

IIT Bombay is organising an Institute Lecture on Tuesday, January 31, 2012. The details are as follows:



by

Prof. Rajesh N. Dave
Distinguished Professor
Otto York Department of Chemical,
Biological and Pharmaceutical Engineering
New Jersey Institute of Technology
New Jersey

Title : **Advanced Pharmaceutical Manufacturing Initiative: Engineering Research Center on Structured Organic Particulate Systems**

Day & Date : Tuesday, January 31, 2012

Time : 5.15 p.m.

Venue : Main Auditorium, VMCC

All are invited.

Abstract:

U.S. National Science Foundation Engineering Research Center (ERC) on Structured Organic Particulate Systems (C-SOPS) is a joint effort between four universities, viz., Rutgers (the lead institution), Purdue, NJIT, and Puerto Rico at Mayaguez to conduct research with an emphasis on enhancing the quality and consistency of materials used in drug tablets, pharmaceuticals, processed foods, agrichemicals and other composite organic products. This talk will provide an overview of the Center activities in which Prof. Dave plays several major roles.

Product and process design for organic particulate systems has a mostly empirical history due to the underlying complexity of processes and products. The major objective of C-SOPS is to transform this area into a science-based enterprise. A predictive fundamental understanding of the effects of material properties and process parameters on the structure and functionality of Organic Particulate Systems is pursued, while at the same time developing transformative technologies for improving manufacturing of existing products, and for developing manufacturing methods for new products. This advanced manufacturing initiative of C-SOPS research is expected to result in reduced cost and more reliable manufacture of biocompatible products, as well as in faster development of new products, and a more competitive US industry. Impact is maximized through three current test beds, which were selected to promote two major shifts in technology: from batch manufacturing to a continuous mode capable of much greater process controllability, and from mass production of identical product units, to mini-manufacturing of small numbers of product units tailored for personalized therapy. By focusing increasingly on microstructure-function-performance relationships, the ERC is transforming product and process design, optimization, and control of pharmaceutical products and processes. The talk will also present a brief overview of the research work by Prof. Dave's group on creation of advanced particulate materials through engineering of particles, with applications to pharmaceutical, bio, energetic, and specialty chemical materials.

About the Speaker:

Prof. Rajesh N. Dave received B.Tech. degree in Mechanical Engineering from Indian Institute of Technology Bombay in 1978, and the M.S. and Ph.D. Degrees in Mechanical Engineering from Utah State University in 1981 and 1983 respectively. He is currently a Distinguished Professor in the Department of Chemical, Biological and Pharmaceutical Engineering, at New Jersey Institute of Technology. He is also the *Site-Leader, Thrust Leader and a Test-bed Leader*, National Science Foundation Engineering Research Center on Structured Organic Particulate Systems (NSF ERC-SOPS), a Rutgers (lead), Purdue, NJIT and UPRM partnership. He is the founding Director of New Jersey Center for Engineered Particulates, an R&D Excellence Center engaged in research for applications such as pharmaceutical, food, electronic and energetic materials. His research has been supported through grants from federal, state, and industrial awards totaling about \$16 Million as a Principal or Co-Principal Investigator, without including the \$ 35M NSF ERC-SOPS award.

His research contributions are in two main areas, Particle Technology/Engineered Particulates and Fuzzy Pattern Recognition. His main research interests in Engineered Particulates include: synthesis of nano-particles and engineering of structured particle composites; modeling and development of novel techniques for dry particle coating, film-coated particles, granules and engineered particulates; nano-particle mixing, and nano-particle fluidization; powder flow and particle-particle interactions/cohesion; and DEM simulations. He has graduated 22 doctoral students of which five are currently in US academic positions. Eight of his past postdoctoral advisees are in academic positions. At present he is supervising eight doctoral students and several post-doctoral research associates.