



Director's Report
XL Convocation
May 31, 2008

Indian Institute of Technology Kanpur
Prof. Sanjay G. Dhande
Director, IIT Kanpur

Honorable Chairman, Board of Governors of the Indian Institute of Technology Kanpur, Professor M. Anandkrishnan, Distinguished Chief Guest, Professor Shih Choon Fong, Members of the Board of Governors, Members of the Academic Senate, all graduating students and their family members, all members of faculty, staff and students, invited dignitaries, guests, and members of the media: I heartily welcome you all on this occasion of the fortieth convocation of the Indian Institute of Technology Kanpur.

We are particularly happy to welcome Professor Shih Choon Fong, President, National University of Singapore, amongst us for our Convocation today.

The academic year closing in May 2008 has been momentous and I consider it a privilege to review our activities during this period.

ACADEMIC ACTIVITIES

The academic year 2007-08 has had a successful run. The number of graduating students both at the undergraduate (B Tech - 334, M Sc (5 year Integrated) - 40, B Tech – M Tech Dual Degree (5 year) - 60, M Sc (2 year) - 70, Total = 504) and the postgraduate (M Tech - 356, M Des - 6, MBA - 27, PhD - 101, Total = 490) levels show a satisfactory trend. The enrollment in the Doctoral program as well as the publication record of the faculty and students for the academic year has considerably increased. Faculty members and students published a large number of research papers in journals and conference proceedings. Books published by the faculty are listed in the appendix of this report.

AWARDS AND HONORS

The faculty and students of IITK continue to break new grounds at the frontiers of research. This has been duly recognized in the form of various awards and honors to the faculty including Fellowships of professional societies, Editorship of international journals, and best paper awards to the students. A representative list of Awards and Honors to our faculty members is included as an addendum to the report.

Our undergraduate students Sandip Gupta, Varun Mishra, Shrey Sahay, and Divyanshu Jha have been conferred the **Goldman Sachs Global Leaders Award** and are expected to attend the Global Leadership Institute in the USA. Amartya Mukhopadhyay received **Dr. A. K. BOSE GOLD MEDAL** by the Indian Institute of Metals (IIM), 2007 for the best M. Tech thesis. Dr. Atul Srivastava won the best doctoral thesis award of **Indian National Academy of Engineering**, while Sunil Verma was conferred the best doctoral research award of the **Indian Laser Association**. Anurag Awasthi, Ankit Lohiya, Subhonmesh Bose and Mohit Bansal received **O P Jindal Engineering & Management Scholars Scholarship**.

IIT Kanpur is proud of Professor Amalendu Chandra (Chemistry) who was conferred the prestigious **Shanti Swarup Bhatnagar Award – 2007**. Prof. R. N. Mukherjee (Chemistry) received **Sir J C Bose Fellowship** by DST. Dr. J. K. Bera (Chemistry) and Prof. V. K. Yadav (Chemistry) have been awarded the **Ramanna Fellowship** by DST. **Indian National Science Academy, New Delhi** awarded its fellowships to Professors V. Chandrasekhar (Chemistry), Manindra Agrawal (Computer Science) and R. N. Mukherjee (Chemistry). Professors V. Eswaran and P. Munshi of the Mechanical Engineering Department have been elected Fellows of **Indian National Academy of Engineering**.

Dr. Bikramjit Basu (MME) was awarded the **International Coble Award** of the American Ceramic Society. Incidentally, Dr. Basu will be the first Indian and the second Asian to receive this award. Drs. S. A. Ramakrishna (Physics) and Avinash Kumar Agarwal (Mechanical) have been awarded the **INSA Young Scientist Award (2007)**. Professors V. Chandrasekhar (Chemistry) and Gautam Biswas (Mechanical) have received Fellowship of the **National Academy of Sciences (2007)**. Dr. Ramkumar of the Mechanical Engineering Department has been granted the **DAE Young Scientist Award** for the year 2008. The **Young Achiever's award, 2007-08** of the Department of Atomic Energy (DAE) was awarded to Dr. Satyajit Banerjee. Dr. A. K. Ghosh (Mathematics and Statistics) and Professor V. K. Yadav (Chemistry) have been elected Associate and Fellow respectively of the **Indian Academy of Sciences**. Drs. Yogesh Joshi, Animangsu Ghatak and V. Shankar (Chemical) have received the **IChE Golden Jubilee Young Achiever Award**. Dr. Sameer Khandekar has been awarded the **George Grover Gold medal** by the International Heat Pipe Committee for his outstanding contribution to the development of science and technology of heat pipes. **Welliver Faculty Fellowship** was awarded by Boeing, USA to Professor Prem Kalra. Dr. Ashok K Mittal received **Amity Best Global HR Faculty Award**. Professors M R Madhav

(Civil Engineering), A K Chaturvedi (Electrical Engineering), H S Mani (Physics), M K Harbola (Physics) have been honored with the **Distinguished Teacher award** of IIT Kanpur for the year 2007.

RESEARCH & DEVELOPMENT

The Institute is engaged in providing meaningful education in engineering and science, while conducting original research of the highest standard. The research profile of the Institute is continually growing every year. During the year 2007-2008, about 111 sponsored projects and 109 consultancy projects were undertaken by the faculty and research engineers/scientists of the Institute with the sanctioned amount of Rs. 4182 lakh and 663 lakh respectively.

Our faculty members have published research papers in reputed national and international journals. This year Dr. Animangsu Ghatak (Chemical) published a paper in ***SCIENCE***, a journal that has an impact factor of 30. Faculty filed 15 patents in India and overseas. The Institute has signed several Memoranda of Understanding with Indian as well as international academic/research institutions and industries to strengthen its collaborative research efforts. Some of the organizations include: United Nations Development Program

New Delhi; Tata Institute of Fundamental Research Mumbai; Tata Consultancy Ltd. Mumbai; Hindustan Petroleum Corporation Limited Mumbai; Center for Development of Advanced Computing (CDAC) Thiruvananthapuram; Shell Technology India Pvt. Ltd. Bangalore; Prasar Bharati; The Department of Scientific and Industrial Research; Intel Corporation; Santa Clara; Nemgenix Pty Ltd; The Procter & Gamble Co, Ohio; Deakin University; Geelong Victoria; Ecole Centrale Paris; The University of Nottingham; Keio University Japan; UNICEF; Bose Corporation, USA; Cromoz Inc. USA; IBM, New York; Autodesk Asia Pte. Ltd.

The Institute has signed a Memorandum of Understanding with Bharat Sanchar Nigam Limited (BSNL) for setting up the *BSNL-IITK Telecom Centre of Excellence*. The basic objective of the Centre is to provide and facilitate an environment for innovation and application oriented research in the field of Telecommunication and related areas. It will seek to address the technological needs of DoT, BSNL and other related industries.

The Institute has also entered into an MoU with Uttar Pradesh Power Transmission Corporation Ltd (UPPTCL) with the objective of accelerating the development of the transmission system in UP through appropriate application of science and

technology. Such efforts would enable the State to utilize the scientific, technological and managerial resources of the Institute in introducing modern technology to accelerate its economic growth and also upgrade the technological skills of its personnel.

To devise concrete product prototypes using Nano Science and Technology, a unique interdisciplinary project funded by nanotechnology initiative of DST, has been undertaken at a current total outlay of 11 crore beginning January 2007. *Centre for Nanotechnology* at the Institute focuses on development of technologies based on the rapidly developing Nano Science. The focus is currently on the inter-related areas of: Development of printable Organic Electronics with Organic-RFID tags as the first demonstrator prototype and the Development of a versatile focused ion beam tool based on microwave plasma ion beam for applications in patterning and templating of soft-materials and substrates. As a part of this project, world class facilities for printing circuits with technologies will be installed.

The Institute has also entered into an MoU with the Archaeological Survey of India, to set up *Centre for Archaeology and Cultural Resource Management*. The Institute shall draw specific short and long term training

programs for capacity building for officers of The Archaeological Survey of India in the application of modern technology in archaeology. Initially, the focus will be on Geoinformatics, CAD and Computer Applications in Archaeology and Archaeo-materials.

Mechanical engineering faculty has taken the lead in the joint IITK-ISRO program for developing and launching an indigenous Micro-Satellite. ISRO has provided the initiation grant for the project. The satellite is expected to weigh less than 10 kg and would be based on MEMS sensors and actuators. A similar initiative on designing a lunar rover is under discussion. The Department has also taken the lead in a consortium project on development of Electronic Stability Control Systems for automobiles under the Core group on Automotive Research (CAR) program of TIFAC. Other members of the consortium include IIT Bombay, TATA Motors, Mahindra & Mahindra, Ashok Leyland, and TCS.

Biological Sciences and Bioengineering Department (BSBE) has developed a disposable polymeric bioreactor for therapeutic protein production for medical applications and a cost effective cryogel filter for the purification of blood cells. It has also developed an RNAi-based technology to engineer plants for nematode resistance. The technology now being

developed for a larger number of crop plants has received a World Bank research grant of 5.5 crore.

Department of Electrical Engineering has developed technologies for *Low Cost Visual 3-D modeling with Texture Mapping for Small Objects ready for transfer; E-Signboard; a Device-free HCI for Interactive Public Annunciation System, and Language Independent Book Copying Machine with Search Features*. Also technology was developed for working prototypes developed and tested using UHF RFIDs for automatic vehicle identification. Tags using ISO 18000B standard was tested on coaches for speeds up to 80 kmph. Tags and system employing EPC standard was developed and tested for speeds up to 50 kmph on trains and 150 kmph on automobiles respectively. Other technologies developed are IGBT Gate Drive Card with integrated short-circuit protection; power isolation; extremely small pulse-width capability and special measures to prevent nuisance tripping; UHF RFID tag antenna; Continuous Wireless Monitoring of the Cervical Dilation during pregnancy; a Free Space Optics Based Identification and Interrogation System; and manufacturing functionally-graded wide-band polymeric composites for microwave absorbers. Also the Department has developed software for SCORM module developed in Brihaspati, Brihaspati_sync - *live lecture delivery tools completed;*

fingerprint separation s/w and GUI Interface; Audio separation s/w and GUI Interface; Image compression s/w and GUI Interface; Day ahead Auction software for power exchange; determination of V-I characteristics of a Shunt Inductor.

Chemical Engineering Department has developed a *Higee* separation and supportive ionic liquid catalysis technology along with adsorptive separation of mixtures.

Department of Physics has developed a microwave generated subcutoff multicusp plasma source for production of multi-elemental focused ion beams and a 3-D Monte Carlo simulation code for studying electron dynamics in gas in the presence of EM waves.

Some of the major sponsored projects undertaken by the Institute include those funded by Chevron-Texaco Inc USA; Shell-India; HPCL; AOR; IndoGulf Fertilizers-Jagdishpur; Transpek Silox-Vadodara. UKIERI research grant for modeling of gene network along with Indian Institute Toxicology Research Lucknow and University of Nottingham, UK and River dynamics and hazard assessment in the Himalayan foreland sponsored by UKIERI. Other projects include - Performance analysis and trading of wind power generation in

emerging power system by Central Power Research Institute; Power Quality problem Analysis and recommended solutions by SAF Yeast Sandila; Quality assurance condition monitoring and fault diagnosis using Intelligent control methodologies by Technology Information; Forecasting and Assessment Council; E-Classroom Rollout in Science College of Chhattisgarh; Passive and active RFID location technology research by the Boeing Company, USA; National RFID Program by the Ministry of Communication and Information Technology; Small Antennas by Pico Mega Systems; Antenna for P-19 Radar; RF Propagation and radiation studies for WLAN system by Airtight Networks; Trans-receiver chip for the next generation of network in Telecommunication; Development of magnetic field sensors based on metallic multilayers with high magnetoresistive sensitivity; Development of magnetic field by Electrolyte Plasma; Exploiting crystallographic texture for improved nano-crystalline metal; and Electrochemical deposition technique for fabricating solar cells and IR Photodectors.

A few major consultancy projects received last year include: Hydrogeological investigations for assessment of quality and quantity of ground water funded by Johnson Matthey (ICI); Hydrological and hydraulic studies of Bhutahi Balan and Kamla Balan river in the vicinity of the proposed bridge location in

respect of unprecedented floods in the region of Muzaffarpur to Purnea Section funded by NHAI; Development of Power Sector in UP by Giri Institute of Development Studies for a Study Group formed by Planning Commission to prepare a road map for rapid economic development of UP; The Institutional Framework for Rural Energy Service from Renewables by Department of Economics; University of Cambridge, Cambridge (UK); Technology Development for Agricultural Extension and Outreach by National Agricultural Innovation Project; Power Metallurgical (P/M) Processing of High Density High Strength Aluminum Metal Matrix Composites by Schlumberger, USA; Feasibility Study for Establishing P/M Production Facility and Ferrous and Non-Ferrous Alloys by Raychem RPG, Mumbai; Yield improvement and inclusion removal from a slab casting tundish by JSW Torangallu; Reduction of tundish skull from a slab casting tundish by JSPL Raipur.

RESEARCH INFRASTRUCTURE DEVELOPMENT

The Institute is adding several major infrastructural facilities for carrying out multidisciplinary R&D activities. A Terrestrial Laser Scanner under the CARE scheme project was procured. ILRIS3D from Optech Inc., Canada was purchased at a cost of Rs. 55 Lakh and will be ready for use by the month of May

2008. This high density surveying instrument opens up several avenues for research and problem solving.

The Cascaded Dilatometer Facility procured under CARE scheme will be housed at the Materials Processing Laboratory (MPL) in the Advanced Centre for Materials Science. A dilatometer is employed for measuring *in situ* the instantaneous dimensional changes in compacts during various thermal cycles.

ICAP 6300 ICP Spectrometer was acquired under the CARE scheme. The use of Inductively Coupled Plasma source (ICP) and Atomic Absorption (AA) are the accepted and most powerful techniques for the analysis of and quantification of trace elements in both solid and liquid samples. Applications range from important environmental analyses to the materials industry, geological applications to clinical research and from the food industry to the semiconductor industry.

The Department of Science and Technology (DST) has a *Fund for improvement of Science & Technology (FIST)* scheme to build infrastructure facilities in universities and higher educational institutions. The grant under this scheme is provided for strengthening infrastructure of the identified department in teaching and research and is to be spent

exclusively for the said purpose. During 2007-2008, the Institute has received FIST grants to add special infrastructure facilities for research purposes. The Department of Chemical Engineering has been provided a total amount of Rs. 6 crore, while the Department of Chemistry has been provided a total amount of Rs. 4 crore.

The Department of Physics is installing a major facility for cross-disciplinary research, namely 1.7 MV Tandatron accelerator, with microprobe and heavy ion irradiation. Beam lines have been designed and fabricated for carrying out research in solid state materials and other cross disciplinary field with a focus on development of futuristic technology. The facility is expected to be ready by mid June 2008. This is in addition to significant advances made in fabricating nanostructures with the newly established facility on Focused Ion Beam (FIB).

The Institute is also acquiring a new Liquid Helium Liquefier to enable low temperature based and high magnetic field research.

The Department of Physics is establishing a high performance computing facility (One Teraflop operations per second and 0.5 T Byte). This facility will help tackle challenging and

complex numerical problems in computational astrophysics, turbulence and materials physics.

INTERNATIONAL COLLABORATIONS

The Institute has entered into MoUs with The Universita' Degli Studi Di Perugia; Deakin University, Victoria; Dan Kook University; University of Modena and Reggio Emilia (Italy); KEIO University; University of Ulster; Ecole Polytechnique, France; University of Nanyang Technological University, Singapore (NTUS); University of McMaster, Canada; Ritsumeikan University and Ritsumeikan Asia Pacific University. The objectives of these MoUs are promoting, strengthening and maintaining scientific and academic co-operation, exchange of faculty, students, and staff for the purposes of engineering research, and educational programs, sharing scientific instrumentation of common interest.

Kanpur International Academic Programme (KIAP) has been initiated by the Institute. KIAP is meant to exchange students between the Institute and universities abroad while bringing in an international flavor to faculty-driven research. Several universities have been invited to join the programme.

FINANCIAL RESOURCE MOBILIZATION

The Institute has had a satisfactory financial year during 2007-08. The total Grant-in-aid received during the financial year from MHRD, Govt. of India, under Non-Plan was Rs 74 crore and Rs 52 crore under Plan.

The last financial year has also been very successful for the fund raising activity at IIT Kanpur. The total amount of donations the Institute received was Rs 5.96 crore from 1017 donors as compared to Rs 5.40 crore contributed by 623 donors in previous financial year. Many new Faculty chairs have been created for outstanding faculty members of the Institute by our alumni. Two chairs in the names of Professor N.C. Nigam and Professor C.V. Seshadri have been set up by their family, friends and admirers. Several new scholarships and awards have been instituted for students during the year. At present, the Institute has 33 faculty chairs. Priority is now to raise Research Fellowships for outstanding young faculty members with a view to make IITK more attractive to the new faculty.

Under *Annual Gift Program (AGP)*, the response was tremendous. The Institute has received donations of Rs. 56 lakhs contributed by 647 donors during 2007-08. Donations

received under AGP have been utilized for supporting excellence in the Institute such as providing travel support to the students and faculty members for attending international conferences, cash award to students for publication of their research papers in reputed journals, travel support to international visiting faculty, filing of patents and for Summer Undergraduate Research Grant for Excellence Program (SURGE).

Partial travel support to 58 students amounting to Rs. 19 lakhs was given to participate in International Conferences overseas. 171 students were awarded the cash award amounting to Rs. 19 lakhs for publishing their research papers in reputed Journals. Faculty members and international visitors were provided travel support to attend conferences and visit the Institute.

SURGE Program was started in Summer 2006 to encourage undergraduate student research. SURGE'07 concluded very successfully. Ecole Centrale, Paris had joined the Program in SURGE'07 and, Ecole Polytechnique, France has signed an MoU to join this Program. The Institute is planning to expand the program in future to add a few more interested prestigious Institutions.

The Institute has now been successful in obtaining a Notification u/s 35(i) of the Income Tax Act from the Central Board of Direct Taxes, Ministry of Finance, Government of India. Under this section, a person/organization who donates for scientific research to be conducted by the Institute faculty and its students is eligible for 125% tax exemption on the donated amount.

A project called *Opportunity College* was started from the financial year 2006-07. Under this program, unemployed youth in and around the campus are trained to help improve their employability. Three batches (each of 3 months duration) were conducted so far under this program, where about 100 students have been trained. In addition, one batch consisting of the Institute project employees was trained in English language skills. The faculty, students and staff of the Institute have extended their support to run the activities. The total expenditure during the year was Rs. 4 lakh and this was met from the donations received from the alumni and well wishers of the Institute.

Recently, the Institute has created a fund called *Contract Workers' Welfare and Relief Fund* at the Dean of Resource Planning and Generation office. The Fund was created with an initial seed money of Rs. 10 lakhs provided by the Institute

from its Non-plan budget. A sum of Rs. 0.6 lakh has so far been received as donation under the *Contract Workers' Welfare and Relief Fund*. The fund aims to provide support for welfare of the contract labor working for the construction projects in the Institute.

STUDENTS ACTIVITIES

IIT Kanpur continually strives to encourage an equitable balance between academics and extra-curricular activities among its students. Our vision is to create future leaders in their chosen fields and not just technically accomplished individuals. The Institute strongly believes that an abiding social and humane engagement is the hallmark of its students. To translate such belief into reality, the Institute nurtures various social, cultural and sporting activities pursued by the students' gymkhana and other student groups.

A variety of activities are pursued by various clubs coming under the broad ambit of the councils of the gymkhana. They range from clubs like **Prayas**, where students teach children coming from socially disadvantaged and economically deprived backgrounds to the Dramatics club which stages thematically inspired and socially relevant plays. Other technically oriented student groups are engaged throughout

the year in pursuing special interests like robotics, electronic aids, animation, aero-modeling and astronomy to name but a few.

The overriding objective of the large-scale events of IITK such as **Antaragni, Techkriti, Josh, Udghosh, Megabucks** and **Umang** is to infuse a sense of richness and purpose in the lives of students. Antaragni is the Cultural festival. Techkriti is the science and technology festival. Josh and Udgosh are the sports festivals. Megabuck is a festival to promote the spirit of innovation and incubation.

The name of the Film Council was recently changed to **Films and Media Council (FMC)**. Meander - students' magazine, Vox Populi – students' newspaper and Photography club were added to FMC.

These social, cultural and sporting activities play a crucial role in the transformation of a student into a complete person. These festivals have seen vastly improved participation levels, both from within the Institute and also from students from other national and international institutions. The revenues generated for conducting these festivals saw an impressive growth last year which is a tribute to the managerial and logistic skills of our students. A new event called **Alfaaz**

which began as an event of the Students' book club attained the status of a festival with improved participation from within the campus and also from outside. This event focuses on a variety of literary activities and fills in a long felt need of that section of the campus community with a literary sensibility.

IIT Kanpur came up with a creditable show in the inter IIT sports meet held at IIT Bombay. The team finished fourth in the General championship for Men and Second for Women. There were a number of podium performances both in the team and individual events. To strengthen the sports culture, an inter-hall games event called **JOSH** was also organized which witnessed mass participation from the students. **UDGHOSH**, which acts as a match practice for the Inter IIT Sports Meet, also saw an increased participation both in terms of quality as well as quantity.

Adventure Club as its name depicts is the most vibrant club of the Institute. Year 2007-2008 was a year of new accomplishments in the field of adventure for IIT Kanpur, with an unprecedented participation of 55 students in various activities like trekking, rock Climbing and High Altitude Mountain Cycling. For the first time, a basic course in **skiing** was also organized for the new students. The Sports Council has come out with a new initiative of having a **Skating Club**.

The aim of the club is to have regular skating sessions, participating in national skating competitions, encouraging skate hockey as a regular sport, and creating a skating rink on the campus.

Techkriti 2008 was a huge success in every sense of the word. It witnessed an audience of over 2000 external students during the festival itself and another 10000 more who participated through online contests. There were several new initiatives which included lectures delivered by international figures including a number of Nobel laureates.

The **Nature Club** organized several Bird Watching expeditions, and to the surprise of many found out rare species of birds on our own Campus. The club also organized tree-labeling Campaigns and started a new activity, called Insect Study, which has now many enthusiastic participants.

The Institute has formed a club for Journalism. The student magazine **Meander** now contains both Hindi and English sections. Campus reportage is covered by both **Spark** and **Eyes** newsletter and the students contribute significantly to these. The newsletter called **Vox Populi** continues to voice the concerns of the student community and encourages

discussion and debate on several issues of interest to the student community. The **GLDC** – Gymkhana Lecture and Discussion Club, organized lectures by diverse and eminent personalities from various spheres of life, including one from Mr. R.K. Mishra, the winner of the Lead India Contest organized by the Times of India.

Students' Counseling Service is the most active wing of the students. The activities of this Service include organizing the orientation programs for UG as well as PG students; providing specific attention to students having academic, financial or personal problems; following up on the progress of students who need special attention. Overall, the student counseling service, both at the UG and PG levels, enjoys wide appreciation from faculty and students.

A very novel feature has been the opening of Yoga and Naturopathy Center at IIT Kanpur, where the emphasis is totally on de-stressing the campus community in general and the students in particular. Several workshops and conferences have also been organized where professional counselors were invited to create awareness about stress management. Regular camps are being organized through the **Art of Living** and **Jeevan Vidya**. These activities not only help in de-

stressing the students, but also inculcate in them certain values, which are necessary to make an individual into a good human being and a thinking citizen.

The placement scenario this year has registered a positive upswing with almost 90 percent of registered students receiving job offers through the student placement office. About 700 public and private organizations were invited to interview the students. The response from various national and international business majors is encouraging. Many companies of repute have also registered for the on-campus recruitment program for the first time. With an improved facilitation and response system in place, it is hoped that IIT Kanpur will see even better placement levels in the coming years.

The Institute is fully geared to meet the infrastructural requirements for the year 2008-09 that an enhancement in student strength is likely to create. As of now, there are 10 halls of residence, eight for boys and two for girls. The total capacity of these halls is close to four thousand. However in view of the subsequent enhancement in the next two years, IIT Kanpur shall require at least three more halls of residence.

CLOSING REMARKS

Dear graduates, on this occasion of the fortieth convocation, I congratulate each one of you on your achievement. From today, you are on your own. As individuals you will choose the profession that excites you, that generates intellectual passion within yourself, and engages your mind in the best possible way. I fervently hope that you would be successful in your endeavors. Today, you will be going out of the protected environment of the Institute to find your place in the larger order of the society, which involves evaluating the needs of others and responding to the call for action.

Your talents would be reflected in your innovative application of science and technology. Your authentic utilization of knowledge in service to the community will benefit not only our country, but will leave a civilizational impact.

Graduates, you have the responsibility of changing this world into a better place to live in. You are supremely qualified to bring about this transformation given your training, passion, knowledge, and determination. Innovate, create and forge ahead. As leaders, you should continually strive to usher in a revolution of quality in both professional and social domains.

Always look for ways and means to help your countrymen. Discover your own *mantra* to create wealth for the benefit of the human society. With your personal standards of excellence, you are ready to evolve just policies that would leave no community or race behind. Simply put, if you cannot break the chain of poverty nobody else will be able to!

Dear Graduate of 2008, I admire you for your fine accomplishments during your stay at IIT Kanpur. My sincere, good wishes for the work you aspire to do in the future. I earnestly believe that it is you who will light the lamp for the new world that will be thoughtful, just, and caring.

Jai Hind.

AWARDS AND HONORS

Fellowship

1. Dr. J K Bera, Assistant Professor in the Department of Chemistry, has been awarded the prestigious Ramanna Fellowship of the DST.
2. Dr. Vijendra K Yadav, Professor in the Department of Chemistry, has been awarded the prestigious Ramanna Fellowship of the DST.
3. Dr. Manindra Agrawal, Professor in the Department of Computer Science and Engineering, has been elected Fellow of two academies: the Indian National Science Academy and the National Academy of Sciences.
4. Drs. V. Eswaran and P. Munshi, Professors in the Department of Mechanical Engineering, have been elected Fellows of Indian National Academy of Engineering.
5. Dr. Sudipta Dutta, Assistant Professor in the Department of Mathematics and Statistics, has been awarded the Indo US Science and Technology Forum Fellowship for the year 2008. The Fellowship award is jointly given by the Science and Engineering Research Council (SERC) of the Department of Science and Technology and Indo-US Science & Technology Forum.
6. Dr. Raghunandan Sengupta, Assistant Professor in the Department of Industrial and Management Engineering,

has been awarded the Indo US Science and Technology Forum Fellowship for the year 2008.

7. Professor R. N. Mukherjee of Chemistry Department has been awarded the J. C. Bose National Fellowship by the Department of Science and Technology. Prof. Mukherjee has also been appointed on the advisory board of Dalton Transactions, the premier journal in Inorganic Chemistry, published by the Royal Society.
8. Drs. V. Chandrasekhar and R. N. Mukherjee, Professors in the Department of Chemistry, have been elected Fellows of the Indian National Science Academy (INSA).
9. Dr. Chandrasekhar has also been elected Fellow of the National Academy of Sciences, India.
10. Dr. Gautam Biswas, Professor in the Department of Mechanical Engineering, has been elected Fellow of the National Academy of Sciences, India.

Awards and Medals

1. Dr. Avinash Kumar Agrawal, Associate Professor in the Department of Mechanical Engineering, has been awarded the INSA Medal for Young Scientist 2007.
2. Dr. S A Ramakrishna, Assistant Professor in the Department of Physics, has been awarded the INSA Medal for Young Scientist 2007.

3. Dr. F. A. Khan, Professor in the Department of Chemistry, has been chosen for the award of CRSI (Chemical Research Society of India) Bronze Medal this year.
4. Dr. Brahma Deo, Professor in the Department of Materials and Metallurgical Engineering, has been conferred the *Distinguished Alumnus Award* by the Department of Metallurgical Engineering, Institute of Technology, Banaras Hindu University, Varanasi.
5. Dr. Phalguni Gupta, Professor in the Department of Computer Science and Engineering, has been chosen for the IBM 2007 Faculty Award.
6. Dr. Sameer Khandekar, Assistant Professor in the Department of Mechanical Engineering, has been awarded the George Grover Gold Medal (Young Scientist Award) by the International Heat Pipe Committee for his outstanding contribution to the development of science and technology of heat pipes.
7. Drs. Animangsu Ghatak, Yogesh M. Joshi and V. Shankar, Assistant Professors in the Department of Chemical Engineering, have been conferred the *Diamond Jubilee Young Achiever's Awards* of the Indian Institute of Chemical Engineers.
8. Dr. T. K. Chandrashekhar, Professor in the Department of Chemistry, has been chosen for the award of the CRSI

(Chemical Research Society of India) Silver Medal in recognition of his outstanding contributions.

9. Dr. J. Ramkumar, Assistant Professor in the Department of Mechanical Engineering, has been chosen for the *Young Scientist Award (2007-08) - Engineering Sciences* by the Indian Science Congress Association.
10. Professor Y.N. Mohapatra of Department of Physics and Materials Science Program has been awarded the *MRSI Medal* by the Materials Research Society of India.
11. Prof. Vinod K. Singh in the Department of Chemistry has been awarded the Vigyan Ratna Award of UP State.
12. Prof. Vinod K. Singh in the Department of Chemistry has been awarded the BHAGYATARA AWARD of the Panjab University.
13. Dr. Satyajit Banerjee, Associate Professor in the Department of Physics, has been awarded the Young Achiever Award by the Department of Atomic energy (DAE) Solid State Physics Symposium.
14. Dr. Bikramjit Basu, Associate Professor in the Department of Materials and Metallurgical Engineering, has been awarded the International Coble Award of the American Ceramic Society.
15. Dr. Gautam Biswas, Professor in the Department of Mechanical Engineering, has been elected to represent India in the International Union of Theoretical and Applied

Mechanics (IUTAM) for four years with effect from January 2008.

16. Dr. Gautam Biswas became the President of the Indian Society for Theoretical and Applied Mechanics (ISTAM) for the year 2008.
17. Dr. Anil Kumar Ghosh, Assistant Professor in the Department of Mathematics and Statistics, has been elected an Associate of the Indian Academy of Sciences.
18. Dr. Amalendu Chandra, Professor in the Department of Chemistry, has been awarded the prestigious Shanti Swarup Bhatnagar Award for the year 2007.
19. Dr. Kripa Shanker, Professor in the Department of Industrial and Management Engineering, has been elected a Country Member on the Board of the Asia Pacific Industrial Engineering and Management Systems (APIEMS) Society for the year 2007-2008.
20. Professor Kripa Shanker in the Department of Industrial and Management Engineering has received the *Distinguished Alumnus Award* from the Department of Mechanical Engineering, Banaras Hindu University, Varanasi.
21. Dr. Avinash Kumar Agrawal, Associate Professor in the Department of Mechanical Engineering, has also been awarded the *Alkyl Amines-UICT Foundation Day Young Scientist Award*, 2007.

22. Dr. Avinash Kumar Agarwal, Associate Professor in the Department of Mechanical Engineering, has been awarded the Ralph R. Teetor Educational Award – 2008 by the Society of Automotive Engineers International (SAE International), USA.
23. Professor Sanjay Mittal in the Department of Aerospace Engineering has been chosen the Scopus Young Scientist in Engineering for year 2007.
24. Professor R. R. K. Sharma, Department Industrial and Management Engineering, has been elected the Member of:
- a. The Board of Governors - STEP, HBTI, Kanpur, 2007 onwards;
 - b. The Board of Governors, International Academy of Business and Economics, USA, 2008;
 - c. The Board of Governors, Society of Management Science, IIM Ahmedabad, India, 2008.
25. Professor J.P. Gupta in the Department of Chemical Engineering has been given the IPCL Award for Safety and Hazard Management in Petrochemical Industry by the Indian Institute of Chemical Engineers in its Diamond Jubilee Conference, Kolkata, December 2007.
26. Dr. Kalyanmoy Deb in the Department of Mechanical Engineering has received the MCDM Pareto-Edgeworth

Award from International Society on Multiple Criterion Decision Making (MCDM) in January 2008.

27. Dr. Kalyanmoy Deb has been awarded the Finland Distinguished Professor (FiDiPro) by the Academy of Finland since June 2007 for two years.
28. Dr. Tapobrata Sarkar, Assistant Professor in the Department of Physics, has been awarded the IRCC Research and Industrial Consultancy Research Paper Award for 2006.
29. Dr. Ashok K. Mittal received the Amity Best Global HR Faculty Award.
30. Dr. F. A. Khan, Professor in the Department of Chemistry, has been awarded AVRA Young Scientist Award – A. V. Rama Rao Foundation.

BOOKS PUBLISHED

1. *Statistics for Social Sciences*, Dr. Braj Bhusan, Assistant Professor in the Department of Humanities and Social Sciences, Prentice-Hall of India Pvt. Ltd., New Delhi.
2. *Postmodern Identity*, Dr. T. Ravichandran, Assistant Professor in the Department of Humanities and Social Sciences, RBSA publishers, Jaipur.
3. *Materials Requirements Planning System: Heuristics for Improved Performance*, Dr. R R K Sharma, Professor in the

Department of Industrial and Management engineering
Vitasta Publishing Pvt. Ltd., New Delhi.

4. *Productivity, Cost Structure, and Pricing in Urban Bus Transport*, Dr. Sanjay Kumar Singh, Assistant Professor in the Department of Humanities and Social Sciences, the Amani International Publishers, Germany.
5. *Cell Separation: Fundamentals, Analytical and Preparative Methods*, by Dr. Ashok Kumar, Associate Professor in the Department of Biological Sciences and Bioengineering, Springer.
6. The following 5 new books of Dr. R. Balasubramaniam, Professor in the Department of Materials and Metallurgical Engineering have been published:
 - i) *Callisters Materials Science and Engineering*, Wiley India Private Limited, New Delhi.
 - ii) *Prachin Bharatiya Datturshastriye Ashchharya Dilli Loha Stabmha*, co-authored with Pravin P. Deshpandey, Sushama Prakashan, Pune.
 - iii) *Professor T. R. Anantharaman: An Inspiring and Dedicated Educator*, co-authored with Anish Upadhyaya, Bikramjit Basu (Both his colleagues in the Department) and Deepika Sachdeva, Aryan Books International, New Delhi.
 - iv) *Marvels of Indian Iron Through Ages*, Rupa and Co., New Delhi.

- v) *The Saga of Indian Cannons*, Aryan Books International, New Delhi.
7. *Antennas and Wave Propagation*, Professors A. R. Harish and M Sachidananda, both from the Department of Electrical Engineering, Oxford University Press, 2008.
8. *Iron Making and Steel Making-Theory and Practice*, Professor Ahindra Ghosh, Department of Materials and Metallurgical Engineering, and Dr. Amit Chatterjee of TATA Steel, Prentice Hall of India.
9. *Flow through open channels*, Prof. Rajesh Srivastva Department of Civil Engg., Oxford Press (higher education)
10. *Linear Models and Generalizations* (third edition), C.R. Rao, H. Toutenburg, Shalabh, Assistant Professor in the Department of Mathematics and Statistics, and C. Heumann, Springer
11. *Multiobjective Problem Solving from Nature: From Concepts to Applications* J. Knowles, D. Corne and Kalyanmoy Deb in the Department of Mechanical Engineering, Berlin: Springer. (2008)
12. *Fundamentals of Combustion*, Dr. D. P. Mishra, Associate Professor in the Department of Aerospace Engineering, Prentice Hall of India, New Delhi.
13. *Semiconductor Devices and Circuits*, Professor Aloke Dutta, Department of Electrical Engineering, the Oxford University Press, 2008.

14. *Java for Scientists and Engineers*, Professor Sanjeev Saxena of the Department of Computer Science and Engineering, Anamaya Publishers, New Delhi.
15. *CI Engine Performance for use with Alternative Fuels*, Avinash Kumar Agrawal, Associate Professor in the Department of Mechanical Engineering, G. J. Thompson, Scott A. Miers, Sundar R. Krishnan SAE International, USA, April 2008, (Eds.) (ISBN Number: 978-0-7680-2018-2).
16. *Alternative Fuels and CI Engine Performance*, Dr. Avinash K. Agarwal, G. J. Thompson, SAE International, USA, April 2007, (Eds.) (ISBN # 978-0-7680-1857-8).
17. *Digital Communications and Signal Processing*, Dr. K. Vasudevan, Associate Professor in the Dept. of Electrical Engineering. Universities Press, India.
18. *Indian Infrastructure Report – Rural Infrastructure (3i Network)*, Dr. P. K. Kalra, Oxford University Press, 2008 New Delhi.
19. Dr. S. C. Srivastava: Edited the following Books published by Narosa Publishing House, New Delhi, under *Narosa Series on Power and Energy*.
 - a. *Small Signal Analysis of Isolated Hybrid Power Systems: Reactive Power and Frequency Control Analysis* by R.C. Bansal and T.S. Bhatti, 2008.
 - b. *Electrical Engineering Materials* by Bhadra Prasad Pokhrel and Nava Raj Karki, 2007.

- c. Power Electronics Laboratory: Theory, Practice and Organization by O.P. Arora, 2007.
20. G.S. Upadhyaya and A. Upadhyaya Materials Engineering- An Introduction (overseas edition), Anashan Pub. UK (Hardbound). ISBN-10:1 905740 51 4) April 2007.
21. *Bulk nanoceramics and ceramic nanocomposites for structural applications*, Amartya Mukhopadhyay and Bikramjit Basu; as a book chapter in Handbook of Nanoceramics and Their Based Nanodevices; Ed.: T. Y. Tseng and H. S. Nalwa; American Scientific Publishers, California 91381-1439, USA
22. *Czochralski Growth of Oxide Crystals: Numerical Simulation and Experiments*, Jyotirmay Banerjee and K. Muralidhar, Techscience Press, Georgia (USA).
23. Engine Emissions: Pollutant Formation and Advances in Control Technology, Dr B. P. Pundir, Narosa Publishing House, New Delhi.
24. *Stability Problems in Applied Mechanics*, Dr. G. Obinata, A. Dutta, N.Watanabe and N. Moriyama, A.K. Mallik and Dr J.K. Bhattacharjee, Narosa Publishers, New Delhi.
25. *Fundamentals of Design and Manufacturing*, Dr(s) G.K. Lal, Vijay Gupta and N.V. Reddy, Narosa Publishers, New Delhi.

26. *Fundamentals of Manufacturing Processes*, Dr(s). G.K. Lal and S.K. Choudhury, Narosa Publishers, New Delhi and Alpha Science, London.
27. *Language Label Learning for Visual Concepts Discovered from Video Sequences In Attention in Cognitive Systems: Theories and Systems from an Interdisciplinary Viewpoint*, Prithwijit Guha, Amitabha Mukerjee, Springer LNCS v. 4840/2007.
28. Occlusion Sequence Mining for Activity Discovery from Surveillance Videos in Pattern Recognition Technologies and Applications: Recent Advances, Prithwijit Guha, Amitabha Mukerjee, and K.S. Venkatesh, ed. Brijesh Verma and Michael Blumenstein, Information Science Reference Publishers, Australia (ISBN: 978-1-59904-807-9).

Video Books:

1. Digital Image Processing, Sumana Gupta, the NPTEL program in October 2007.
2. Water and Waste Water Engineering, Prof. P Bose.
3. Advanced Transportation Engineering, Profs. P Chakraborty and A Das.
4. Modern Surveying Techniques, Prof. Onkar Dikshit.
5. Compiler Design, Prof. Sanjeev Agarwal.

6. Numerical Analysis in Computer Programming, Profs. Rathish Kumar, V Raghvendra, and MK Kadalbajoo.
7. Mathematics-2, Profs. A K Lal, V Raghvendra, Peeyush Chandra, and G Santhanam.
8. Power System Analysis, Prof. Arindam Ghosh.
9. High Voltage Engineering, Prof. R Arora.
10. Digital Signal Processing, Prof. G Sharma.
11. High Speed & Circuits Devices, Prof. Anjan Ghosh.
12. Microcontrollers and Applications, Prof. S P Das.
13. Fluid Mechanics, Prof. Gauatm Biswas.
14. Finite Element Methods, Prof. P M Dixit.



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