	विवरण PARTICULARS		रु.Rs.	पै.Ps.
		वर्ष के प्रारंभ में नकद एवं बैंक शेष			
2,518,141		To Cash and Bank Balance at the commencement of the year		1,577,099	
		अं.भ.नि. अभिदान लेखा			
		To C.P. F Subscription A/c			
		भा.प्रौ.सं मुख्य लेखा से अंतरित(वर्ष के दौरान वेतन से वसूली)			
8,913,282		Transferred from IIT Main A/c	9,037,699		
		(Recoveries Made from salary during the year)			
		अन्य समायोजन			
5,000		Other Adjustments	0		
8,918,282				9,037,699	
		अं.भ.नि. अग्रिम लेखा			
		To C.P. F Advance A/c			
		(भा.प्रौ.सं मुख्य लेखा से अंतरण(वर्ष के दौरान वेतन से वसूली)			
40,000		Transferred from IIT Main A/c	0		
		(Recoveries Made from salary during the year)			
		नये अग्रिम से समायोजन			
510,000		Adjustments from fresh advances	0		
		अन्य समायोजन			
0		Other Adjustments	1,512,114		
550,000				1,512,114	
		अं.भ.नि. लेखा में संस्थान का अंशदान			
		भा.प्रौ.सं मुख्य लेखा से अंतरण			
3,105,637		To Institute contribution to CPF A/c	3,112,976		
		Transferd from IIT Main A/c			
		अन्य संगठन से प्राप्त कर्मचारियों का अभिदान			
103,869		Employer's contribution received from other organisation	0		
3,209,506				3,112,976	
		अं.भ.नि. लेखा (वर्ष 2013-14 हेतु भा.प्रौ.सं मुख्य लेखा से अंतरण)			
		To Interest payable to CPF Subscriber's A/c			
		(Transferred from IIT Main A/c for 2013-14)			
10,168,755		Pertains to 2013-14	11,534,891		
201,527		Pertains to 2011-12	0		
10,370,282				11,534,891	
		सावधि जमा लेखा-भा.स्टै.बैं पर ब्याज (निवेश पर प्राप्त ब्याज)			
		To Interest on Fixed Term Deposit A/c – S.B.I			
644,381		(Interest realised on investment)	256,700		
		एफ टी डी-भा.स्टै.बैं खाता की राशि गलती से जमा			
800,000		FTD SBI Amount wrongly credited	0		
1,444,381				256,700	

27,010,592

कुल अग्रणीत Total C/F

27,031,479

2012-2013		प्राप्तियां/RECEIPTS	2013-2014	
रु.Rs.	पै.Ps.	विवरण PARTICULARS	रु.Rs.	पै.Ps.
27,010,592		कुल अग्रानीत Total B/F		27,031,479
		विशेष जमा योजना पर ब्याज (निवेश पर प्राप्त ब्याज)		
1,391,983		To Interest on Special Deposit Scheme A/c (Interest realised on investment)		1,335,404
		एफ टी डी पर प्रोद्भूत ब्याज-ओरियन्टल बैंक ऑफ कॉमर्स (वर्ष के दौरान 12-13 हेतु प्राप्त ब्याज)		
1,224,436		To Accrued Int. on FTD A/c -Oriental Bank of Commerce (Int. For 12-13 realised during the year)		1,724,488
		सावधि जमा भा.स्टै.बैंक पर प्रोद्भूत (वर्ष के दौरान 12-13 हेतु प्राप्त ब्याज)		
165,253		To Accrued Int. on Fixed Term Deposit A/c – S.B.I (Int. For 12-13 realised during the year)		14,052
		बैंक कमिशन प्रभार खाता (मुख्य खाता से अंतरण)		
2,515		To Bank Commission Charges A/c (Transferred from Main A/c)		436
		सावधि जमा खाता- ओरियन्टल बैंक ऑफ कॉमर्स द्वारा (परिपक्वता पर प्राप्त राशि)		
15,000,000		To Fixed Term Deposit A/c – Oriental Bk of Commerce (Amount realised on Maturity)		14,000,000
		एफ टी डी खाता-कैनरा बैंक (परिपक्वता पर प्राप्त राशि)		
2,500,000		To FTD A/c – Canara Bank (Amount realised on Maturity)		10,000,000
		विशेष जमा योजना खाता पर प्रोद्भूत ब्याज (वर्ष के दौरान प्राप्त 12-13 हेतु ब्याज)		
409,341		To Accrued int. on Special Deposit Scheme A/c (Interest for 12-13 realised during the year)		450,275
		एफ टी डी खाता -कैनरा बैंक पर ब्याज (निवेश पर प्राप्त ब्याज)		
1,726,756		To Interest on FTD A/c – Canara Bank (Interest realised on investment)		3,413,307
		एफ टी डी खाता -कैनरा बैंक पर प्रोद्भूत ब्याज (वर्ष के दौरान प्राप्त 12-13 हेतु ब्याज)		
161,894		To Accrued interest on FTD A/c – Canara Bank (Interest for 12-13 realised during the year)		463,689
49,592,770		कुल अग्रानीत Total C/F		58,433,130

2012-2013		प्राप्तियाँ/RECEIPTS	2013-2014	
रु.Rs.	पै.Ps.	विवरण PARTICULARS	रु.Rs.	पै.Ps.
	49,592,770	कुल अग्रानीत Total B/F		58,433,130
		एफ टी डी खाता- भा.स्टै.बै. (परिपक्वता पर प्राप्त राशि)		
	11,300,000	To FTD A/c – SBI (Amount realised on Maturity)		0
		एफ टी डी खाता -ओरियन्टल बैंकऑफ कॉमर्स पर ब्याज (निवेश पर प्राप्त ब्याज)		
	4,286,257	To Int. on FTD A/c- Oriental Bank of Commerce (Interest realised on investment)		5,115,832
65,179,027		कुल योग GRAND TOTAL		63,548,962

2012-2013		भुगतान/PAYMENTS		2013-2014	
रु.Rs.	पै.Ps.	विवरण		रु.Rs.	पै.Ps.
		PARTICULARS			
		<u>अं.भू.नि अभिदान लेखा</u>			
		<u>By C.P.F Subscription A/c</u>			
		1) वर्ष के दौरान किया गया प्रत्याहरण तथा अंतिम भुगतान			
		Withdrawals and Final Payments			
		Made during the year			
		अभिदान			
2,829,554		a) Subscription	4,255,982		
		संस्थान अंशदान			
944,558		b) Institute Contribution	885,796		
		अन्य समायोजन			
5,000		c) Other Adjustments	1,512,114		
3,779,112					6,653,892
		<u>अं.भू.नि अग्रिम लेखा से</u>			
		<u>By C.P.F Advance A/c</u>			
		वर्ष के दौरान प्रदत्त अग्रिम			
510,000		Advances paid during the year			0
		सावधि जमा खाता-भा.स्टै.बैं पर ब्याज द्वारा			
		(निवेश पर प्राप्त ब्याज तथा भा.प्रौ.सं मुख्य खाता में अंतरण)			
644,381		By Int. on Fixed Term Deposit A/c – S.B.I	256,700		
		(Interest realised on Investment			
		and transferred to IIT Main A/c)			
		गलती से जमा की गई एफ टी डी-भा.स्टै.बैं खाता की राशि में सुधार			
800,000		Rectification of FTD SBI amount wrongly credited	0		
1,444,381					256,700
		विशेष जमा योजना खाता पर ब्याज द्वारा			
		(निवेश पर प्राप्त ब्याज तथा भा.प्रौ.सं मुख्य खाता में अंतरण)			
1,391,983		By Int. on Special deposit Scheme A/c			1,335,404
		(Interest realised on investment and transferred to IIT Main A/c)			
		एफ टी डी खाता-कैनरा बैंक			
		(वर्ष के दौरान निवेशित)			
17,000,000		By FTD A/c - Canara Bank			9,000,000
		(Invested during the year)			
		बैंक कमिशन प्रभार खाता			
2,515		By Bank Commission Charges A/c			436
		विविध लेनदार लेखा / देय बिल			
		(वर्ष के दौरान पूरा किया गये)			
1,960,924		By Sundry Creditors/Bills Payable A/c			2,652,504
		(Cleared during the year)			
		एफटीडी खाता -कैनरा बैंक पर ब्याज			
		(निवेश पर प्राप्त ब्याज तथा भा.प्रौ.सं मुख्य खाता में अंतरण)			
1,726,756		By Int. on FTD A/c - Canara Bank			3,413,307
		(Int. realised and transferred to IIT Main A/c)			
27,815,671		कुल अग्रणीत Total C/F			23,312,243

2012-2013		भुगतान/PAYMENTS विवरण PARTICULARS	2013-2014	
रु.Rs.	पै.Ps.		रु.Rs.	पै.Ps.
27,815,671		कुल अग्रानीतTotal B/F		23,312,243
		सावधि जमा खाता- ओरियन्टल बैंक ऑफ कॉमर्स द्वारा (वर्ष के दौरान निवेशित)		
31,500,000		By Fixed Term Deposit A/c – Oriental Bk of Commerce (Invested during the year)		27,000,000
		एफटीडी खाता- ओरियन्टल बैंक ऑफ कॉमर्स द्वारा ब्याज (निवेश पर प्राप्त ब्याज तथा भा.प्रौ.सं मुख्य खाता में अंतरण)		
4,286,257		By Int. on FTD A/c-Oriental Bank of Commerce (Int. Realised and transferred to IIT Main A/c)		5,115,832
		सावधि जमा खाता- भा.स्टै.बैं.द्वारा (वर्ष के दौरान निवेशित)		
0		By Fixed Term Deposit A/c - SBI (Invested during the year)		7,200,000
		अंतशेष द्वारा		
		By Closing Balance		
		a) हस्तांगत नकद		
0		a) Cash in hand	0	
		b) बैंक में नकद		
1,577,099		b) Cash at Bank	920,887	
1,577,099				920,887
65,179,027		कुल योगGRAND TOTAL		63,548,962

भारतीय प्रौद्योगिकी संस्थान मुंबई
INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY
अंशदायी भविष्य निधि व उपदान निधि योजना
CONTRIBUTORY PROVIDENT FUND CUM-GRATUITY FUND SCHEME
वर्ष 01.04.2013 से 31.03.2014 तक की अवधि हेतु आय व व्यय लेखा
INCOME AND EXPENDITURE ACCOUNT FOR THE PERIOD FROM 01/04/2013 TO 31/03/2014

2012-2013		आय/INCOME	2013-2014
रु.Rs.	पै.Ps.		रु.Rs.
		विवरण PARTICULARS	पै.Ps.
		अं.भ.नि अभिदान खाता को देय ब्याज द्वारा (भा.प्रौ.सं मुंबई मुख्य लेखा में अंतरित)	
10,370,282		By Interest payable to CPF Subscribers A/c (Transferred from IIT Main A/c)	11,534,891
		एफ टी डी लेखा-भा.स्टै.बैं पर ब्याज द्वारा	
1,444,381		By Interest on FTD A/c – S.B.I कम: गलती से जमा	256,700
800,000		Less FTD SBI Amount wrongly credited	0
644,381		(Int. realised on investment) जोड़:जे.ई (प्रोद्धत किन्तु प्राप्त नहीं हुआ)	256,700
14,052		Add: J.E. (Accrued but not received)	126,671
658,433			383,371
		विशेष जमा योजना खाता पर ब्याज द्वारा (निवेश पर प्राप्त ब्याज)	
1,391,983		By Int. on Special deposit Scheme A/c (Int. realised on Investment) जोड़:जे.ई(प्रोद्धत किन्तु प्राप्त नहीं हुआ)	1,335,404
450,275		Add: J.E. (Accrued but not received)	445,158
1,842,258			1,780,562
		एफ टी डी लेखा-केनरा.बैं पर ब्याज (निवेश पर प्राप्त ब्याज)	
1,726,756		By Interest on FTD A/c – Canara Bank (Int. realised on Investment) जोड़:जे.ई.(प्रोद्धत किन्तु प्राप्त नहीं हुआ)	3,413,307
463,689		Add: J.E. (Accrued but not received)	310,776
2,190,445			3,724,083
		एफ टी डी लेखा-ओ..बैं.ऑफ कॉमर्स पर ब्याज द्वारा	
4,286,257		By Interest on FTD A/c- Oriental Bk of Commerce (Int. realised on Investment) जोड़:जे.ई(मुख्य लेखा में अंतरण किया जाएगा)	5,115,832
1,724,488		Add: J.E. (Accrued but not received)	1,498,412
6,010,745			6,614,244
21,072,163		कुल योग GRAND TOTAL	24,037,151

2012-2013		व्यय/EXPENDITURE	2013-2014	
रु.Rs.	पै.Ps.	विवरण PARTICULARS	रु.Rs.	पै.Ps.
		अं.भ.नि अभिदान खाता को देय ब्याज		
		To Interest payable to CPF Subscribers A/c (Credited to CPF Subscribers A/c)(अं.भ.नि अभिदान खाता में जमा)		
10,168,755		Pertains to 2013-14	11,534,891	
201,527		Pertains to 2011-12	0	
10,370,282				11,534,891
		एफ टी डी लेखा-भा.स्टै.बैं पर ब्याज (मुख्य लेखा में प्राप्त तथा अंतरित ब्याज)		
1,444,381		To Interest on FTD A/c - SBI	256,700	
800,000		Less Rectification of FTD SBI Amt wrongly credited (कम: गलती से जमा)	0	
644,381		(Interest realised & transferred to IIT Main A/c) जोड़:जे.ई.(मुख्य लेखा में अंतरण किया जाएगा)	256,700	
14,052		Add : J.E. (to be trfd to Main A/c)	126,671	
658,433				383,371
		विशेष जमा योजना खाता पर ब्याज (ब्याज प्राप्त तथा मुख्य लेखा में अंतरित)		
1,391,983		To Interest on Special Deposit Scheme A/c (Int. realised and transferred to Main A/c) जोड़:जे.ई.(मुख्य लेखा में अंतरण किया जाएगा)	1,335,404	
450,275		Add: J.E. (to be trfd to Main A/c)	445,158	
1,842,258				1,780,562
		एफटीडी खाता-कैनरा बैंक पर ब्याज (ब्याज प्राप्त तथा मुख्य लेखा में अंतरित)		
1,726,756		To Interest on FTD A/c- Canara Bank (Int. realised and transferred to Main A/c) जोड़:जे.ई.(मुख्य लेखा में अंतरण किया जाएगा)	3,413,307	
463,689		Add: J.E. (to be trfd to Main A/c)	310,776	
2,190,445				3,724,083
		एफ टी डी खाता-ओरि.बैं.ऑफ कॉमर्स पर ब्याज		
4,286,257		To Interest on FTD A/c - Oriental Bk of Commerce (Int. realised and transferred to Main A/c) जोड़:जे.ई.(मुख्य लेखा में अंतरण किया जाएगा)	5,115,832	
1,724,488		Add: J.E. (to be trfd to Main A/c)	1,498,412	
6,010,745		(मुख्य लेखा में प्राप्त एवं अंतरित ब्याज)		6,614,244
21,072,163		कुल योग GRAND TOTAL		24,037,151

भारतीय प्रौद्योगिकी संस्थान मुंबई
INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY
अंशदायी भविष्य निधि व उपदान निधि योजना
CONTRIBUTORY PROVIDENT FUND-CUM-GRATUITY FUND SCHEME
31.03.2014 तक का तुलन पत्र
BALANCE SHEET AS AT 31/03/2014

2012-2013 रु.Rs. पै.Ps.	दायित्व/LIABILITIES विवरण PARTICULARS	2013-2014 रु.Rs. पै.Ps.
	<u>I. अंशदायी भविष्य निधि लेखा।</u>	
	<u>Contributory Provident Fund A/c</u>	
	1.04.2013 तक का अथ शेष	
117,550,091	Opening Balance as on 1.4.2013	136,269,049
201,527	Add: Differential interest for 2011-12	0
117,751,618	जोड़: 2011-12 से संबंधित ब्याज	136,269,049
8,918,282	CPF Subscription Account अं.भ.नि अंशदान लेखा	9,037,699
126,669,900		145,306,748
	अं.भ.नि अंशदाता लेखा में जमा ब्याज	
10,168,755	Interest Credited to CPF Subscribers A/c for 13-14	11,534,891
	अं.भ.नि लेखा में संस्थान योगदान	
3,209,506	Institute Contribution to CPF A/c	3,112,976
140,048,161		159,954,615
	कम: अं.भ.नि प्रत्याहरण	
3,779,112	Less : CPF Withdrawal	6,653,892
136,269,049		153,300,723
	<u>कम: अं.भ.नि अग्रिम लेखा</u>	
	<u>Less: CPF Advance A/c</u>	
	1.4.2013 तक अथशेष	
1,564,914	Opening Balance as on 1.4.2013	1,524,914
	जोड़: वर्ष के दौरान प्रदत्त	
510,000	Add: Paid during the year	0
2,074,914		1,524,914
	कम: वर्ष के दौरान वसूली	
550,000	Less: Recovery during the year	1,512,114
1,524,914		12,800
134,744,135		153,287,923
	<u>II. देय बिल /विविध लेनदार लेखा</u>	
	<u>Bills Payable / Sundry Creditors A/c</u>	
	1.4.2013 तक का अथ शेष	
1,960,924	Opening Balance as on 1.4.2013	2,652,504
	जोड़: बिल देय लेखा से लिया गया प्रोद्भूत ब्याज	
2,652,504	Add: Accrued Interest taken to Bills Payable A/c	2,381,017
4,613,428	मुख्य लेखा में अंतरित किये जाने वाले निवेश पर ब्याज	5,033,521
	(Interest on Invst to be trfd to Main A/c)	
	कम: वर्ष के दौरान समाप्त	
1,960,924	Less : Cleared during the year	2,652,504
2,652,504		2,381,017

137,396,639 कुल योग GRAND TOTAL

155,668,940

2012-2013		परिसंपत्तियां/ASSETS	2013-2014	
रु.Rs.	पै.Ps.	विवरण PARTICULARS	रु.Rs.	पै.Ps.
<u>I.सावधि जमा लेखा-भा.स्टै.बैं</u>				
<u>Fixed Term Deposit A/c – S.B.I</u>				
1.04.2013 तक अथ शेष				
12,800,000		Opening Balance as on 1.4.2013	1,500,000	
		क) वर्ष के दौरान निवेशित		
0		a) Invested during the year	7,200,000	
12,800,000			8,700,000	
		ख) कम: वर्ष के दौरान प्राप्त		
11,300,000		b) Less: Realised during the year	0	
1,500,000		कुल-Total - I		8,700,000
<u>II.विशेष जमा योजना लेखा</u>				
<u>Speical Deposit Scheme A/c</u>				
20,467,036		Opening Balance as on 1.4.13	20,467,036	
20,467,036		कुलTotal - II		20,467,036
<u>III. एफ टी डी लेखा-केनरा बैंक</u>				
<u>FTD A/c – Canara Bank</u>				
1.4.2013 तक अथ शेष				
24,000,000		Opening Balance as on 1.4.2013	38,500,000	
		क) वर्ष के दौरान निवेशित		
17,000,000		a) Invested during the year	9,000,000	
		ख) निम्नांकित 'ग'में से पुनःनिवेशित राशि		
4,500,000		b) Amount reinvested out of 'c' below	7,000,000	
45,500,000		ग) कम: वर्ष के दौरान प्राप्त	54,500,000	
7,000,000		c) Less: Realised during the year	17,000,000	
38,500,000		कुलTotal – III		37,500,000
<u>IV. एफ टीडी लेखा-ओरिएण्टल बैंक ऑफ कॉमर्स</u>				
<u>FTD A/c - Oriental Bank of Commerce</u>				
1.4.2013 तक अथ शेष				
56,200,000		Opening Balance as on 1.4.2013	72,700,000	
		क) वर्ष के दौरान निवेशित		
31,500,000		a) Invested during the year	27,000,000	
		ख) निम्नांकित 'ग'में से पुनःनिवेशित राशि		
1,200,000		b) Amount reinvested out of 'c' below	26,000,000	
88,900,000		ग) कम: वर्ष के दौरान प्राप्त	125,700,000	
16,200,000		c) Less: Realised during the year	40,000,000	
72,700,000		कुलTotal – IV		85,700,000
<u>V. बकाया आय</u>				
<u>Outstanding Income</u>				
1. एफटीडी लेखा-भा.स्टै.बैं पर प्रोद्भूत ब्याज				
Accrued Int. on FTD A/c – S.B.I				
अथ शेष				
165,253		Opening Balance as on 1.4.2013	14,052	
		जोड: वर्ष के दौरान किये गये प्रावधान		
14,052		Add : Provision made during the year	126,671	
179,305		कम: वर्ष के दौरान समाप्त	140,723	
165,253		Less: Cleared during the year	14,052	
14,052				126,671
133,181,088		कुल अग्रणीतTOTAL C/F		152,493,707

2012-2013		परिसंपत्तियां/ASSETS	2013-2014	
रु.Rs.	पै.Ps.	विवरण	रु.Rs.	पै.Ps.
PARTICULARS				
133,181,088		कुल अग्रानीत Total B/F	152,493,707	
		2. विशेष जमा योजना लेखा पर प्रोद्भूत ब्याज अथ शेष		
		Accrued Int. on Special Deposit Scheme A/c		
409,341		Opening Balance as on 1.4.2013	450,275	
		जोड: वर्ष के दौरान किये गये प्रावधान		
450,275		Add: Provision made during the year	445,158	
859,616		कम: वर्ष के दौरान समाप्त	895,433	
409,341		Less: Cleared during the year	450,275	
450,275				445,158
		3. एफटीडी खाता-केनरा बैंक पर प्रोद्भूत ब्याज		
		Accrued Int. on FTD A/c- Canara Bank		
		अथ शेष		
161,894		Opening Balance as on 1.4.2013	463,689	
		जोड: वर्ष के दौरान किया गया प्रावधान		
463,689		Add: Provision made during the year	310,776	
625,583		कम: वर्ष के दौरान समाप्त	774,465	
161,894		Less: Cleared during the year	463,689	
463,689				310,776
		4. एफटीडी खाता-ओबीसी पर प्रोद्भूत ब्याज		
		Accrued Int. on FTD A/c – OBC		
		अथ शेष		
1,224,436		Opening Balance as on 1.4.2013	1,724,488	
		जोड: वर्ष के दौरान किया गया प्रावधान		
1,724,488		Add: Provision made during the year	1,498,412	
2,948,924		कम: वर्ष के दौरान समाप्त	3,222,900	
1,224,436		Less: Cleared during the year	1,724,488	
1,724,488				1,498,412
		VI. अंत शेष		
		Closing Balance		
		क) हस्तगत नकद		
0		a) Cash in hand	0	
		ख) बैंक में नकद		
1,577,099		b) Cash at Bank	920,887	
1,577,099				920,887
137,396,639		कुल योग GRAND TOTAL	155,668,940	

भारतीय प्रौद्योगिकी संस्थान मुंबई
INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY
अंशदायी भविष्य निधि व उपदान निधि योजना
CONTRIBUTORY PROVIDENT FUND-CUM-GRATUITY FUND SCHEME
01.04.2013 से 31.3.2014 तक की अवधि हेतु प्राप्तियां एवं भुगतान
RECEIPTS AND PAYMENTS ACCOUNT FOR THE PERIOD FROM 01/04/2013 TO 31/03/2014

2012-2013		प्राप्तियां/RECEIPTS		2013-2014	
रु.Rs.	पै.Ps.	विवरण PARTICULARS		रु.Rs.	पै.Ps.
		वर्ष के प्रारंभ में नकद एवं बैंक शेष			
2,518,141		To Cash and Bank Balance at the commencement of the year		1,577,099	
		अं.भ.नि. अभिदान लेखा			
		To C.P. F Subscription A/c			
		भा.प्रौ.सं मुख्य लेखा से अंतरित(वर्ष के दौरान वेतन से वसूली)			
8,913,282		Transferred from IIT Main A/c	9,037,699		
		(Recoveries Made from salary during the year)			
		अन्य समायोजन			
5,000		Other Adjustments	0		
8,918,282				9,037,699	
		अं.भ.नि. अग्रिम लेखा			
		To C.P. F Advance A/c			
		(भा.प्रौ.सं मुख्य लेखा से अंतरण(वर्ष के दौरान वेतन से वसूली)			
40,000		Transferred from IIT Main A/c	0		
		(Recoveries Made from salary during the year)			
		नये अग्रिम से समायोजन			
510,000		Adjustments from fresh advances	0		
		अन्य समायोजन			
0		Other Adjustments	1,512,114		
550,000				1,512,114	
		अं.भ.नि. लेखा में संस्थान का अंशदान			
		भा.प्रौ.सं मुख्य लेखा से अंतरण			
3,105,637		To Institute contribution to CPF A/c	3,112,976		
		Transferd from IIT Main A/c			
		अन्य संगठन से प्राप्त कर्मचारियों का अभिदान			
103,869		Employer's contribution received from other organisation	0		
3,209,506				3,112,976	
		अं.भ.नि. लेखा (वर्ष 2013-14 हेतु भा.प्रौ.सं मुख्य लेखा से अंतरण)			
		To Interest payable to CPF Subscriber's A/c			
		(Transferred from IIT Main A/c for 2013-14)			
10,168,755		Pertains to 2013-14	11,534,891		
201,527		Pertains to 2011-12	0		
10,370,282				11,534,891	
		सावधि जमा लेखा-भा.स्टै.बैं पर ब्याज (निवेश पर प्राप्त ब्याज)			
		To Interest on Fixed Term Deposit A/c – S.B.I			
644,381		(Interest realised on investment)	256,700		
		एफ टी डी-भा.स्टै.बैं खाता की राशि गलती से जमा			
800,000		FTD SBI Amount wrongly credited	0		
1,444,381				256,700	

27,010,592

कुल अग्रणीत Total C/F

27,031,479

2012-2013		प्राप्तियां/RECEIPTS	2013-2014	
रु.Rs.	पै.Ps.	विवरण PARTICULARS	रु.Rs.	पै.Ps.
27,010,592		कुल अग्रानीत Total B/F		27,031,479
		विशेष जमा योजना पर ब्याज (निवेश पर प्राप्त ब्याज)		
1,391,983		To Interest on Special Deposit Scheme A/c (Interest realised on investment)		1,335,404
		एफ टी डी पर प्रोद्भूत ब्याज-ओरियन्टल बैंक ऑफ कॉमर्स (वर्ष के दौरान 12-13 हेतु प्राप्त ब्याज)		
1,224,436		To Accrued Int. on FTD A/c -Oriental Bank of Commerce (Int. For 12-13 realised during the year)		1,724,488
		सावधि जमा भा.स्टै.बैंक पर प्रोद्भूत (वर्ष के दौरान 12-13 हेतु प्राप्त ब्याज)		
165,253		To Accrued Int. on Fixed Term Deposit A/c – S.B.I (Int. For 12-13 realised during the year)		14,052
		बैंक कमिशन प्रभार खाता (मुख्य खाता से अंतरण)		
2,515		To Bank Commission Charges A/c (Transferred from Main A/c)		436
		सावधि जमा खाता- ओरियन्टल बैंक ऑफ कॉमर्स द्वारा (परिपक्वता पर प्राप्त राशि)		
15,000,000		To Fixed Term Deposit A/c – Oriental Bk of Commerce (Amount realised on Maturity)		14,000,000
		एफ टी डी खाता-कैनरा बैंक (परिपक्वता पर प्राप्त राशि)		
2,500,000		To FTD A/c – Canara Bank (Amount realised on Maturity)		10,000,000
		विशेष जमा योजना खाता पर प्रोद्भूत ब्याज (वर्ष के दौरान प्राप्त 12-13 हेतु ब्याज)		
409,341		To Accrued int. on Special Deposit Scheme A/c (Interest for 12-13 realised during the year)		450,275
		एफ टी डी खाता -कैनरा बैंक पर ब्याज (निवेश पर प्राप्त ब्याज)		
1,726,756		To Interest on FTD A/c – Canara Bank (Interest realised on investment)		3,413,307
		एफ टी डी खाता -कैनरा बैंक पर प्रोद्भूत ब्याज (वर्ष के दौरान प्राप्त 12-13 हेतु ब्याज)		
161,894		To Accrued interest on FTD A/c – Canara Bank (Interest for 12-13 realised during the year)		463,689
49,592,770		कुल अग्रानीत Total C/F		58,433,130

2012-2013		प्राप्तियाँ/RECEIPTS	2013-2014	
रु.Rs.	पै.Ps.	विवरण PARTICULARS	रु.Rs.	पै.Ps.
	49,592,770	कुल अग्रानीत Total B/F		58,433,130
		एफ टी डी खाता- भा.स्टै.बै. (परिपक्वता पर प्राप्त राशि)		
	11,300,000	To FTD A/c – SBI (Amount realised on Maturity)		0
		एफ टी डी खाता -ओरियन्टल बैंकऑफ कॉमर्स पर ब्याज (निवेश पर प्राप्त ब्याज)		
	4,286,257	To Int. on FTD A/c- Oriental Bank of Commerce (Interest realised on investment)		5,115,832
65,179,027		कुल योग GRAND TOTAL		63,548,962

2012-2013		भुगतान/PAYMENTS		2013-2014	
रु.Rs.	पै.Ps.	विवरण		रु.Rs.	पै.Ps.
		PARTICULARS			
		<u>अं.भू.नि अभिदान लेखा</u>			
		<u>By C.P.F Subscription A/c</u>			
		1) वर्ष के दौरान किया गया प्रत्याहरण तथा अंतिम भुगतान			
		Withdrawals and Final Payments			
		Made during the year			
		अभिदान			
2,829,554		a) Subscription	4,255,982		
		संस्थान अंशदान			
944,558		b) Institute Contribution	885,796		
		अन्य समायोजन			
5,000		c) Other Adjustments	1,512,114		
3,779,112					6,653,892
		<u>अं.भू.नि अग्रिम लेखा से</u>			
		<u>By C.P.F Advance A/c</u>			
		वर्ष के दौरान प्रदत्त अग्रिम			
510,000		Advances paid during the year			0
		सावधि जमा खाता-भा.स्टै.बैं पर ब्याज द्वारा			
		(निवेश पर प्राप्त ब्याज तथा भा.प्रौ.सं मुख्य खाता में अंतरण)			
644,381		By Int. on Fixed Term Deposit A/c – S.B.I	256,700		
		(Interest realised on Investment			
		and transferred to IIT Main A/c)			
		गलती से जमा की गई एफ टी डी-भा.स्टै.बैं खाता की राशि में सुधार			
800,000		Rectification of FTD SBI amount wrongly credited	0		
1,444,381					256,700
		विशेष जमा योजना खाता पर ब्याज द्वारा			
		(निवेश पर प्राप्त ब्याज तथा भा.प्रौ.सं मुख्य खाता में अंतरण)			
1,391,983		By Int. on Special deposit Scheme A/c			1,335,404
		(Interest realised on investment and transferred to IIT Main A/c)			
		एफ टी डी खाता-कैनरा बैंक			
		(वर्ष के दौरान निवेशित)			
17,000,000		By FTD A/c - Canara Bank			9,000,000
		(Invested during the year)			
		बैंक कमिशन प्रभार खाता			
2,515		By Bank Commission Charges A/c			436
		विविध लेनदार लेखा / देय बिल			
		(वर्ष के दौरान पूरा किया गये)			
1,960,924		By Sundry Creditors/Bills Payable A/c			2,652,504
		(Cleared during the year)			
		एफटीडी खाता -कैनरा बैंक पर ब्याज			
		(निवेश पर प्राप्त ब्याज तथा भा.प्रौ.सं मुख्य खाता में अंतरण)			
1,726,756		By Int. on FTD A/c - Canara Bank			3,413,307
		(Int. realised and transferred to IIT Main A/c)			
27,815,671		कुल अग्रणीत Total C/F			23,312,243

2012-2013		भुगतान/PAYMENTS विवरण PARTICULARS	2013-2014	
रु.Rs.	पै.Ps.		रु.Rs.	पै.Ps.
27,815,671		कुल अग्रानीतTotal B/F		23,312,243
		सावधि जमा खाता- ओरियन्टल बैंक ऑफ कॉमर्स द्वारा (वर्ष के दौरान निवेशित)		
31,500,000		By Fixed Term Deposit A/c – Oriental Bk of Commerce (Invested during the year)		27,000,000
		एफटीडी खाता- ओरियन्टल बैंक ऑफ कॉमर्स द्वारा ब्याज (निवेश पर प्राप्त ब्याज तथा भा.प्रौ.सं मुख्य खाता में अंतरण)		
4,286,257		By Int. on FTD A/c-Oriental Bank of Commerce (Int. Realised and transferred to IIT Main A/c)		5,115,832
		सावधि जमा खाता- भा.स्टै.बैं.द्वारा (वर्ष के दौरान निवेशित)		
0		By Fixed Term Deposit A/c - SBI (Invested during the year)		7,200,000
		अंतशेष द्वारा		
		By Closing Balance		
		a) हस्तांगत नकद		
0		a) Cash in hand	0	
		b) बैंक में नकद		
1,577,099		b) Cash at Bank	920,887	
1,577,099				920,887
65,179,027		कुल योगGRAND TOTAL		63,548,962

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INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY
अंशदायी भविष्य निधि व उपदान निधि योजना
CONTRIBUTORY PROVIDENT FUND CUM-GRATUITY FUND SCHEME
वर्ष 01.04.2013 से 31.03.2014 तक की अवधि हेतु आय व व्यय लेखा
INCOME AND EXPENDITURE ACCOUNT FOR THE PERIOD FROM 01/04/2013 TO 31/03/2014

2012-2013		आय/INCOME	2013-2014
रु.Rs.	पै.Ps.		रु.Rs.
		विवरण PARTICULARS	पै.Ps.
		अं.भ.नि अभिदान खाता को देय ब्याज द्वारा (भा.प्रौ.सं मुंबई मुख्य लेखा में अंतरित)	
10,370,282		By Interest payable to CPF Subscribers A/c (Transferred from IIT Main A/c)	11,534,891
		एफ टी डी लेखा-भा.स्टै.बैं पर ब्याज द्वारा	
1,444,381		By Interest on FTD A/c – S.B.I कम: गलती से जमा	256,700
800,000		Less FTD SBI Amount wrongly credited	0
644,381		(Int. realised on investment) जोड़:जे.ई (प्रोद्धत किन्तु प्राप्त नहीं हुआ)	256,700
14,052		Add: J.E. (Accrued but not received)	126,671
658,433			383,371
		विशेष जमा योजना खाता पर ब्याज द्वारा (निवेश पर प्राप्त ब्याज)	
1,391,983		By Int. on Special deposit Scheme A/c (Int. realised on Investment) जोड़:जे.ई(प्रोद्धत किन्तु प्राप्त नहीं हुआ)	1,335,404
450,275		Add: J.E. (Accrued but not received)	445,158
1,842,258			1,780,562
		एफ टी डी लेखा-केनरा.बैं पर ब्याज (निवेश पर प्राप्त ब्याज)	
1,726,756		By Interest on FTD A/c – Canara Bank (Int. realised on Investment) जोड़:जे.ई.(प्रोद्धत किन्तु प्राप्त नहीं हुआ)	3,413,307
463,689		Add: J.E. (Accrued but not received)	310,776
2,190,445			3,724,083
		एफ टी डी लेखा-ओ..बैं.ऑफ कॉमर्स पर ब्याज द्वारा	
4,286,257		By Interest on FTD A/c- Oriental Bk of Commerce (Int. realised on Investment) जोड़:जे.ई(मुख्य लेखा में अंतरण किया जाएगा)	5,115,832
1,724,488		Add: J.E. (Accrued but not received)	1,498,412
6,010,745			6,614,244
21,072,163		कुल योग GRAND TOTAL	24,037,151

2012-2013		व्यय/EXPENDITURE	2013-2014	
रु.Rs.	पै.Ps.	विवरण PARTICULARS	रु.Rs.	पै.Ps.
		अं.भ.नि अभिदान खाता को देय ब्याज		
		To Interest payable to CPF Subscribers A/c (Credited to CPF Subscribers A/c)(अं.भ.नि अभिदान खाता में जमा)		
10,168,755		Pertains to 2013-14	11,534,891	
201,527		Pertains to 2011-12	0	
10,370,282				11,534,891
		एफ टी डी लेखा-भा.स्टै.बैं पर ब्याज (मुख्य लेखा में प्राप्त तथा अंतरित ब्याज)		
1,444,381		To Interest on FTD A/c - SBI	256,700	
800,000		Less Rectification of FTD SBI Amt wrongly credited (कम: गलती से जमा)	0	
644,381		(Interest realised & transferred to IIT Main A/c) जोड़:जे.ई.(मुख्य लेखा में अंतरण किया जाएगा)	256,700	
14,052		Add : J.E. (to be trfd to Main A/c)	126,671	
658,433				383,371
		विशेष जमा योजना खाता पर ब्याज (ब्याज प्राप्त तथा मुख्य लेखा में अंतरित)		
1,391,983		To Interest on Special Deposit Scheme A/c (Int. realised and transferred to Main A/c) जोड़:जे.ई.(मुख्य लेखा में अंतरण किया जाएगा)	1,335,404	
450,275		Add: J.E. (to be trfd to Main A/c)	445,158	
1,842,258				1,780,562
		एफटीडी खाता-कैनरा बैंक पर ब्याज (ब्याज प्राप्त तथा मुख्य लेखा में अंतरित)		
1,726,756		To Interest on FTD A/c- Canara Bank (Int. realised and transferred to Main A/c) जोड़:जे.ई.(मुख्य लेखा में अंतरण किया जाएगा)	3,413,307	
463,689		Add: J.E. (to be trfd to Main A/c)	310,776	
2,190,445				3,724,083
		एफ टी डी खाता-ओरि.बैं.ऑफ कॉमर्स पर ब्याज		
4,286,257		To Interest on FTD A/c - Oriental Bk of Commerce (Int. realised and transferred to Main A/c) जोड़:जे.ई.(मुख्य लेखा में अंतरण किया जाएगा)	5,115,832	
1,724,488		Add: J.E. (to be trfd to Main A/c)	1,498,412	
6,010,745		(मुख्य लेखा में प्राप्त एवं अंतरित ब्याज)		6,614,244
21,072,163		कुल योग GRAND TOTAL	24,037,151	

भारतीय प्रौद्योगिकी संस्थान मुंबई
INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY
अंशदायी भविष्य निधि व उपदान निधि योजना
CONTRIBUTORY PROVIDENT FUND-CUM-GRATUITY FUND SCHEME
31.03.2014 तक का तुलन पत्र
BALANCE SHEET AS AT 31/03/2014

2012-2013 रु.Rs. पै.Ps.	दायित्व/LIABILITIES विवरण PARTICULARS	2013-2014 रु.Rs. पै.Ps.
	<u>I. अंशदायी भविष्य निधि लेखा।</u>	
	<u>Contributory Provident Fund A/c</u>	
	1.04.2013 तक का अथ शेष	
117,550,091	Opening Balance as on 1.4.2013	136,269,049
201,527	Add: Differential interest for 2011-12	0
117,751,618	जोड़: 2011-12 से संबंधित ब्याज	136,269,049
8,918,282	CPF Subscription Account अं.भ.नि अंशदान लेखा	9,037,699
126,669,900		145,306,748
	अं.भ.नि अंशदाता लेखा में जमा ब्याज	
10,168,755	Interest Credited to CPF Subscribers A/c for 13-14	11,534,891
	अं.भ.नि लेखा में संस्थान योगदान	
3,209,506	Institute Contribution to CPF A/c	3,112,976
140,048,161		159,954,615
	कम: अं.भ.नि प्रत्याहरण	
3,779,112	Less : CPF Withdrawal	6,653,892
136,269,049		153,300,723
	<u>कम: अं.भ.नि अग्रिम लेखा</u>	
	<u>Less: CPF Advance A/c</u>	
	1.4.2013 तक अथशेष	
1,564,914	Opening Balance as on 1.4.2013	1,524,914
	जोड़: वर्ष के दौरान प्रदत्त	
510,000	Add: Paid during the year	0
2,074,914		1,524,914
	कम: वर्ष के दौरान वसूली	
550,000	Less: Recovery during the year	1,512,114
1,524,914		12,800
134,744,135		153,287,923
	<u>II. देय बिल /विविध लेनदार लेखा</u>	
	<u>Bills Payable / Sundry Creditors A/c</u>	
	1.4.2013 तक का अथ शेष	
1,960,924	Opening Balance as on 1.4.2013	2,652,504
	जोड़: बिल देय लेखा से लिया गया प्रोद्भूत ब्याज	
2,652,504	Add: Accrued Interest taken to Bills Payable A/c	2,381,017
4,613,428	मुख्य लेखा में अंतरित किये जाने वाले निवेश पर ब्याज	5,033,521
	(Interest on Invst to be trfd to Main A/c)	
	कम: वर्ष के दौरान समाप्त	
1,960,924	Less : Cleared during the year	2,652,504
2,652,504		2,381,017

2012-2013		परिसंपत्तियां/ASSETS	2013-2014	
रु.Rs.	पै.Ps.	विवरण PARTICULARS	रु.Rs.	पै.Ps.
<u>I.सावधि जमा लेखा-भा.स्टै.बैं</u>				
<u>Fixed Term Deposit A/c – S.B.I</u>				
1.04.2013 तक अथ शेष				
12,800,000		Opening Balance as on 1.4.2013	1,500,000	
		क) वर्ष के दौरान निवेशित		
0		a) Invested during the year	7,200,000	
12,800,000			8,700,000	
		ख) कम: वर्ष के दौरान प्राप्त		
11,300,000		b) Less: Realised during the year	0	
1,500,000		कुल-Total - I		8,700,000
<u>II.विशेष जमा योजना लेखा</u>				
<u>Speical Deposit Scheme A/c</u>				
Opening Balance as on 1.4.13				
20,467,036		कुलTotal - II	20,467,036	
				20,467,036
<u>III. एफ टी डी लेखा-केनरा बैंक</u>				
<u>FTD A/c – Canara Bank</u>				
1.4.2013 तक अथ शेष				
24,000,000		Opening Balance as on 1.4.2013	38,500,000	
		क) वर्ष के दौरान निवेशित		
17,000,000		a) Invested during the year	9,000,000	
		ख) निम्नांकित 'ग'में से पुनःनिवेशित राशि		
4,500,000		b) Amount reinvested out of 'c' below	7,000,000	
45,500,000		ग) कम: वर्ष के दौरान प्राप्त	54,500,000	
7,000,000		c) Less: Realised during the year	17,000,000	
38,500,000		कुलTotal – III		37,500,000
<u>IV. एफ टीडी लेखा-ओरिएण्टल बैंक ऑफ कॉमर्स</u>				
<u>FTD A/c - Oriental Bank of Commerce</u>				
1.4.2013 तक अथ शेष				
56,200,000		Opening Balance as on 1.4.2013	72,700,000	
		क) वर्ष के दौरान निवेशित		
31,500,000		a) Invested during the year	27,000,000	
		ख) निम्नांकित 'ग'में से पुनःनिवेशित राशि		
1,200,000		b) Amount reinvested out of 'c' below	26,000,000	
88,900,000		ग) कम: वर्ष के दौरान प्राप्त	125,700,000	
16,200,000		c) Less: Realised during the year	40,000,000	
72,700,000		कुलTotal – IV		85,700,000
<u>V. बकाया आय</u>				
<u>Outstanding Income</u>				
1. एफटीडी लेखा-भा.स्टै.बैं पर प्रोद्भूत ब्याज				
Accrued Int. on FTD A/c – S.B.I				
अथ शेष				
165,253		Opening Balance as on 1.4.2013	14,052	
		जोड: वर्ष के दौरान किये गये प्रावधान		
14,052		Add : Provision made during the year	126,671	
179,305		कम: वर्ष के दौरान समाप्त	140,723	
165,253		Less: Cleared during the year	14,052	
14,052				126,671
133,181,088		कुल अग्रणीतTOTAL C/F		152,493,707

2012-2013		परिसंपत्तियां/ASSETS	2013-2014	
रु.Rs.	पै.Ps.	विवरण	रु.Rs.	पै.Ps.
PARTICULARS				
133,181,088		कुल अग्रानीत Total B/F	152,493,707	
		2. विशेष जमा योजना लेखा पर प्रोद्भूत ब्याज अथ शेष		
		Accrued Int. on Special Deposit Scheme A/c		
409,341		Opening Balance as on 1.4.2013	450,275	
		जोड: वर्ष के दौरान किये गये प्रावधान		
450,275		Add: Provision made during the year	445,158	
859,616		कम: वर्ष के दौरान समाप्त	895,433	
409,341		Less: Cleared during the year	450,275	
450,275				445,158
		3. एफटीडी खाता-केनरा बैंक पर प्रोद्भूत ब्याज		
		Accrued Int. on FTD A/c- Canara Bank		
		अथ शेष		
161,894		Opening Balance as on 1.4.2013	463,689	
		जोड: वर्ष के दौरान किया गया प्रावधान		
463,689		Add: Provision made during the year	310,776	
625,583		कम: वर्ष के दौरान समाप्त	774,465	
161,894		Less: Cleared during the year	463,689	
463,689				310,776
		4. एफटीडी खाता-ओबीसी पर प्रोद्भूत ब्याज		
		Accrued Int. on FTD A/c – OBC		
		अथ शेष		
1,224,436		Opening Balance as on 1.4.2013	1,724,488	
		जोड: वर्ष के दौरान किया गया प्रावधान		
1,724,488		Add: Provision made during the year	1,498,412	
2,948,924		कम: वर्ष के दौरान समाप्त	3,222,900	
1,224,436		Less: Cleared during the year	1,724,488	
1,724,488				1,498,412
		VI. अंत शेष		
		Closing Balance		
		क) हस्तगत नकद		
0		a) Cash in hand	0	
		ख) बैंक में नकद		
1,577,099		b) Cash at Bank	920,887	
1,577,099				920,887
137,396,639		कुल योग GRAND TOTAL	155,668,940	

भारतीय प्रौद्योगिकी संस्थान मुंबई
INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY
अंशदायी भविष्य निधि व उपदान निधि योजना
CONTRIBUTORY PROVIDENT FUND-CUM-GRATUITY FUND SCHEME
01.04.2013 से 31.3.2014 तक की अवधि हेतु प्राप्तियां एवं भुगतान
RECEIPTS AND PAYMENTS ACCOUNT FOR THE PERIOD FROM 01/04/2013 TO 31/03/2014

2012-2013		प्राप्तियां/RECEIPTS		2013-2014	
रु.Rs.	पै.Ps.	विवरण PARTICULARS		रु.Rs.	पै.Ps.
		वर्ष के प्रारंभ में नकद एवं बैंक शेष			
2,518,141		To Cash and Bank Balance at the commencement of the year		1,577,099	
		अं.भ.नि. अभिदान लेखा			
		To C.P. F Subscription A/c			
		भा.प्रौ.सं मुख्य लेखा से अंतरित(वर्ष के दौरान वेतन से वसूली)			
8,913,282		Transferred from IIT Main A/c	9,037,699		
		(Recoveries Made from salary during the year)			
		अन्य समायोजन			
5,000		Other Adjustments	0		
8,918,282				9,037,699	
		अं.भ.नि. अग्रिम लेखा			
		To C.P. F Advance A/c			
		(भा.प्रौ.सं मुख्य लेखा से अंतरण(वर्ष के दौरान वेतन से वसूली)			
40,000		Transferred from IIT Main A/c	0		
		(Recoveries Made from salary during the year)			
		नये अग्रिम से समायोजन			
510,000		Adjustments from fresh advances	0		
		अन्य समायोजन			
0		Other Adjustments	1,512,114		
550,000				1,512,114	
		अं.भ.नि. लेखा में संस्थान का अंशदान			
		भा.प्रौ.सं मुख्य लेखा से अंतरण			
3,105,637		To Institute contribution to CPF A/c	3,112,976		
		Transferd from IIT Main A/c			
		अन्य संगठन से प्राप्त कर्मचारियों का अभिदान			
103,869		Employer's contribution received from other organisation	0		
3,209,506				3,112,976	
		अं.भ.नि. लेखा (वर्ष 2013-14 हेतु भा.प्रौ.सं मुख्य लेखा से अंतरण)			
		To Interest payable to CPF Subscriber's A/c			
		(Transferred from IIT Main A/c for 2013-14)			
10,168,755		Pertains to 2013-14	11,534,891		
201,527		Pertains to 2011-12	0		
10,370,282				11,534,891	
		सावधि जमा लेखा-भा.स्टै.बैं पर ब्याज (निवेश पर प्राप्त ब्याज)			
		To Interest on Fixed Term Deposit A/c – S.B.I			
644,381		(Interest realised on investment)	256,700		
		एफ टी डी-भा.स्टै.बैं खाता की राशि गलती से जमा			
800,000		FTD SBI Amount wrongly credited	0		
1,444,381				256,700	

27,010,592

कुल अग्रणीत Total C/F

27,031,479

2012-2013		प्राप्तियाँ/RECEIPTS	2013-2014	
रु.Rs.	पै.Ps.	विवरण PARTICULARS	रु.Rs.	पै.Ps.
27,010,592		कुल अग्रानीत Total B/F		27,031,479
		विशेष जमा योजना पर ब्याज (निवेश पर प्राप्त ब्याज)		
1,391,983		To Interest on Special Deposit Scheme A/c (Interest realised on investment)		1,335,404
		एफ टी डी पर प्रोद्भूत ब्याज-ओरियन्टल बैंक ऑफ कॉमर्स (वर्ष के दौरान 12-13 हेतु प्राप्त ब्याज)		
1,224,436		To Accrued Int. on FTD A/c -Oriental Bank of Commerce (Int. For 12-13 realised during the year)		1,724,488
		सावधि जमा भा.स्टै.बैंक पर प्रोद्भूत (वर्ष के दौरान 12-13 हेतु प्राप्त ब्याज)		
165,253		To Accrued Int. on Fixed Term Deposit A/c – S.B.I (Int. For 12-13 realised during the year)		14,052
		बैंक कमिशन प्रभार खाता (मुख्य खाता से अंतरण)		
2,515		To Bank Commission Charges A/c (Transferred from Main A/c)		436
		सावधि जमा खाता- ओरियन्टल बैंक ऑफ कॉमर्स द्वारा (परिपक्वता पर प्राप्त राशि)		
15,000,000		To Fixed Term Deposit A/c – Oriental Bk of Commerce (Amount realised on Maturity)		14,000,000
		एफ टी डी खाता-कैनरा बैंक (परिपक्वता पर प्राप्त राशि)		
2,500,000		To FTD A/c – Canara Bank (Amount realised on Maturity)		10,000,000
		विशेष जमा योजना खाता पर प्रोद्भूत ब्याज (वर्ष के दौरान प्राप्त 12-13 हेतु ब्याज)		
409,341		To Accrued int. on Special Deposit Scheme A/c (Interest for 12-13 realised during the year)		450,275
		एफ टी डी खाता -कैनरा बैंक पर ब्याज (निवेश पर प्राप्त ब्याज)		
1,726,756		To Interest on FTD A/c – Canara Bank (Interest realised on investment)		3,413,307
		एफ टी डी खाता -कैनरा बैंक पर प्रोद्भूत ब्याज (वर्ष के दौरान प्राप्त 12-13 हेतु ब्याज)		
161,894		To Accrued interest on FTD A/c – Canara Bank (Interest for 12-13 realised during the year)		463,689
49,592,770		कुल अग्रानीत Total C/F		58,433,130

2012-2013		प्राप्तियाँ/RECEIPTS	2013-2014	
रु.Rs.	पै.Ps.	विवरण PARTICULARS	रु.Rs.	पै.Ps.
	49,592,770	कुल अग्रानीतTotal B/F		58,433,130
		एफ टी डी खाता- भा.स्टै.बै. (परिपक्वता पर प्राप्त राशि)		
	11,300,000	To FTD A/c – SBI (Amount realised on Maturity)		0
		एफ टी डी खाता -ओरियन्टल बैंकऑफ कॉमर्स पर ब्याज (निवेश पर प्राप्त ब्याज)		
	4,286,257	To Int. on FTD A/c- Oriental Bank of Commerce (Interest realised on investment)		5,115,832
65,179,027		कुल योग GRAND TOTAL		63,548,962

2012-2013		भुगतान/PAYMENTS		2013-2014	
रु.Rs.	पै.Ps.	विवरण		रु.Rs.	पै.Ps.
		PARTICULARS			
		<u>अं.भू.नि अभिदान लेखा</u>			
		<u>By C.P.F Subscription A/c</u>			
		1) वर्ष के दौरान किया गया प्रत्याहरण तथा अंतिम भुगतान			
		Withdrawals and Final Payments			
		Made during the year			
		अभिदान			
2,829,554		a) Subscription	4,255,982		
		संस्थान अंशदान			
944,558		b) Institute Contribution	885,796		
		अन्य समायोजन			
5,000		c) Other Adjustments	1,512,114		
3,779,112					6,653,892
		<u>अं.भू.नि अग्रिम लेखा से</u>			
		<u>By C.P.F Advance A/c</u>			
		वर्ष के दौरान प्रदत्त अग्रिम			
510,000		Advances paid during the year			0
		सावधि जमा खाता-भा.स्टै.बैं पर ब्याज द्वारा			
		(निवेश पर प्राप्त ब्याज तथा भा.प्रौ.सं मुख्य खाता में अंतरण)			
644,381		By Int. on Fixed Term Deposit A/c – S.B.I	256,700		
		(Interest realised on Investment			
		and transferred to IIT Main A/c)			
		गलती से जमा की गई एफ टी डी-भा.स्टै.बैं खाता की राशि में सुधार			
800,000		Rectification of FTD SBI amount wrongly credited	0		
1,444,381					256,700
		विशेष जमा योजना खाता पर ब्याज द्वारा			
		(निवेश पर प्राप्त ब्याज तथा भा.प्रौ.सं मुख्य खाता में अंतरण)			
1,391,983		By Int. on Special deposit Scheme A/c			1,335,404
		(Interest realised on investment and transferred to IIT Main A/c)			
		एफ टी डी खाता-कैनरा बैंक			
		(वर्ष के दौरान निवेशित)			
17,000,000		By FTD A/c - Canara Bank			9,000,000
		(Invested during the year)			
		बैंक कमिशन प्रभार खाता			
2,515		By Bank Commission Charges A/c			436
		विविध लेनदार लेखा / देय बिल			
		(वर्ष के दौरान पूरा किया गये)			
1,960,924		By Sundry Creditors/Bills Payable A/c			2,652,504
		(Cleared during the year)			
		एफटीडी खाता -कैनरा बैंक पर ब्याज			
		(निवेश पर प्राप्त ब्याज तथा भा.प्रौ.सं मुख्य खाता में अंतरण)			
1,726,756		By Int. on FTD A/c - Canara Bank			3,413,307
		(Int. realised and transferred to IIT Main A/c)			
27,815,671		कुल अग्रणीत Total C/F			23,312,243

2012-2013		भुगतान/PAYMENTS विवरण PARTICULARS	2013-2014	
रु.Rs.	पै.Ps.		रु.Rs.	पै.Ps.
27,815,671		कुल अग्रानीतTotal B/F		23,312,243
		सावधि जमा खाता- ओरियन्टल बैंक ऑफ कॉमर्स द्वारा (वर्ष के दौरान निवेशित)		
31,500,000		By Fixed Term Deposit A/c – Oriental Bk of Commerce (Invested during the year)		27,000,000
		एफटीडी खाता- ओरियन्टल बैंक ऑफ कॉमर्स द्वारा ब्याज (निवेश पर प्राप्त ब्याज तथा भा.प्रौ.सं मुख्य खाता में अंतरण)		
4,286,257		By Int. on FTD A/c-Oriental Bank of Commerce (Int. Realised and transferred to IIT Main A/c)		5,115,832
		सावधि जमा खाता- भा.स्टै.बैं.द्वारा (वर्ष के दौरान निवेशित)		
0		By Fixed Term Deposit A/c - SBI (Invested during the year)		7,200,000
		अंतशेष द्वारा		
		By Closing Balance		
		a) हस्तांगत नकद		
0		a) Cash in hand	0	
		b) बैंक में नकद		
1,577,099		b) Cash at Bank	920,887	
1,577,099				920,887
65,179,027		कुल योगGRAND TOTAL		63,548,962

भारतीय प्रौद्योगिकी संस्थान मुंबई
INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY
अंशदायी भविष्य निधि व उपदान निधि योजना
CONTRIBUTORY PROVIDENT FUND CUM-GRATUITY FUND SCHEME
वर्ष 01.04.2013 से 31.03.2014 तक की अवधि हेतु आय व व्यय लेखा
INCOME AND EXPENDITURE ACCOUNT FOR THE PERIOD FROM 01/04/2013 TO 31/03/2014

2012-2013		आय/INCOME	2013-2014
रु.Rs.	पै.Ps.		रु.Rs.
		विवरण PARTICULARS	पै.Ps.
		अं.भ.नि अभिदान खाता को देय ब्याज द्वारा (भा.प्रौ.सं मुंबई मुख्य लेखा में अंतरित)	
10,370,282		By Interest payable to CPF Subscribers A/c (Transferred from IIT Main A/c)	11,534,891
		एफ टी डी लेखा-भा.स्टै.बैं पर ब्याज द्वारा	
1,444,381		By Interest on FTD A/c – S.B.I कम: गलती से जमा	256,700
800,000		Less FTD SBI Amount wrongly credited	0
644,381		(Int. realised on investment) जोड़:जे.ई (प्रोद्धत किन्तु प्राप्त नहीं हुआ)	256,700
14,052		Add: J.E. (Accrued but not received)	126,671
658,433			383,371
		विशेष जमा योजना खाता पर ब्याज द्वारा (निवेश पर प्राप्त ब्याज)	
1,391,983		By Int. on Special deposit Scheme A/c (Int. realised on Investment) जोड़:जे.ई(प्रोद्धत किन्तु प्राप्त नहीं हुआ)	1,335,404
450,275		Add: J.E. (Accrued but not received)	445,158
1,842,258			1,780,562
		एफ टी डी लेखा-केनरा.बैं पर ब्याज (निवेश पर प्राप्त ब्याज)	
1,726,756		By Interest on FTD A/c – Canara Bank (Int. realised on Investment) जोड़:जे.ई.(प्रोद्धत किन्तु प्राप्त नहीं हुआ)	3,413,307
463,689		Add: J.E. (Accrued but not received)	310,776
2,190,445			3,724,083
		एफ टी डी लेखा-ओ..बैं.ऑफ कॉमर्स पर ब्याज द्वारा	
4,286,257		By Interest on FTD A/c- Oriental Bk of Commerce (Int. realised on Investment) जोड़:जे.ई(मुख्य लेखा में अंतरण किया जाएगा)	5,115,832
1,724,488		Add: J.E. (Accrued but not received)	1,498,412
6,010,745			6,614,244
21,072,163		कुल योग GRAND TOTAL	24,037,151

2012-2013		व्यय/EXPENDITURE	2013-2014	
रु.Rs.	पै.Ps.	विवरण PARTICULARS	रु.Rs.	पै.Ps.
		अं.भ.नि अभिदान खाता को देय ब्याज		
		To Interest payable to CPF Subscribers A/c (Credited to CPF Subscribers A/c)(अं.भ.नि अभिदान खाता में जमा)		
10,168,755		Pertains to 2013-14	11,534,891	
201,527		Pertains to 2011-12	0	
10,370,282				11,534,891
		एफ टी डी लेखा-भा.स्टै.बैं पर ब्याज (मुख्य लेखा में प्राप्त तथा अंतरित ब्याज)		
1,444,381		To Interest on FTD A/c - SBI	256,700	
800,000		Less Rectification of FTD SBI Amt wrongly credited (कम: गलती से जमा)	0	
644,381		(Interest realised & transferred to IIT Main A/c) जोड़:जे.ई.(मुख्य लेखा में अंतरण किया जाएगा)	256,700	
14,052		Add : J.E. (to be trfd to Main A/c)	126,671	
658,433				383,371
		विशेष जमा योजना खाता पर ब्याज (ब्याज प्राप्त तथा मुख्य लेखा में अंतरित)		
1,391,983		To Interest on Special Deposit Scheme A/c (Int. realised and transferred to Main A/c) जोड़:जे.ई.(मुख्य लेखा में अंतरण किया जाएगा)	1,335,404	
450,275		Add: J.E. (to be trfd to Main A/c)	445,158	
1,842,258				1,780,562
		एफटीडी खाता-कैनरा बैंक पर ब्याज (ब्याज प्राप्त तथा मुख्य लेखा में अंतरित)		
1,726,756		To Interest on FTD A/c- Canara Bank (Int. realised and transferred to Main A/c) जोड़:जे.ई.(मुख्य लेखा में अंतरण किया जाएगा)	3,413,307	
463,689		Add: J.E. (to be trfd to Main A/c)	310,776	
2,190,445				3,724,083
		एफ टी डी खाता-ओरि.बैं.ऑफ कॉमर्स पर ब्याज		
4,286,257		To Interest on FTD A/c - Oriental Bk of Commerce (Int. realised and transferred to Main A/c) जोड़:जे.ई.(मुख्य लेखा में अंतरण किया जाएगा)	5,115,832	
1,724,488		Add: J.E. (to be trfd to Main A/c)	1,498,412	
6,010,745		(मुख्य लेखा में प्राप्त एवं अंतरित ब्याज)		6,614,244
21,072,163		कुल योग GRAND TOTAL	24,037,151	

भारतीय प्रौद्योगिकी संस्थान मुंबई
INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY
अंशदायी भविष्य निधि व उपदान निधि योजना
CONTRIBUTORY PROVIDENT FUND-CUM-GRATUITY FUND SCHEME
31.03.2014 तक का तुलन पत्र
BALANCE SHEET AS AT 31/03/2014

2012-2013 रु.Rs. पै.Ps.	दायित्व/LIABILITIES विवरण PARTICULARS	2013-2014 रु.Rs. पै.Ps.
	<u>I. अंशदायी भविष्य निधि लेखा।</u>	
	<u>Contributory Provident Fund A/c</u>	
	1.04.2013 तक का अथ शेष	
117,550,091	Opening Balance as on 1.4.2013	136,269,049
201,527	Add: Differential interest for 2011-12	0
117,751,618	जोड़: 2011-12 से संबंधित ब्याज	136,269,049
8,918,282	CPF Subscription Account अं.भ.नि अंशदान लेखा	9,037,699
126,669,900		145,306,748
	अं.भ.नि अंशदाता लेखा में जमा ब्याज	
10,168,755	Interest Credited to CPF Subscribers A/c for 13-14	11,534,891
	अं.भ.नि लेखा में संस्थान योगदान	
3,209,506	Institute Contribution to CPF A/c	3,112,976
140,048,161		159,954,615
	कम: अं.भ.नि प्रत्याहरण	
3,779,112	Less : CPF Withdrawal	6,653,892
136,269,049		153,300,723
	<u>कम: अं.भ.नि अग्रिम लेखा</u>	
	<u>Less: CPF Advance A/c</u>	
	1.4.2013 तक अथशेष	
1,564,914	Opening Balance as on 1.4.2013	1,524,914
	जोड़: वर्ष के दौरान प्रदत्त	
510,000	Add: Paid during the year	0
2,074,914		1,524,914
	कम: वर्ष के दौरान वसूली	
550,000	Less: Recovery during the year	1,512,114
1,524,914		12,800
134,744,135		153,287,923
	<u>II. देय बिल /विविध लेनदार लेखा</u>	
	<u>Bills Payable / Sundry Creditors A/c</u>	
	1.4.2013 तक का अथ शेष	
1,960,924	Opening Balance as on 1.4.2013	2,652,504
	जोड़: बिल देय लेखा से लिया गया प्रोद्भूत ब्याज	
2,652,504	Add: Accrued Interest taken to Bills Payable A/c	2,381,017
4,613,428	मुख्य लेखा में अंतरित किये जाने वाले निवेश पर ब्याज	5,033,521
	(Interest on Invst to be trfd to Main A/c)	
	कम: वर्ष के दौरान समाप्त	
1,960,924	Less : Cleared during the year	2,652,504
2,652,504		2,381,017

2012-2013		परिसंपत्तियां/ASSETS	2013-2014	
रु.Rs.	पै.Ps.	विवरण PARTICULARS	रु.Rs.	पै.Ps.
<u>I.सावधि जमा लेखा-भा.स्टै.बैं</u>				
<u>Fixed Term Deposit A/c – S.B.I</u>				
1.04.2013 तक अथ शेष				
12,800,000		Opening Balance as on 1.4.2013	1,500,000	
		क) वर्ष के दौरान निवेशित		
0		a) Invested during the year	7,200,000	
12,800,000			8,700,000	
		ख) कम: वर्ष के दौरान प्राप्त		
11,300,000		b) Less: Realised during the year	0	
1,500,000		कुल-Total - I		8,700,000
<u>II.विशेष जमा योजना लेखा</u>				
<u>Speical Deposit Scheme A/c</u>				
Opening Balance as on 1.4.13				
20,467,036		कुलTotal - II	20,467,036	
				20,467,036
<u>III. एफ टी डी लेखा-केनरा बैंक</u>				
<u>FTD A/c – Canara Bank</u>				
1.4.2013 तक अथ शेष				
24,000,000		Opening Balance as on 1.4.2013	38,500,000	
		क) वर्ष के दौरान निवेशित		
17,000,000		a) Invested during the year	9,000,000	
		ख) निम्नांकित 'ग'में से पुनःनिवेशित राशि		
4,500,000		b) Amount reinvested out of 'c' below	7,000,000	
45,500,000		ग) कम: वर्ष के दौरान प्राप्त	54,500,000	
7,000,000		c) Less: Realised during the year	17,000,000	
38,500,000		कुलTotal – III		37,500,000
<u>IV. एफ टीडी लेखा-ओरिएण्टल बैंक ऑफ कॉमर्स</u>				
<u>FTD A/c - Oriental Bank of Commerce</u>				
1.4.2013 तक अथ शेष				
56,200,000		Opening Balance as on 1.4.2013	72,700,000	
		क) वर्ष के दौरान निवेशित		
31,500,000		a) Invested during the year	27,000,000	
		ख) निम्नांकित 'ग'में से पुनःनिवेशित राशि		
1,200,000		b) Amount reinvested out of 'c' below	26,000,000	
88,900,000		ग) कम: वर्ष के दौरान प्राप्त	125,700,000	
16,200,000		c) Less: Realised during the year	40,000,000	
72,700,000		कुलTotal – IV		85,700,000
<u>V. बकाया आय</u>				
<u>Outstanding Income</u>				
1. एफटीडी लेखा-भा.स्टै.बैं पर प्रोद्भूत ब्याज				
Accrued Int. on FTD A/c – S.B.I				
अथ शेष				
165,253		Opening Balance as on 1.4.2013	14,052	
		जोड: वर्ष के दौरान किये गये प्रावधान		
14,052		Add : Provision made during the year	126,671	
179,305		कम: वर्ष के दौरान समाप्त	140,723	
165,253		Less: Cleared during the year	14,052	
14,052				126,671
133,181,088		कुल अग्रणीतTOTAL C/F		152,493,707

2012-2013		परिसंपत्तियां/ASSETS	2013-2014	
रु.Rs.	पै.Ps.	विवरण PARTICULARS	रु.Rs.	पै.Ps.
133,181,088		कुल अग्रानीत Total B/F	152,493,707	
		2. विशेष जमा योजना लेखा पर प्रोद्भूत ब्याज अथ शेष		
		Accrued Int. on Special Deposit Scheme A/c		
409,341		Opening Balance as on 1.4.2013	450,275	
		जोड़: वर्ष के दौरान किये गये प्रावधान		
450,275		Add: Provision made during the year	445,158	
859,616		कम: वर्ष के दौरान समाप्त	895,433	
409,341		Less: Cleared during the year	450,275	
450,275				445,158
		3. एफटीडी खाता-केनरा बैंक पर प्रोद्भूत ब्याज		
		Accrued Int. on FTD A/c- Canara Bank		
		अथ शेष		
161,894		Opening Balance as on 1.4.2013	463,689	
		जोड़: वर्ष के दौरान किया गया प्रावधान		
463,689		Add: Provision made during the year	310,776	
625,583		कम: वर्ष के दौरान समाप्त	774,465	
161,894		Less: Cleared during the year	463,689	
463,689				310,776
		4. एफटीडी खाता-ओबीसी पर प्रोद्भूत ब्याज		
		Accrued Int. on FTD A/c – OBC		
		अथ शेष		
1,224,436		Opening Balance as on 1.4.2013	1,724,488	
		जोड़: वर्ष के दौरान किया गया प्रावधान		
1,724,488		Add: Provision made during the year	1,498,412	
2,948,924		कम: वर्ष के दौरान समाप्त	3,222,900	
1,224,436		Less: Cleared during the year	1,724,488	
1,724,488				1,498,412
		VI. अंत शेष		
		Closing Balance		
		क) हस्तगत नकद		
0		a) Cash in hand	0	
		ख) बैंक में नकद		
1,577,099		b) Cash at Bank	920,887	
1,577,099				920,887
137,396,639		कुल योग GRAND TOTAL	155,668,940	

भारतीय प्रौद्योगिकी संस्थान मुंबई
INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY
 सेवा निवृत्ति पश्चात चिकित्सा निधि
POST RETIREMENT MEDICAL BENEFIT SCHEME
1.4.2013 से 31.3.2014 के लिए आय एवं व्यय लेखा
INCOME AND EXPENDITURE ACCOUNT FOR THE PERIOD 01.4.2013 TO 31.3.2014

आय INCOME				
2012-2013		विवरण PARTICULARS		2013-2014
रु.Rs	पै.Ps			रु.Rs पै.Ps
		निवेश/आरबीआई बॉण्ड पर ब्याज द्वारा By Interest on Investment / GOI Bond	7600000	
6333333		कम प्रोद्धत ब्याज गलती से जमा Less Accrued interest wrongly credited	1266667	
-		(वर्ष के दौरान प्राप्त ब्याज)		
6333333		(Interest realised during the year)	6333333	
1266667		जोड जेई (प्रोद्धत ब्याज किन्तु प्राप्त नहीं हुआ) Add JE (Interest accrued but not received)	1266667	
7600000				7600000
		निवेश/एसबीआई पर ब्याज द्वारा 621652 By Interest on Investment / SBI	-	
56538		निवेश/कैनरा बैंक पर ब्याज द्वारा By Interest on Investment / Canara Bank	299541	
		(वर्ष के दौरान प्राप्त ब्याज)		
56538		(Interest realised during the year)	299541	
17346		जोड जेई (प्रोद्धत ब्याज किन्तु प्राप्त नहीं हुआ) Add JE (Interest accrued but not received)	112146	
73884				411687
		निवेश/ओबीसी पर ब्याज द्वारा 1800089 By Interest on Investment / OBC	2772564	
157500		कम प्रोद्धत ब्याज गलती से जमा Less Accrued interest wrongly credited	-	
		(वर्ष के दौरान प्राप्त ब्याज)		
1642589		(Interest realised during the year)	2772564	
866812		जोड जेई (प्रोद्धत ब्याज किन्तु प्राप्त नहीं हुआ) Add JE (Interest accrued but not received)	746624	
2509401				3519188
10804937		कुल योग Grand Total		11530875

व्यय EXPENDITURE				
2012-2013		विवरण PARTICULARS	2013-2014	
रु.Rs	पै.Ps		रु.Rs	पै.Ps
4623402		सेवा निवृत्ति पश्चात चिकित्सा निधि दावा संदत्त To Post Retirement Medical Fund Claim Paid	6954532	
		कम सेवा निवृत्ति पश्चात चिकित्सा निधि दावा की वापसी Less Refund of Post Retirement Medical Fund Claim	453330	
		वर्तमान पीआरएमएस अभिदान लेखा में देय ब्याज का प्रावधान	6501202	
342383		To Provision towards Interest Payable to Existing PRMS Subscription A/c	348416	
2208		बैंक प्रभार To Bank Charges	380	
5836944		सामान्य निधि में अंतरित व्यय पर आय की अधिकता To Excess of Income over expenditure transferred to General Fund	4680877	
10804937		कुल योग Grand Total	11530875	

भारतीय प्रौद्योगिकी संस्थान मुंबई INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY सेवा निवृत्ति पश्चात चिकित्सा निधि POST RETIREMENT MEDICAL BENEFIT SCHEME 1.4.2013 से 31.3.2014 तक प्राप्ति एवं भुगतान खाता RECEIPTS AND PAYMENTS A/C FOR THE PERIOD 1.4.2013 TO 31.3.2014				
प्राप्ति/ RECEIPTS				
2012-2013		विवरण PARTICULARS		2013-2014
रु. Rs	पै. Ps			रु. Rs पै. Ps
		अथ शेष Opening Balance		
	5576429	बैंक में नक़द Cash at Bank		1337807
	2148203	सेवा निवृत्ति पश्चात चिकित्सा निधि लेखा में अभिदान To Subscription to Post Retirement Medical Fund A/c		2480448
		अल्पावधि जमा/ओबीसी (वर्ष के दौरान निवेशित) By Short term deposit / OBC		10500000
		(Amount realised during the year)		
	12850000	अल्पावधि जमा/भा.स्टे.बैं (परिपक्वता पर प्राप्त राशि) To Short Term Deposit / SBI		-
		(Amt realised during the year)		
	6333333	निवेश/आरबीआई बॉण्ड पर ब्याज To Interest on investment / GOI Bond	6333333.00	
		(निवेश पर प्राप्त ब्याज)		
	-	Accrued Interest wrongly credited भूल से जमा प्रोद्भूत ब्याज	1266667.00	7600000
	621652	निवेश/भा.स्टे.बैं पर ब्याज To Interest on investment / SBI		-
	56538	निवेश/कैनरा बैंक पर ब्याज To Interest on investment / Canara Bank		299541
	1642589	निवेश/ओबीसी पर ब्याज To Interest on Investment / OBC	2772564.00	
	157500	भूल से जमा प्रोद्भूत ब्याज Accrued Interest wrongly credited	-	
	1800089	(निवेश पर प्राप्त ब्याज)/ (interest received on investment)		2772564
	3297507	प्रोद्भूत ब्याज (वर्ष 12-13 के दौरान प्राप्त ब्याज) Accrued Interest		2150825
		(Interest for 12-13 realised during the year)		
		सेवा निवृत्ति पश्चात चिकित्सा निधि दावा वापसी (चिकित्सा दावा प्रदत्त) To Post retirement medical fund claim		453330
		(medical claim refund)		
32683751		कुल योग Grand Total		27594515

भुगतान/PAYMENTS				
2012-2013		विवरण PARTICULARS	2013-2014	
रु. Rs	पै. Ps		रु. Rs	पै. Ps
-		अल्पावधि जमा/कैनरा बैंक (वर्ष के दौरान निवेशित) By Short term deposit / Canara (invested during the year)	14500000	
26500000		अल्पावधि जमा/ओबीसी (वर्ष के दौरान निवेशित) By Short term deposit / OBC (invested during the year)	3500000	
2208		बैंक प्रभार By Bank charges	380	
4623402		सेवा निवृत्ति पश्चात चिकित्सा निधि दावा (चिकित्सा दावा प्रदत्त) By Post retirement medical fund claim (medical claim paid)	6954532	
		निवेश/आरबीआई बॉण्ड बैंक पर ब्याज		
157500		(आरबीआई बॉण्ड पर भूल से जमा प्रोद्भूत ब्याज का परिशोधन) By Interest on investment / GOI (rectification of accrued interest on GOI wrongly credited)	1266667	
62834		सेवा निवृत्ति पश्चात चिकित्सा निधि के अभिदान द्वारा (अभिदान की वापसी) By Subscription to Post Retirement Medical Fund (refund of Subscription)	104648	
157500		(ओबीसी पर भूल से जमा प्रोद्भूत ब्याज का परिशोधन) By Interest on investment / OBC (rectification of accrued interest on OBC wrongly credited)		
1337807		अंत शेष By Closing Balance हस्तगत नक़द Cash in hand बैंक में नक़द Cash at Bank	1268288	
32683751		कुल योग Grand Total	27594515	

भारतीय प्रौद्योगिकी संस्थान मुंबई
INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY
सेवा निवृत्ति पश्चात चिकित्सा निधि
POST RETIREMENT MEDICAL BENEFIT SCHEME
31 मार्च 2014 यथातिथि तुलन पत्र
BALANCE SHEET AS AT 31ST MARCH 2014

दायित्व/LIABILITIES			
2012-2013 रु.Rs पै.Ps	विवरण PARTICULARS		2013-2014 रु.Rs पै.Ps
70000000	आई आर सी सी निधि IRCC FUND		70000000
	अभिदान निधि- वर्तमान कर्मचारी Subscription Fund-Existing Employees प्रारंभिक निधि		
11982501	Opening Fund जोड़:- वर्ष के दौरान अभिदान	12274117	
2148203	Add:- Subscription during the year जोड़: - अभिदान पर देय ब्याज	2480448	
342383	Add:- Interest payable on subscription कम:-अभिदान की वापसी	348416	
3100	Less:- Refund of Subscription कम: 13-14 में सेवानिवृत्त कर्मचारियों से संबंधित अभिदान का अथ शेष	498	
1715896	Less : Op. Bal of subscription in r/o employees retired in 13-14 कम: 13-14 में सेवानिवृत्त कर्मचारियों का अभिदान	1500242	
479974	Less:- Subscription of Retired Employees for 13-14 कम: 13-14 में सेवानिवृत्त कर्मचारियों का अभिदान – MACP	650225	
	Less:Subscription in r/o retired employees on a/c MACP upgradation	177600	
12274117	अंत शेष /Closing Fund		12774416
	Subscription Fund-Retired Employees प्रारंभिक निधि		
14037981	Opening Fund जोड़-13-14 में सेवानिवृत्त कर्मचारियों से संबंधित अभिदान का अथ शेष	16174117	
1715896	Add – Op balance of subscription in r/o of employees retired in 13-14 जोड़: 13-14 में सेवानिवृत्त कर्मचारियों से संबंधित अभिदान	1500242	
479974	Add:- Subscription in r/o retired employees for 13-14 कम:-अभिदान की वापसी	650225	
59734	Less:- Refund of Subscription जोड़:13-14 में सेवानिवृत्त कर्मचारियों का अभिदान – MACP	104150	
	ADD:Subscription in r/o retired employees on a/c MACP upgradation	177600	
16174117	अंतिम निधि/Closing Fund		18398034
	सामान्य निधि General Fund अथ शेष		
34779069	Opening Balance जोड़:- वर्ष के दौरान आय(व्यय पर आय की अधिकता)	40616013	
5836944	Add :Income during the year	4680877	
40616013	(Excess Income over Expenditure)		45296890
139064247	कुल योग/Grand Total		146469340

परिसम्पत्तियाँ/ASSETS				
2012-2013 रु.Rs पै.Ps		विवरण PARTICULARS		2013-2014 रु.Rs पै.Ps
		निवेश/INVESTMENTS:		
		सावधि जमा/आरबीआई बॉण्डद्वारा		
		Fixed Deposit / GOI Bonds		
		1.4.2013 तक प्रारंभिक शेष		
95000000		Op Balance as on 1.4.2013	95000000	
-		कम: वर्ष के दौरान प्राप्ति	-	
		Less Realised during the year		
95000000				95000000
		अल्पावधि जमा/कैनरा बैंक		
		Short Term Deposit / Canara Bank		
		1.4.2013 तक यथास्थिति अथ शेष		
10000000		Opening Balance as on 1.4.2013	10000000	
-		कम: वर्ष के दौरान प्राप्ति	-	
		Less realised during the year		
10000000		जोड़ वर्ष के दौरान निवेशित राशि	10000000	
		Add Invested during the year	14500000	
10000000				15500000
		अल्पावधि जमा/भा.स्टै.बैं		
		Short Term Deposit / SBI		
		01.4.2013 तक यथास्थिति अथ शेष		
128500000		Opening Balance as on 1.4.2013	-	
-		जोड़ वर्ष के दौरान निवेशित राशि		
		Add Invested during the year		
128500000		कम: वर्ष के दौरान प्राप्ति	-	
		Less realised during the year		
-				-
		अल्पकालिक जमा/ओबीसी		
		Short Term Deposit / OBC		
		1.4.2013 तक यथास्थिति अथ शेष		
13075615		Opening Balance as on 1.4.2013	39575615	
26500000		जोड़ वर्ष के दौरान निवेशित राशि		
		Add Amt Invested during the year	3500000	
39575615		कम: वर्ष के दौरान प्राप्ति	43075615	
-		Less realised during the year	10500000	
39575615				32575615
		प्रोद्भूत ब्याज/Accrued Interest		
		1.4.2013 तक यथास्थिति अथ शेष		
3297507		Opening Balance as on 1.4.2013	2150825	
2150825		जोड़ वर्ष के दौरान किया गया प्रावधान		
		Add provision made during the year	2125437	
5448332		कम: वर्ष के दौरान प्राप्ति	4276262	
3297507		Less realised during the year	2150825	
2150825				2125437
		प्रोद्भूत ब्याज/Accrued Interest		
		1.4.2013 तक यथास्थिति अथ शेष		
		नकद तथा बैंक शेष		
		Cash & Bank Balance		
		हस्तागत नकद		
-		Cash in hand	-	
		बैंक में नकद		
1337807		Cash at Bank	1268288	
1337807				1268288
139064247		कुल योग/Grand Total		146469340