

## Nanomanufacturing Lab Inaugurated



The country's first Nano-manufacturing lab was inaugurated at IIT Bombay by Mr. Michael R. Splinter, President & CEO of Applied Materials, Inc. (AMAT), on 1 November 2007. The Applied Materials Inc. contributed equipment worth 7.5 million USD to this lab. The equipment consist of cluster tools for different modules (such as Rapid Thermal, Low Pressure CVD, High k, DPN, RIE, Ashing Chamber, PVD Chamber, Degas Chamber, Preclean Chamber) and have advanced semiconductor manufacturing process capabilities and applications. These will complement the equipment at the Nanotechnology Centre, which was established through a grant from the Ministry of Communications & IT, Government of India.

While inaugurating the lab, Mr. Splinter said that energy and environment applications is a new thrust area for AMAT and the company would be looking forward to some "breakthrough ideas in the area from IIT".

Welcoming the initiative from AMAT, Prof. Ashok Misra said that IIT Bombay, being a leader in nanotechnology, has been able to receive a special assistance from the Union Government of over Rs.49 crores for setting up the Nanotechnology Centre and enhancing education and research activities in this area at IIT Bombay.

Prof. J.M. Vasi, Deputy Director, said that the tools donated by AMAT would be used by students and faculty at IIT Bombay for research in developing newer flash memory devices and improving the present-day applications in solar energy.

On this occasion, an MoU was also signed between IIT Bombay and the Applied Materials Inc. on collaborative R&D projects.



### **IIT Bombay Wins First Prize at MicAV-2007**

An IIT Bombay team led by Prof. Hemendra Arya of Aerospace Engineering Department emerged on top at MicAV-2007 (Micro-Aerial Vehicle) on October 27, 2007, at Agra. The occasion was the first national meet for mini-sized fixed-wing, rotary-wing, flapping-wing aircraft. The team demonstrated the "Autonomous Flying of a tiny 450 mm fixed-wing aircraft" that faithfully flew through all the "Way Points" marked out, braving strong winds. The team also flew a remotely controlled 300 mm aircraft.

The five-day national competition, MicAV-'07, was organised jointly by the Aeronautics Research and Development Board, the Aerial Delivery Research and Development Establishment and National Aeronautics Laboratory between October 23 and 27, 2007, at Agra.

The first prize was shared with another team that flew a well-crafted 300 mm vehicle carrying a video camera. Their aircraft was remotely piloted and did not have autonomous capability.

The Aeronautics Research and Development Board (ARDB) had funded several teams across India with Rs.10 lakhs to develop vehicles towards MicAV-2008 – an international competition scheduled in March 2008. Prof. Arya's team is the only hopeful entry from India to this event. The team will receive additional funding from ARDB.

The composition of Prof. Arya's team was highly interdisciplinary, had great diversity, and demonstrated excellent teamwork. The contributions made by individual team members are as follows:

**Prof. Hemendra Arya, Aerospace Engineering Department**, apart from being the team leader and handling the overall coordination, was responsible for design, off-line simulations, hardware integration.

**Prof. Sanjay P. Bhat, Aerospace Engineering Department** – Theoretical studies leading to autonomous capability.

**Mr. Vishal Prabhu, 3rd Year DD, Aerospace Engineering Department** – S/W for NGC and integration.

**Mr. Ashish Bhat, "IdeaForge", SINE** – Development of miniature on-board computer and on-board S/W.

**Mr. Aditya Mandrekar, RA, Aerospace Engineering Department** – Flight data analysis & control law implementation.

**Mr. Kiran Verma, Indian Aeromodelers Clob, Virar** – Aircraft construction, flying and other operations.

### **IIT Bombay signs MoU with North Carolina A & T State University, USA**

IIT Bombay and the North Carolina A & T State University, Greensboro, North Carolina, USA, signed a Memorandum of Understanding on 15th June 2007 for co-operation in any field related to science and technology, exchange of Scientists and Students, research projects, etc.

#### **Symposium on Optimization in Supply Chains**

Industrial Engineering and Operations Research (IEOR), as part of the Golden Jubilee celebrations, organized a one-day symposium on "Optimization in Supply Chains" on Saturday, 27th October 2007 at the Electrical Engineering seminar hall. The proceedings were inaugurated by Prof. Krithivasan Ramamritham, Dean (R&D), IIT Bombay. A spectrum of talks was hosted on different aspects of supply chain, with focus on the quantitative techniques employed. Speakers were drawn from Dell, Patni Computer Systems, Tata Consultancy Services and IIT Bombay. The topics of the talks are as follows:

"Introductory talk on optimization in supply chain"  
– Prof. Tapan P. Bagchi (IEOR, IITB)

"Forecasting of short life cycle products and parts in Dell using non-linear optimization"  
– Dr. K. Raghava Rau (Dell, Bangalore)

"Pricing shared resources with QoS guarantees in some logistics models"  
– Mr. Sudhir Sinha (IEOR, IITB)

"Decentralized supply chain formation using an incentive compatible mechanism"

- Prof. N. Hemachandra (IEOR, IITB)
- "Network flow optimization in Stolt Tank Containers"
- Mr. Barry McNally (Stolt Nielsen

Transportation Group, Netherlands) and Dr. Siddhartha Sengupta (Tata Consultancy Services, Mumbai)

- "Some models in closed loop supply chains"

- Prof. Jayendran Venkateswaran (IEOR, IITB)

- "Capacity requirements planning in a services supply chain"

- Mr. Milind Padalkar (Patni Computer Systems, Mumbai)

- "Pricing as a means of co-ordinating supply chain decisions"

- Prof. Narayan Rangaraj (IEOR, IITB)

Participants included students and faculty from NITIE, Symbiosis Institute of Operations Management, SNDT University, Mumbai University, MNIT Jaipur and IIT Bombay; and professionals from TCS, Patni, Oracle India Ltd, and Parle Sales. The symposium was supported by IRCC, IIT Bombay.

### **Awards & Distinctions**

Prof. Ashok Misra, Director, IIT Bombay, received the Degree of Doctor of Science (*Honoris Causa*) at the 21<sup>st</sup> Convocation of Thapar University, Patiala, for his dedication and commitment to the cause of science research and education and for his reputation as an academic, researcher and administrator.

Prof. B.P. Kashyap, Department of Metallurgical Engineering & Materials Science, has been elected as a "Fellow of The National Academy of Sciences, India (NASI)".

An M.Tech. thesis titled "Processing and properties of metal matrix composites for satellite and launch vehicles" by **Shri Shahaur Rehman** of Department of Metallurgical Engineering & Materials Science has been selected for the award of 2007 Dr. A.K. Bose Gold Medal by the Indian Institute of Metals. The thesis was done under the supervision of **Prof. R.C. Prasad**.

**Prof. H.R. Srirangarajan** of the Department of Mechanical Engineering has been appointed as an expert in the Board of Studies for PG & Research of NITK, Surathkal.

**Prof. Deepankar Choudhury**, Department of Civil Engineering, has been selected for the NASI-Young Scientist Platinum Jubilee Award in Physical Science for the year 2007 in recognition of his excellent academic and research work.

**Prof. Preeti Aghalayam**, Department of Chemical Engineering, has been selected for the INAE Young Engineer Award 2007. She will be receiving the award, which carries a cash prize and a citation, at the Academy's meeting in Hyderabad, on December 7, 2007

**Prof. Ramgopal Rao**, Department of Electrical Engineering, has been awarded the IBM Faculty Award 2007 in recognition of his research achievements.

**Prof. Pushpak Bhattacharyya**, Department of Computer Science and Engineering, has received the IBM UIMA Innovation Award for faculty for his proposal "Integrating Indian Language Tools and Resources and Tools and Semantic Search Capabilities with the UIMA Framework". It is aimed at providing a platform for computational processing of Indian languages on a widely acclaimed, powerful and free software environment.

### **Seminars**

#### **Department of Chemistry**

Prof. Carsten Bolm, RWTH-Aachen, Germany, delivered a seminar on "Iron Catalyzed Organic Reactions" on October 29, 2007

#### **Department of Physics**

Prof. U.A. Yajnik, Department of Physics, delivered a seminar on "Unification and Supersymmetry" on September 26, 2007

Prof. Vincent G. Harris, Northeastern University, USA, delivered a seminar on "Frontiers of Ferrite Materials Research" on October 19, 2007

#### **Department of Mathematics**

Shailaja Deshmukh, Dept. of Statistics, K.C. College, delivered a seminar on "Binomial and Negative Binomial Analogues Under Correlated Bernoulli Trials" on September 30, 2007

Sanjeev Sabnis, Mathematics Department, IIT Bombay, delivered a seminar on "An Introduction to the Gibbs Sampler" on September 30, 2007

#### **Department of Metallurgical Engineering & Materials Science**

Dr. Amitabh Bansal, Polymer and Chemical Technology, GE Global Research Center, Niskayuna, NY, USA, delivered a seminar on "Quantitative Equivalence between Polymer Nanocomposites and Thin Polymer Films" on September 18, 2007

#### **School of Biosciences and Bioengineering**

Prof. Leslie Wilson, Department of Molecular, Cellular, and Developmental Biology, University of California, Santa

Barbara, USA delivered a seminar on "Microtubule Dynamics and the Mechanism of Action of Microtubule-Targeted Antimitotic Anticancer Drugs" on October 3, 2007

Dr. Himanshu Sinha, EMBL Heidelberg, Meyerhofstrasse 1, 69117 Heidelberg, Germany, delivered a seminar on "High-resolution Mapping of Quantitative Trait Loci in Yeast" on October 24, 2007

Dr. Saikat Chakrabarti, National Center for Biotechnology Information (NCBI), National Library of Medicine (NLM), National Institutes of Health (NIH), Bethesda, MD 20894, USA, delivered a seminar on "Towards Understanding of Structural, Functional and Evolutionary Diversities among Proteins" on October 25, 2007

Dr. Radhika Madhavan, Georgia Institute of Technology, Atlanta, GA delivered a seminar on "Role of Spontaneous Bursts in Functional Plasticity and Spatiotemporal Dynamics of Dissociated Cortical Cultures" on October 31, 2007

Dr. Samir K. Maji, SBL-R, The Salk Institute for Biological Studies, La Jolla, CA-92037 delivered a seminar on "Amyloid aggregation: from Dark Side to Novel Therapeutics" on October 31, 2007

Dr. Santanu Kumar Ghosh, University of Texas at Austin, delivered a seminar on "The Yeast Plasmid: An Impostor Chromosome" on November 13, 2007

### Faculty News

#### Department of Civil Engineering

**Prof. V. Jothiprakash**, Assistant Professor, of dept. delivered an invited paper on "Dreams and Reality of Nanotechnology and its Applications in Water Resources Engineering", in the

National Conference on Nanotechnology and its application in Water Resources and Environmental Engineering Systems conducted by SRM Deemed University, Chennai, during 28 and 29 September 2007; he also co-chaired a session in the conference.

#### Department of Mechanical Engineering

**Prof. S. S. Pande**, Mechanical Engineering Department, presented the invited key-note lecture on "Internet Based Product Design and Manufacturing" in the National Conference on Trends in Advanced Manufacturing organised by FCRCE, Mumbai, on October 19, 2007.

#### Department of Physics

**Prof. G. Mukhopadhyay**, Physics Department, gave two invited talks on "Optical Properties of Materials" and "Dielectric Response of Nanoparticles" on 11th October 2007 at the Workshop on Physics and Technology of All-optical Communication Components and Devices, 11th - 16th October 2007 at IIT Kharagpur.

**Prof. G. Mukhopadhyay**, Physics Department, gave an invited talk on "Dielectrophoresis and Electrorotation of Elongated Biocells" on 2nd September 2007 at "The Symposium 200 Years of Condensed Matter Physics in Gothenburg", 30th August - 2nd September 2007 at Hindas, Sweden.

#### School of Management

**Prof. (Ms) Karuna Jain**, SJMSOM, organised 3-day Management Development Programme on R&D Management during September 20-22, 2007. The programme was focused on issues confronting R&D managers with emphasis on market-driven R&D in view of a host of MNCs setting up R&D and

technical development centers in India. Thirty participants attended the programme from industrial R&D units and academics. The programme was sponsored by DSIR, Government of India.

In general, the programme was well received. There was a suggestion to repeat the same programme for their colleagues in industry.

**Prof. Atanu Ghosh**, SJMSOM, delivered talks on "The Innovative Way of Learning on Leadership: An Experiment at the School of Management, IIT Bombay" at Fr.C. Rodrigues Institute of Management Studies, Vashi, on 1st September and 13th October 2007; at Department of Management Studies, IIT Delhi, on 15th September 2007; and at N.L. Dalmia Institute of Management Studies and Research, Mumbai, on 18th October 2007. He delivered a talk on "Leadership and Business Ethics" at NITIE, Mumbai on 30th October 2007.

#### Centre for Environmental Science and Engineering

**Prof. A.K. Dikshit**, CESE, was invited as a dignitary at the National Conference on Environmental Biotechnology (BioZeal '07), Department of Biotechnology, Thadomal Shahani Engineering college, Mumbai, on October 5-6, 2007. He delivered a keynote address on "Applications of Environmental Biotechnology for Pollution Control" to engineers, biotechnologists and students.

### Student News

A team of the following five PhD students - **Ayesha Chaudhary** (team leader), **Swati M**; **Deepti Dyondi**, **Anubhav Kaviratna** and **Rahul Dev Jayant**, of the School of Biosciences & Bioengineering - has been selected to represent India in the Biotechnology YES - Young Entrepreneur Scheme - in UK.

The students are doing their PhDs in biomedical engineering under the guidance of Prof Rohit Srivastava and Prof Rinti Banerjee. They are among the top four teams identified on the basis of their business ideas (on science and technology innovation and entrepreneurship for bioscience product development,) presented to a select panel comprising eminent academics, an entrepreneur and a venture capitalist. This all-India competition was organised by the British High Commission and the Department of Biotechnology, India. The students will be competing with UK teams in Oxford between 24-26th October.

The students of Department of Humanities and Social Sciences participated and presented papers at the Students Colloquium held at the Indira Gandhi Institute of Development Research, Mumbai, on 28th and 29th September. The details of the papers and the link to the website are given below:

1. Sutapa Ghosh (Ph.D. Student)  
Paper Titled: SEZs and Urban Planning Policy in India
2. Binti Kantha (Ph.D. Student)  
Paper Titled: Civil Society and the urban question
3. Aakriti Grover, (M.Phil Student)  
Paper Titled: Causes of Floods in Mumbai and Critical Analysis Disaster Management Plan of Mumbai

We would like to add that Binti Kantha's Paper has been awarded the second best paper at the colloquium.

### News from Central Library

Central Library organized a half-day seminar on IPR Issues (in relation to Library and Information resources and services) in Digital Millennium on 28th September 2007 at FC Kohli Auditorium (KReSIT Building). Dr A. L. Moorthy, Director, Defence Scientific Information

and Documentation Centre (DESIDOC), New Delhi, was the main speaker.

The talk was followed by two presentation-cum-demonstrations of the following products:

1. J-Gate and JCCC by M/s Informatics India Ltd. (Central Library provides access to above sources under INDEST Programme).

2. Proquest's Dissertations and Theses (full text) (earlier UMI Product) by M/s Allied Publishers.

### Publications

**Mr. Jayesh Ruparelia**, Research Scholar at Centre for Environmental Science and Engineering (CESE), presented a research paper on "Antibacterial Activity of Silver and Copper Nanoparticles" co-authored by Prof. Suparna Mukherji, CESE, and Prof. S. P. Duttgupta, EE, in "Second Conference on Environmental Effects of Nanoparticles and Nanomaterials". The conference was organized by Society of Environmental Toxicology and Chemistry (SETAC), Society for Experimental Biology (SEB) and the Environmental Agencies of UK, during September 24 - 25, 2007 at Natural History Museum, London, UK.

**Prof. A. K. Dikshit**, CESE, visited the School of Environmental Engineering at the National Technical University of Athens on September 3, 2007, and The University of the Aegean, Athens, Greece on September 4, 2007, and interacted with faculty, staff and students. He participated in the 10th International Conference on Environmental Science and Technology (CCEST 2007) organised by the University of the Aegean, during September 5-7, 2007, at Kos and presented a paper on "Decolourisation of Distillery Wastewater in India: Current Status and Future Trends" in the technical session on Industrial Wastewaters. He also chaired the

technical session on Industrial Wastewaters - Sludge Treatment at the conference.

**Prof. A. K. Rastogi**, Department of Civil Engineering, participated in the 4th Annual Meeting of Asia-Oceania Geosciences Society (AAOGS 2007) held at Queen Sirikit National Convention Centre, Bangkok, from July 30 to August 4, 2007. He presented a research paper entitled 'GA Application to Determine Optimal Pumping Policy in Heterogeneous Unconfined Aquifer'.

**Prof. Malhar Kulkarni**, Department of Electrical Engineering, published a review article entitled "Process & Language: A study of the Mahabhashya and A.1.31." in the Nagoya Studies in Indian Culture & Buddhism, SANHASHA, Vol.26, pp.181-186, Nagoya University, Japan.

### Appointments

**Dr. Surendra P. Shah** has been appointed as an Honorary Visiting Professor in the Department of Civil Engineering from 22nd October 2007 for a period of six months.

**Dr. Pradeepkumar, P.I.** has been appointed as an Assistant Professor in the Department of Chemistry from 22nd October 2007.

**Dr. Sudhir Misra** has been appointed as an Adjunct Professor in the Department of Civil Engineering for a period from 12th September to December 2007.

**Dr. Nilanjan Halder** has been appointed as a Post Doctoral Fellow in the Department of Electrical Engineering from 1st October 2007 for a period of two years.

**Dr. Kedar Damle** has been appointed as a Visiting Assistant Professor in the Department of Physics for a period from October 2007 to May 2008.

**Prof. S.L. Dhingra** has been appointed as an Emeritus Fellow in the Department of Civil Engineering from 11th October 2007 for a period of two years.

Dr. Michael A Schoenberg has been appointed as a B.G. India Visiting Professor in the Department of Earth Sciences from 15th October 2007 for a period of two months.

Dr. (Ms.) Nayantara Gupta has been appointed as an Assistant Professor (Contract) in the Department of Physics from 15th October 2007.

Dr. Rajbabu Velmurugan has been appointed as an Assistant Professor (Contract) in the Department of Electrical Engineering from 26th September 2007 for a period of two years.

Dr. Sivaramakrishnan Sivasubramanian has been appointed as an Assistant Professor in the Department of Mathematics from 1st October 2007.

Prof. Haripriya Gundimeda has been appointed as an Associate Professor in the Department of Humanities and Social Sciences from 14th September 2007.

**Retirement**

**as on 30.11.2007**

1. Shri B.N. Ghoshal, Security Section
2. Ms. S.S. Patwardhan, Administration Section
3. Ms. M.I. Kriplani, Central Library
4. Ms. Baby Jose, Physics Department

**Events**

CEP Courses			
No.	Course Title	Coordinator / Department	Date
1.	Modelling Analysis and Optimization of Industrial Processes	Prof. A. Mehra, Prof. A.K. Suresh Chemical Engg.	November 04 - 06
2.	Fuel Cells	Prof. P.C. Ghosh Energy Systems Engg.	November 13 - 14
3.	Application of Centrifuge Modelling to Geotechnical Engineering Practice (for DST, New Delhi)	Prof. B.V.S. Viswanadham Civil Engg.	November 13 - 15
4.	EXPOPI	Prof. R. Poovaiah IDC	November 14 - 16
5.	Soft Computing Techniques in Water Resources Management	Prof. T.I. Eldho, Prof. V. Jothiprakash Civil Engg.	November 19 - 23
6.	Certificate Programme in Management (for Godrej Industries Ltd., Mumbai)	Prof. S. Narayan Rao SJMSoM	November 20 - 29
7.	Energy Management	Prof. R. Banerjee Energy Systems Engg.	November 26 - 30

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