

Reach Symposium

10 - 12th October 2010

IIT Kanpur has been organizing Research Challenges (REACH) symposia with the idea of developing interdisciplinary research thinking and providing impetus to research activity being carried out in frontier areas in this institute. In keeping with the basic objectives of the symposium four divergent themes were covered.

The first theme '**High Performance Computing: Applications in Science and Engineering**' was coordinated by Profs. A. Chandra and K. Deb. The relevance of this theme not only emerges from its contemporary nature but also because of the fact that a large High Performance Computation facility is being set up at IIT Kanpur. Also many researchers cutting across departments investigate problems using High Performance Computation as the tool. There were four internal speakers and two external speakers. This session was chaired by Prof. G. Biswas. After an overview by Prof. K. Deb the following talks were given:

1. 'Using HPC for understanding Fluid Flows' by Prof. Sanjay Mittal, IITK.
2. 'An Applications Perspective of High-Performance Computing' by Dr. S. Sherlekar, INTEL, Bangalore.
3. 'From Sequence Analysis to Simulations: Applications of High-Performance Computing in Modern Biology' by Prof. R. Sankararamakrishnan, IITK.
4. 'Automatic Parallelization of Programs' by Prof. Sanjeev K. Aggarwal, IITK.
5. 'Will HPC ever meet the demands of Weather and Climate Forecasting?' by Dr. P. Goswami, C-MMACS, NAL, Bangalore.
6. 'Molecular Simulations and HPC@IITK' by Prof. A. Chandra, IITK.

The second theme dealt with '**Innovation and Design**' which is highly relevant in technical education. This theme was coordinated by Profs. B. V. Phani, J. Chatterjee and D. Gupta. The theme attracted speakers both from academia and the industry. The two IITK alumni who have incubated their ventures recently also spoke of their experiences. This session was chaired by Prof. B. V. Phani. After an overview of the subject by Prof. Chatterjee the following speakers gave their presentations:

1. 'Good Design-confluence of art, technology and social science' by Mr. Satish Gokhale, Design Directions Pvt. Ltd., Pune.

2. 'Embodiment of Intelligence in Product Design: Inspirations from Nature' by Dr. Bishakh Bhattacharya, IITK.
3. 'Excitement in Creativity and Invention' by Prof. Ashok Misra, Intellectual Ventures, Bangalore.
4. 'From Design to Design Thinking' by Ms. Aradhana Goel, IDEO Corporation, Chicago
5. 'Applying Nanotechnology to Coronary Artery Disease: From Invention to Innovation' by Prof. S. Sundar Manoharan, IITK.
6. 'Innovation in smart card technologies and their applications' by Prof. Rajat Moona, IITK.
7. 'Technology to Product, Lab to Industry: Experiences in Dual Drive High Energy Planetary Mill' by Mr. Prem Prakash, CENOGEN.
8. 'Innovation in Wireless Technology for Industrial Automation' by Mr. Ashish Agarwal, Innovative Embedded Systems Pvt. Ltd.

Most appropriately, the session ended with a vigorous panel session that debated on the state of Innovation and Design in India in general and in Indian Industry in particular. The panelists were Prof. Ashok Misra, Intellectual Ventures, Bangalore; Ms. Aradhana Goel, Ideo Corporation, Chicago, USA; and Ms. Jhumkee Sengupta Iyengar, User in Design, Pune. Prof. J. Chatterjee of IITK moderated the discussion.

Environment related issues and research in biology are extremely contemporary and find a prime place in the research milieu of every good institute. Hence, the next theme was **Health, Environment and Life** and was coordinated by Profs. D. Chowdhary and S. Panda. After an initial overview by Prof. D. Chowdhary the following lectures were delivered:

1. 'Lighting up Human Tissue to Detect Tumors' by Dr. Asima Pradhan, IITK.
2. 'Chemiresistor Sensors for Environmental Monitoring' by Prof. Clifford Ho, Sandia Labs, Albuquerque, USA
3. 'Technologies with Minimal Environmental Footprint' by Prof. Vinod Tare, IITK.

Prof. S. Panda chaired the second session of this theme where the following lectures were given:

1. 'Black Carbon for Green Environment' by Prof. Nishith Verma, IITK.
2. 'Remediation of Pollution in Natural Systems' by Dr. Soumyen Guha, IITK.

3. 'Drug Discovery: A multidisciplinary science' by Dr. Vinod Bhakuni, CDRI, Lucknow.

Every institute of higher learning aims to undertake cutting edge research at the fore front of science and technology. In this context, it is critical for IITK to have a holistic research vision. With an objective to introspect on this issue, the last theme of REACH 2010 symposium was '**Creating a Research Vision for IIT Kanpur**' and was conducted under the convenership of Prof. K. Muralidhar, Prof. A. Sharma and Prof. D. Kunzru. After an overview by Prof. Muralidhar, many eminent academicians shared their views and research experiences. The speakers included:

1. 'IIT Kanpur-Attaining Global Leadership in Research' by Mr. Jeet S. Bindra, Chevron, USA.
2. 'R&D Planning - A Boeing Perspective' by Mr. Bala Bharadvaj, Boeing India, Bangalore.
3. 'IITK should be No. 1 in computing again' by Prof. N. Sathyamurthy, IITK and IISER Mohali.
4. 'Some thoughts on research in IITs - Vision 2020' by Prof. M. S. Ananth, IIT Madras.
5. 'What should be the Research Vision for IIT Kanpur - A Difficult Question with a Simple Answer? or vice versa?' by Prof. A. Ghosh, IITK.
6. 'Prospects for Intelligent Imagination' by Dr. Anurag Gupta, IITK.
7. 'Research-driven strategy in higher education' by Prof. Sanjay G. Dhande, IITK.

In addition to lectures, poster sessions were also held. There was an excellent response to the symposium from the academic community of the campus. The conveners of this year's symposium were Prof. V. Chandrasekhar, Prof. D. Kundu, Prof. M. Katiyar and Prof. B. Mazhari. Prof. M. Agrawal and Prof. K. Muralidhar were in the advisory committee. For more details on the symposium visit: <http://www.iitk.ac.in/reach/>.