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FITT FORUM

A Newsletter of Foundation For Innovation and Technology Transfer, **Indian Institute of Technology, Delhi**

Convocation IITD 2003

In the Convocation 2003, the Chief Guest, Hon'ble Vice President Shri Bhairon Singh Shekhawat, the Chairman Prof. M.G..K. Menon (L), and the Director Prof. R.S. Sirohi (R)

The 34th Annual Convocation of IIT Delhi was held on 9th August 2003, in the Dogra Hall of the Institute in the presence of a distinguished gathering. The chief guest of this event was **Shri Bhairon Singh Shekhawat**, Hon'ble Vice-President of India. The convocation was inaugurated by **Prof. M.G.K. Menon**, Chairman, Board of Governors, IIT Delhi.

Prof. R.S.Sirohi, Director IIT Delhi said in his introductory speech that IIT Delhi was established as an Institution of National Importance under the 'Institutes of Technology (Amendment) Act, 1963' with powers to decide its own academic policy, conduct its own examinations and to award its own degrees. Over the years, IIT Delhi has created a commendable infrastructure due to the very generous support of the Government of India and, recently, through the support of Industry and IITD alumni. The Institute offers four fully Industry supported M.Tech. programmes and already a number of Professional Chairs are functioning to attract renowned academicians.

The Institute has been actively involved in collaborative programmes with national and international organizations/universities to remain at the forefront in scientific and technological development by mutual sharing of knowledge. Major research activities have been undertaken in the areas of national importance including Atmospheric Sciences, Embedded Systems, Fiber Optics, Optical Communications, Biotechnology, Biocatalysis, Photo-thermal Energy Conver-

Contd. on page 22

From the Desk of the Managing Director

This issue of FITT Forum contains a variety of news and views on FITT and IIT Delhi, and exemplifies the transformation of the Institute into a Technology Enterprise, where, in parallel with the excellent education and training of students and researchers, an entrepreneurial bandwagon appears to be forging ahead. The start-up companies incubating in the Institute TBIU programme are showing definite signs of standing on their own feet. Quite a number of IIT Delhi alumni have been in the media headlines, and there has been a significant upsurge in IPR and Technology Transfer activities. We have a new Chairman of Board of Governors in Professor M.G.K. Menon, and with Prof R.S. Sirohi at the helm as Director, the Institute is clearly on a path to great heights.

Dr. A.K. Sengupta, MD, FITT

New Chairman BOG IIT Delhi

***Prof. M.G.K. Menon**, the distinguished Scientist & Administrator has taken over as the new Chairman of B.O.G., IIT Delhi w.e.f. June 28, 2003.*

Highlights of the Issue

INRM Consultants Pvt. Ltd.

INRM Consultants Pvt. Ltd. is a startup company incorporated by faculty and alumnus of IIT Delhi, under the Technology Business Incubation plan of IIT Delhi. Founded in 2001, the R&D division of the company is located in the TBIU Complex of IIT Delhi. Some of the salient activities of INRM over the recent past in the area of IT for natural resources planning & management include:

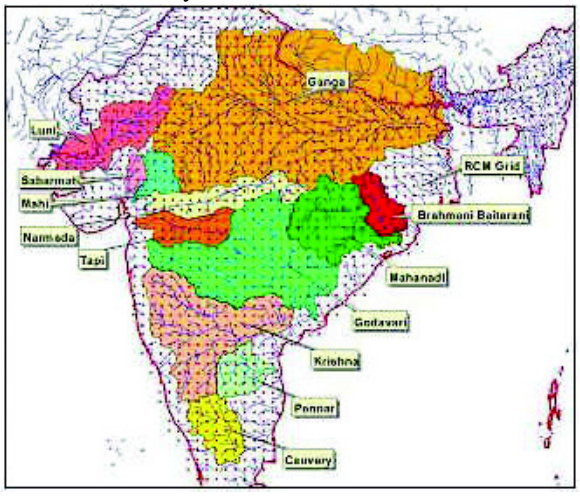
Popularising GIS:. The purpose is to make available a cost effective tool for general users with the basic GIS functionalities like viewing, single layer analysis, multi layer analysis, external database connectivity, charting and reporting. This stand alone GIS Interface developed on Java is now ready for dissemination.

Similar technology is also available as Web based GIS Interface with Java, however the internet bases GIS tool needs customization to cater to varied clientele. One such customization has been demonstrated for IIT Delhi as Infrastructure Information System.

A sample screenshot of the web based GIS tool is depicted here.

Screenshot of Web Based GIS Tool for IIT Infrastructure Information System

IT framework for natural resources management: Countrywide framework for GIS based hydrological modelling of twelve river basins of the country was formulated to evaluate the impact of climate change on water resources. The following figure shows the river basins modelled and analysed..



The modelled river basins along with the RCM Climate Grid Locations

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"Business Incubators for SMEs"

Incubators as entities for accelerating the rate of new business formation leveraging on innovative technologies, products and services ……..

The Asian Productivity Organisation (APO), Japan hosted an international seminar on **"Business Incubators for SMEs"** during September 15 – September 19, 2003 at Taipei, Taiwan, Republic of China (ROC). The seminar aimed to address the issue of challenges and opportunities for SMEs in the competitive market of a liberalized economy and how incubators can play a catalytic role of accelerating the rate of new business formation by start-ups/existing businesses desiring to diversify. The seminar was organised under the aegis of of the China Productivity Council (ROC)

Shri K. K. Roy, Manager (Tech./Admn.), FITT was sponsored by APO to participate in the seminar which was attended by participants from Singapore, Korea, Thailand, Phillipines, Indonesia, Mongolia, Lao PDR, Nepal and Sri Lanka. The seminar methodology provided for sharing of experiences amongst participants through presentation of individual/country papers, group discussions and a series of lectures by resource persons from countries pursuing an economic revival/activation of the SMEs through the incubator mode.

Participants at the seminar on "Business Incubators for SMEs" (Shri K.K.Roy of FITT is seated at the extreme left)

The seminar dwelt on the strategic and economic role of incubators-especially the Technology Business Incubators, in fostering new business leveraging on innovative technologies/products/services to survive and grow in a competitive environment. Salient observations emanating from the seminar were the following:

--*Universities and Technical Institutions are the most significant entities in the incubator concepts.* They are possessed with the resources and potentialities to provide (at the least cost) technologies, knowledge and innovations for the incubator tenants in an effective and efficient delivery system.

--Countries like Taiwan, Japan, Korea, Singapore which have witnessed major economic upheavals during the past decade and could correct the economy by focusing on the SMEs and adopting appropriate policy instruments in invigorating SMEs on a growth path through establishing incubators, especially Technology Business Incubators.

--In Korea, 80% - 90% of the technical institutions have established Technology Business Incubators and have adopted an operational procedure for technology transfers, R&D on emerging technologies, teaming of faculty/students in setting-up new business and providing the technology/R&D support to the start-ups /SMEs in supporting the development of innovative/technology based products and services.

--In each of the countries mentioned earlier, (i) the Government played the major role in the economic exercise by pursuing appropriate policies for new business formation, (ii) the technical and academic institutions have reoriented their R&D activities on emerging technology areas and (iii) incubators with appropriate infrastructure, software, hardware have been set-up in close proximity to Universities/technical institutions. The perceived economic benefits have induced developing countries to focus on incubator programmes and strengthening this further through government initiatives, participation of academic/knowledge institutions and creating an environment for investment of private equity and venture fund.

--In the end, the Governments have been the largest beneficiary through national economic growth. Whereas the technical institutions benefit in effecting large number of technology transfers and Intellectual Property generation, the start-ups and SMEs benefit by the assistance received in coping with the initial teething problems of marshalling essential business inputs to better the chance of success in the business venture.

The Resource Speakers included, amongst others, (i) *Dr. Robert S.Q. Lai*, Director General, Small and Medium Industries, Ministry of Economic Affairs, Republic of China; (ii) *Dr. Hong Kim*, Vice President, Association of Asian Business Incubators (AABI) and President, Korean Business Incubation Association; (iii) *Prof. Benjamin Yuan,* Founder President of Chinese Business Incubators Association and (iv) *Mr. C.J. Chang*, Vice President, Industrial Technology Investment Company, ROC.

Shri K K Roy also visited (i) **Industrial Technology Research Incubator (ITRI) and (ii) National Taiwan University Innovation Incubation Center (NTUII).** Whereas ITRI is a research institute founded by the ROC Govt. for spearheading new industries and strengthening existing industries through technology infusion, NTUII is the classical incubator integrated with the National Taiwan University. ITRI's major contribution had been to Taiwan's Semiconductor Industry.

The Technology areas in which these Incubators are involved include (i) Communication and Opto-Electronics (including Mobile communication, Broadband internet, Wireless Communication, IC Design, Intelligent Information etc.); (ii) Nanotechnology (Nanomaterial, Nanoelectronics, Bio and Nanobiotechnology, (iii) Precision Machinery and MEMS and (iv) Biotechnology.

Besides making the country paper presentation for India, Shri Roy chaired a technical session and led the group dynamics on relevant issues of Technology Business Incubator, including the summarization and presentation before the expert panel. Reiterating the inherent strength in the human capital (knowledge rich but low cost) in India as the key input to technology based venture, Shri Roy highlighted India as a strong contender in Asia and across continents for BPO and technology-led ventures.

VirtualWire Technologies

VirtualWire Technologies is a wireless and communications technology company. It was set up by a team of two faculty members and three alumni from the Department of Electrical Engineering at IIT Delhi. The company is being incubated at the Technology Business Incubation Unit, IIT Delhi. Access to the excellent library and laboratory facilities at IIT Delhi as well as proximity to the academia, gives us a unique edge, in ensuring a continuous flow of energies and ideas directed towards the creation of better technologies. Our work culture revolves around research and innovation.

Core Team: The core team of the company consists of two faculty members- **Prof. Surendra Prasad** (PhD. IIT Delhi), **Dr. Ranjan Bose** (PhD. University of Pennsylvania, Philadelphia) and three alumni of the Electrical Engineering Department at the Indian Institute of Technology, Delhi- **Akshay Sharma** (B.Tech), **Vaibhav Mittal** (B. Tech), **Vishal Chandra** (B. Tech.).The team's strength is the years of experience of the faculty members and the strong skills of the others.

Areas of Expertise: Signal Processing & Analysis, DSP Implementation, Wireless Communication, Cryptology

Areas of interest: Simulation and testing of communication systems, Signal Processing and DSP Algorithm Design, Wireless standards like Bluetooth, IEEE 802.11, 802.15, 802.16 802.20 etc., Upcoming wireless technologies for next generation systems (4G)- UWB,W-OFDM, W-CDMA etc. and Space-Time processing & coding, SDMA and MIMO systems, Cryptanalysis and Cryptosystem Design for Secure Communications, Complete hardware implementations of Wireless and Communication, modules in PCB/FPGA/ ASIC, Antenna Design, and related areas.

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KritiKal Solutions

KritiKal Solutions, one of the first student-faculty led startups formed out of IIT Delhi, turned a year on 5th August, 2003. Today, KritiKal is self-sufficient and generating its own revenue for developing in-house technologies and products, through a few solution development projects for clients. After successfully completing projects for Xerox ModiCorp India and IIT Delhi, KritiKal has in the last few months started working on three new projects encompassing Embedded Systems, Computer Vision and Networking technologies. Among the projects are development of a portable metering and billing device, with network connectivity and security projects from DIT for a Vehicle Authentication System and Vehicle Underside Scanner. The expected revenue from these projects is about one crore over the next year.

...Contd. on page 4

TECHNOLOGY BUSINESS INCUBATION UNIT (TBIU) NEWS

Science-Academia-Industry Ties

The excitement is palpable as the decibel level rises in a crowded conference room in a corner of **IIT Delhi**. Twelve people- five professors and seven recent graduates of the department of computer sciences- bubble with ideas that are debated heatedly. It is no academic session though. Khadi kurtas may still dominate university fashion, but the mild, bespectacled absent-minded professor follows esoteric ideas could soon be an endangered species. Indian scientists are scrambling out of their ivory towers in pursuit of commercial interests and, they are encouraged by both their organizations and the government to do so. The process is transforming the country's scientific landscape. The aim is to make Indian science- which has a total research and development budget of more than Rs.14,000 crore in 2003- directly relevant to society. Pioneered by the Council of Scientific and Industrial Research (CSIR), the Bangalore- based Indian Institute of Science (IISC) and the Indian Institutes of Technology (IITs), it is a trend that is spreading even to Delhi's avowedly socialist Jawaharlal Nehru University. A Centre for Studies in Science Policy, JNU, calculation says 50 of India's 250-odd universities are active in academia-business liaisions. The interaction between academia and business can take many forms- new start-up companies by academics, consultancies, joint ventures between commercial and academic organizations, and even "blue-skies" projects that entail industry sponsorship of research in an area where the outcome is not clear.

It is the spirit which inspired seven graduates and five professors at the computer sciences department in IIT Delhi to launch **Kritikal Solutions Private Limited** a year ago with an initial seed funding of Rs.10 lakh. Their projects range from security solutions to sensor networks, many of them extension of graduate theses. One project, looking at more effective, computerized screening of automobiles, could go a long way in preventing another attack like those in Mumbai recently.

Institutional collaborations with industries are common. The IIT Delhi campus hosts labs for, among others, IBM, Tata Infotech, Motorola. This is not a metro phenomenon. In rural Punjab, scientists from the Amritsar-based Guru Nanak University (GNU) provide quality control consultancy to textile and agro based units. Among GNU's color laborators is food giant Nestle.

IIT Delhi's **Foundation For Innovation and Technology Transfer** (**FITT**), was set up in 1992. It was the first such wing at any IIT. Seen as a prototype by other universities, it provides seed money and infrastructure support to start-up to a year. "Our role", explains Dr.A.K.Sengupta, Managing Director, **FITT**, "ranges from helping faculty with technology transfer agreements to advice on patents to even helping launch start-up companies, four so far".

CSIR's record is a classical example of how the industry-academia partnership has made India a force to reckon with in the global arena. In 2002, the World Intellectual Property Organisation received an equal number of patent applications- 184-from CSIR and Korean giant Samsung, the highest from a single institution in a developing country. But while CSIR's total annual budget is $180 million (Rs.904 crore), Samsung's R&D budget is above $600 million.

Industry has grown more globally ambitious after liberalization. Scientific research had abundant manpower but limited resources. Dr.R.A.Mashelkar, DG CSIR has stated, "India's total R&D budget is less than $3 billion. In the US, one company, General Motors, alone has an R&D budget of $10 billion". The marriage was a commonsense product. "There was movement from both sides", says Ashok Parthasarathy, chairman, Centre for Studies in Science Policy. Academic institutes have reaped tangible benefits. **FITT**, IIT Delhi's business arm, earned Rs.5 lakh from project contracts in 1993-94. In 2001-02, it earned Rs.4.8 crore, a 100-fold increase.

Some see this process as a brain drain antidote. But it is not always smooth sailing. The question of who owns the intellectual property rights can get sticky. Industry tends to see academia as unstructured in business approach. There is also a danger that short-term gains will hurt the core agenda-long term academic pursuits.

(Extracted from INDIA TODAY, September 22, 2003)

Stop Press !!

MOU signed between FITT and US based Venture Capital Management Company, BVG Advisors Pvt Ltd.

The MOU signed in September, 2003 envisages collaborative arrangements with US and India based portfolio companies of the VCC to leverage IIT Delhi technologies and expertise and to network with TBIU companies for equity investment and venture funding.

One More TBIU Resident Company Admitted

The Institute has approved the TBIU residency proposal for an R&D unit of an SME **M/s SofBlue India Pvt Ltd** to develop blue-tooth enabled energy meters. Prof. A.K.Mukherjee of CES is the IITD faculty member associated with this endeavor.

... KritiKal Solutions-TBIU *(Contd. from page 3)*

Among its in-house technologies and products, KritiKal is developing an **Intelligent Camera Surveillance System** for monitoring and securing controlled premises. Physically, the system consists of intelligent cameras networked together through wired or wireless connections and feeding information to a server at the controlling station. The features of the system include activity detection, alerts on PDA, cell-phone and e-mails, and multiple camera tracking of objects.After the first round of meetings with a number of venture capitalists and funding agencies, KritiKal has decided to concentrate its efforts on setting up an alpha site for the same.

With the influx of new projects, KritiKal has just completed a round of hiring and doubled its employee count and are still on the lookout to induct new talent in our team. A number of marketing consultants have also been hired on a part-time basis. They are also exploring the possibility of partnering with established players to commercialize our products and technologies.

For more information, please contact on the following address:

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Healthcare and Safety with Plastics

By Prof. A.K.Ghosh, IIT Delhi & Dr. R.S.Dhaliwal, Asst.Director General, ICMR, New Delhi

Plastics, since their discovery many years ago and their subsequent commercialization and public acceptance, now play a major role-although often an unnoticed part-in the lives of virtually everyone. Longer life expectancy derives not only from the remarkable pharmaceutical developments of the twentieth century, but also from the plastics based technology which make the life-saving and life-enhancing surgery possible. Even fundamental medical care involves plastics, namely blood bags, disposable syringes, hygienic medical instruments, safer spectales, contact lenses and gradual delivery of medicines via capsules and patches. All of these results in better and longer lives-a reality for both the rich and the poor in society, in both developed and developing nations.

The global market for medical devices in the year 2000 is estimated at $260 billion. Global demand for plastics in medical devices was approximately 10.2 million tons in 2002 with an annual growth rate of about 5 per cent. The Indian market expects to see a similar growth rate, which will increase as more players in the country get involved in the development and manufacture of medical devices, thereby resulting in significant business opportunities.

The benefits of plastics as medical products are as follows:
--Flexible, ductile, tough and light weight
--Low co-efficient of friction to withstand fluid flow pressures and facilitates flow
--Inert in contact with blood, tissues and other body fluids/matters
--Transparent-vital to monitor visually/electronically flow through the tube
--Low cost and recyclable

Applications:

A: As Implants

Delivery of Drugs: Many tablets are coated with thin plastic to increase its palatability and to prevent deactivation in the stomach for drugs intended to be released in the intestine for absorption. In the sustained release formulation, the active drug is bound to various plastics to increase the period of disintegration and release of the active drug at regular intervals thereby enhancing its effectiveness.

Jaipur Foot: The concept of extraordinary prosthesis-Jaipur Foot has become a household name and has brought smiles to thousands of those who suffer from amputation of limbs.

Plastic Sutures: Both non-biodegradable and biodegradable plastic sutures find use in specialized medical applications. Various polymeric materials like polyester and polypropylene have been used extensively in medical surgery. Recently biodegradable sutures made from PolyGlycolic Acid(PGA) have been successfully used in surgical sutures by surgeons.

Plastic Knee: Use of Plastics has been successfully made in specialized orthopedic application like artificial knee replacement.

Bone Cement and Dental Cement: These are used for anchoring artificial joints such as total hip prostheses in the medullar cavity. The most commonly used cement is an acrylic resin self-curing at room temperature.

B: As Medical Devices

Artificial Heart Devices: The plastic materials that have been used in artificial heart studies include poly vinyl chloride(PVC), silicone rubber(Silastic), polyurethane and polyolefin rubber.

Artificial Kidney: Artificial kidneys, often referred to as hemodialysis units, remove waste products from the blood with a plastic semi-permeable membrane. Commercial dialysis membranes are made of cellulose acetate, regenerated cellulose, polycarbonate, poly methyl methacrylate (PMMA), polyacrylonitrile, ethylene-vinyl acetate copolymer(EVA) and polysulfone. They are used in disposable forms, e.g., as hollow fibers or integrated plates. The other important plastic medical devices are Continuous Ambulatory Peritoneal Dialysis (CAPD) sets, oxygenators and in ophthalmic applications.

C: As Disposable Products

The use of plastics has reduced the cost of various devices to an extent that they can now be discarded after a single use. These devices include syringes, catheters, blood bags, cannulae, blood transfusion sets and filters, cannulae and surgical drapes. The disposable nature of these devices prevent their re-use, which helps in preventing various diseases like hepatitis, AIDS and other infections, which are transmitted by direct contact with body fluids.

Plastics for Safety

Plastics like PE, PP and PC are inert materials and hence can be used safely in direct contact with the skin of even an infant. Baby diapers have become popular worldwide and effective hygienic conditions are possible by the use of plastics.

Plastics help in establishing domestic safety by avoiding toy hazards arising out of sharp edges, pointed objects, splinters from wooden toys and injuries from impact.

Plastic feeding bottles made of polycarbonate or polypropylene have almost completely replaced glass bottles, later being unsafe because of the high risk of breakage resulting in injury to the infants and babies. Feeding nipples attached to these bottles are made from silicone rubber, again a plastic material. Plastics are the best insulating materials and thus promote electrical and thermal safety.

Medical Plastic Waste Management

The daily production of solid waste by rural hospitals in India range between 0.5 kg to 1.5 kg per bed and that of All India Institute of Medical Sciences is around 5 kg per bed. Presently, 30 to 50 per cent of these wastes are plastics wherein various methods of disposal are employed.

Dioxins

Much attention now-a-days is given to dioxins because of their apparent

...Contd. on page 6

toxicity. As dioxins can be formed in chemical process where chlorine is involved, there is absolutely no reason that Polyethylene or Polypropylene which only contain carbon and hydrogen (no chlorine at all) should emit dioxins on combustion.

D: Plastics Applications in Healthcare

HDPE Blood filters, catheter, reconstruction of joints, syringes, splints bone fracture treatment etc

LDPE Packaging films, wound covering films, urine bags, examination gloves, catheter tracheal prostheses.

PP Joint replacement prosthesis, membrane support suture, packaging foils, syringes.

PTFE Catheters & drainage tubes, coating for suture membrane for artificial lungs, cannulae, artificial bone/joints.

PVC Blood bags, blood tubing, surgical gloves, suction pipe, infu sion drip chamber,etc.

Polyamides Surgical instruments, suture material, artificial skin, splints, etc. *(Source: The Economic Times, May 19, 2003)*

Designing for Future

Rapid growth in VLSI technology cannot be utilized unless one has better tools

Market convergence of communication, computing and consumer markets along with multimedia is driving design convergence, and these changes are having a profound, long-term effect on the entire electronics industry in the country. India produces not only a large fraction of the world's computer engineers but has also made its mark in producing a large number of highly capable Very Large Scale Integration(VLSI) designers. So what is the future of VLSI technology in the country? **Prof. M.Balakrishnan**, Head, Department of Computer Science and Engineering, Indian Institute of Technology, Delhi who recently chaired a conference on *'Design Convergence in System-on-a Chip Design'* held in the Capital said: "Generally, design industry recruits people from electronics engineering background. However Electronic Design Automation or EDA is a mix of Computer Science and Electronics". It's here that there is a challenge to structure the course which integrates teaching of electronics with Computer Science. The EDA and VLSI industry actually requires a mix of both electronics and computer science. So, the need of the hour for universities offering computer science programmes is to introduce more courses in embedded systems design, which is not only a high growth area in near term but has huge long term potential as well, added Balakrishnan.

It's important that joint programmes are initiated which can only be achieved if the faculty of both departments can join hands and look for running a "single" programme which encompasses EDA and VLSI. "At least at the PG level, this is possible where faculty of both the departments can collaborate," remarked Balakrishnan. M Tech programme in VLSI Design, Tools and Technology at IITD is run jointly by Computer Science and Engineering, Electrical Engineering and Centre for Applied Research in Electronics. "But a lot needs to be done to meet the requirements of adequately trained manpower in this area," added Balakrishnan.

The real challenge is to find applications, which are important or perceived to be important to human beings. "There is a major growth in security and surveillance systems. Video cameras and GPS equipment on almost all-mobile platforms from trains to human being will become a feature in the foreseeable future," remarked Balakrishnan.

(Source: Times of India, 17 March 2003)

Better Test for Diabetes
Now IIT Delhi Develops Test to Help Control Diabetes

NEW DELHI: Diagnosis of diabetes may not remain limited to blood sugar testing. Researchers at the Indian Institute of Technology, New Delhi, have identified a test based on a product that gets formed in blood due to high levels of glucose. The test could give an indication of the sugar levels for about four months.

"A simple laboratory test that we are currently trying to develop would be only one-tenth of the present cost," says **Sneh Anand** professor of biomedical engineering at IIT.

"This could well provide an alternative method for monitoring blood sugar for people affected by diabetes both in the developed and developing countries," says **Anoop Misra**, professor of medicine at the All India Institute of Medical Sciences, who is also collaborating on this study. Dr. Misra is currently, visiting faculty to department of endocrinology at the University of Texas.

"This estimation will give an idea of three to four months' average level of blood glucose, precluding many blood glucose tests," explained **Nivedita Karmakar** senior scientific officer at IIT.

This should help control the complications of diabetes, says Misra. One of the methods currently available gives an indication only of about 15 days of blood sugar. Home blood sugar monitoring is the commonest method used so far.

Described in the international journal Diabetes, the test is being seen as a breakthrough in the management of diabetes. The test is based on identifying an end product of chemical reactions that take place in

... Contd. on page 9

Nine Indians Enter Elite US Academy

A record nine Indian scientists and engineers have been elected this year to the elite US National Academy of Science and Engineering in what appears to be a testimony to the increasing presence of Indian immigrants in American academia and industry.Typically, the annual list includes one or two Indians every second or third year. The 200-strong organizations have only about 30 or so Indians, including such luminaries as Nobel laureates **Hargobind Khurana** and **Subramanyam Chandrasekhar.**

But this year the list features a host of US-based Indian scientists, including Caltech astrophysicist **Shrinivas Kulkarni** (who incidentally is the brother-in-law of Infosys' N R Narayana Murthy) and **Dr.Praveen Chaudhury**, who was recently appointed to head the Brookhaven National Laboratory.

...Contd. on page 22

IITian Tops Civil Service Exam

It is tough to get through **Ankur Garg's (22)** telephone number. He is a celebrity tonight. The Indian Institute of Technology(IIT), Delhi, graduate has topped the civil service examination this year. A total of 1,57,486 candidates took the exam of whom 286 finally made it to the civil services-Indian Administrative Services(IAS), Indian Police Services(IPS) and Central Services Group A and B. Garg has made it to the IAS in his maiden attempt. A graduate in electrical engineering, he chose chemistry and physics as his optional subjects for the exam. Speaking from his hometown Patiala, Garg sounded ecstatic. "An engineer topping the civil services exam should serve as a fitting reply to those who think engineers should stay out of the Indian Administrative Services(IAS)," Garg said.

(Source: The Times of India, 2 May 2003)

IIT Grads Script Success Story at Home

After graduating from the Indian Institute of Technology, New Delhi, **Pradeep Gupta** had four career choices — a job with TIFR, another with TELCO, admission in MS (Computer Science) at a US University and admission in IIM-Calcutta. Each of those career paths would have led to a dramatically different life, but Gupta chose IIM-Calcutta, joined HCL and three years later, in 1980, launched Cyber Media (India) Ltd.

Was the decision tough? Didn't he feel lured by the foreign university offer and the prospects of a cushy, overseas job, later? Isn't that what 30 per cent IITians do anyway, according to one estimate?

"The thought never crossed my mind," maintains Gupta. "HCL was just coming up. We were the first bunch of MBAs to join the company. It was a highly entrepreneurial environment and I wanted to be a part of it."

Gupta's is not an isolated case. While reams get written about the 'brain drain' there's not been enough applause for those who have stayed behind, founded and steered successful ventures and served their country in their own ways.

Much before the IIT brand had became an Indian's most sought-after credential abroad, there have been men like **Y.C. Deveshwar, Rajendra Pawar, M.S. Banga** or **P.K. Kaw** who refused lucrative foreign offers, to stay back and succeed. Says Pawar, "When I passed out of IIT-D, I too had the option of going abroad like many of my batchmates. But I chose to stay here. You have to take up the challenge of transforming your environment, not migrate to a more congenial one."

After brief stints with Larsen & Toubro, DCM and Hindustan Computers, Pawar, along with **Vijay Thadani** set up NIIT in 1981. While Thadani offered to move to the US to handle the company's overseas operations there, Pawar remained stuck to his roots.

"Fortunately, the people close to me held the same view. My wife and children derive an inner pleasure from being in the Indian environment," he comments.

Ditto for **Vindi Banga**, whose first and the last job (so far) has been Hindustan Lever. "I have absolutely no regrets," he declares. "It's an outstanding organisation and has offered me enormous and exhilarating challenges and opportunities. I have worked in various functions across categories, including two spells abroad in the U.K. I have no regrets."

Apparently, if the launch pad is good or an entrepreneurial sprit well ingrained, the glue is stronger. *"Contrary to public perception, a large percentage of our alumni have stayed back in India and made tremendous contributions in manufacturing to process; industry to defence research; and in roles ranging from marketing engineer to managing director,"* says **Bijendra Jain**, Dean, Alumni Affairs and International Programmes, IIT-D.

It is indeed surprising how many IIT graduates turn entrepreneurs at some point later in their career. Apparently, the much-maligned 'bureaucratic hassles' don't stand in their way from being successful. Infact, it appears to have fuelled their ambitions and provided grist to their enterprises.

Maybe the fact that a majority of them were working on the software side, posed no major problems in their path. "I encountered no red-tapism in India, that could eventually have disillutioned me because I was in the software business. It may have been different for others," says Pradeep Gupta.

Regardless of motive or circumstance, one cannot overlook the fact that these were the guys, who were not lured by the promises of power and pelf. They made good with whatever they had.

"They have created wealth not only for themselves but also for the nation. They have created thousands of jobs in India, both hi-tech and for the skilled. Their successes are testimony to their hard work, the value system they imbibed at home, and in some measure to the education they received at IIT," maintains Jain.

Nonetheless, when it came to their children's education, many have sent them abroad for higher studies. Pawar, Gupta both have sent their sons to the US for studies and have no plans of influencing them to return to their native land. "My children are capable of building their own careers and I leave the decision to them," says Pawar. Agrees Banga, "It's really up to them to decide what they would like to do."

Gupta also has no clue what station his son would choose after completing his BE-CS from the US. "I don't think, I'd like to influence him in any way," he adds.

(Source: Hindustan Times, 7 June, 2003)

'IIT 2050' Postponed

'IIT 2050', an event scheduled in December 2003 in Delhi to forge partnership between the Indian Institute of Technology and its alumni has been posponed due to short time available " to capture views of all stake holders and bring them into alignment", organisers said.

Earlier, the event was scheduled to be organised by a steering committee chaired by Infosys chairman **NR Narayana Murthy** and co-chaired by former McKinsey managing director **Rajat Gupta**.

"The idea is to bring all the stakeholders — right from government to students — and provide an unified forum to develop a set of objectives for the future." Mr Murthy had said while announcing the Event in the month of July 2003.

IIT plans tie-ups with Singapore Universities

NEW DELHI: The premier Indian Institute of Technology (IIT) is planning to launch educational programmes in Singapore in association with two leading universities there. Preliminary talks have begun among the representatives of all the seven chapters of IIT to finalise the modalities of tie-up with Singapore universities. The Indian government will take a decision after getting the roadmap from IIT authorities.

The seven IITs are located in Mumbai, Chennai, New Delhi, Kharagpur, Kanpur, Roorkie and Guwahati. "The Singapore government and two universities there are keen to form some kind of an alliance with IIT," said **B N Jain**, dean, alumni affairs and international programmes at IIT New Delhi. The two universities, which have expressed an interest are National University of Singapore and Nanyang Technological University.

"The whole aspect of a possible association is currently being discussed. At this stage, we don't know what form and shape the association with Singapore universities will take," said Mr Jain. While refusing to set a time-frame for the launch of IIT programmes in Singapore, Jain said that deliberations among the officials of the seven IITs had started and a detailed roadmap would be submitted to the government. "We are several months away from any possible association with Singapore universities. The basic decision to launch programmes will be taken by us only if we see merit in it."

Official sources say the move for IIT to have a presence in Singapore is part of the comprehensive economic cooperation agreement planned between the governments of India and Singapore.

(Source: The Economic Times, 18 June, 2003)

Forging Ahead

(An Interview with Prof. R.S. Sirohi, Director, IIT Delhi)

Bill Gates while delivering the keynote address of the Golden Jubilee of Indian Institute of Technology(IIT) held in Silicon Valley in January this year, said: "The IIT… is a credible institution that has changed the world." Education Times speaks to R.S.Sirohi, director, Indian Institute of Technology, Delhi(IITD) on what makes IITD a world-class institute.

On reasons why IITD is a top-rated technical institute in the world.

There are several factors which make IITD a world-class institute. The chief among these are excellent faculty, good governance, excellent infrastructure and finance. The IITs are fortunate enough that they have financial autonomy, good governance and academic freedom. The best part is that the IITs have been given freedom to work within their own framework. The faculty at IITD like other IITs can introduce latest topics and courses in curriculum whenever there is a need for it. We review our academic curriculum every five years and changes are made accordingly. So the governing system allows flexibility compared to other institutions in the country.

Characteristics of a world-class technical institute

Any technical institute which contributes towards science and technology, advancement of knowledge and contributes to society at large can be called a world-class institute. Parents send their wards to IITs, they have great faith in the IIT system as they feel we are honest and committed to our work. The Joint Entrance Examination system is such that we get the best students in the country who wish to pursue engineering as a profession. Our graduates have gone on to pursue careers in the areas of finance, civil services, human resources and management.

IITD: The road ahead

We will continue to pursue research-lead activities, as research leads to generation of wealth and creation of new products. Earlier, the idea was to just do research on newer areas of science and engineering but now the focus is to convert these ideas into final products. There is a focus on patenting of new products and issues related to intellectual property rights(IPR). The focus towards research has led to the creation of 'technology business incubation unit' in IITD where students and faculty have come together to convert ideas into products and start-up companies. We would like many such units to come up to continue our focus towards research related activities.

Vision beyond academic achievements

The IITs have made differences in science and technology but lots need to be done. The environment in this country is not as good as perhaps in the US, where one can pursue an idea to its conclusion. Here in India, we need all the support for an idea to become successful. Our country has some of the best analytical minds in the world but we continue to work for someone else. Like CISCO and Sun Microsystems have been created by Indians. We have the intellectual capability, but the environment to utilise the full potential of these minds is still lacking. So, I want my students to provide jobs rather than look for jobs.

Future plans

We will continue to focus on research related activities and we will provide a platform and an environment, infrastructure where people can share their potential. IITs are known for their undergraduate education but we would like to be known for our research related activities. We would like to be known as a destination for high quality research which would act as a magnet to attract the best talent from across for research related activities.

We want to start a couple of M.Tech programmes in bio informatics, system biology, radio frequency devices and transportation engineering. In Asia-Pacific region, we have been ranked 2 in the past 2-3 years. We are in the business of providing quality education and research activities. We shall continue to pursue these two activities with extra vigour in the years to come by, so that we keep churning out best of engineering graduate year after year.

(Source: The Times of India, May 5, 2003)

5 Fs of FITT

1. Friendliness *2. Flexibility*

3. Freedom *4. Focus*

5.Facilitation

Cutting-edge Dilbert Hits Out at Indian Techies

NEW DELHI: In a new series, cartoonist **Scott Adams**' cult strip takes a dig at IIT grads from India. **Asok, the brilliant Indian trainee**, turns out to be an IIT grad, who has managed an entire project single-handedly even though no one responded to his e-mail. When Wally, the strip's original IT jock, asks him, "Are you tired?" Asok replies: "I am trained to sleep only during National Holidays".

It doesn't end there. Asok continues demonstrating his superiority as an IIT grad, declaring that he tries not to frighten ordinary people

with any gratuitous display of mental superiority. Proof? He no longer reheats his tea by imagining fire while holding the cup to his forehead.

Behind this spoofy portrayal of the Indian techie in the US - the work maniac IITian who has inhuman abilities to slog and thus outpace his American counterparts - lies the growing negativity towards this breed among Americans who feel they're losing their jobs to Indians.

Counters an IIT grad who works in the US: "We have several naive and unsuspecting Asoks in the West, who are taken advantage of, exploited, and used unmercifully by mediocre Caucasian engineers for their survival in this competitive market."

India's IITs have, of course, long been the subject of admiration - now bordering on envy - in corporate America. A Business Week article on India's whiz kids has this to say: "The rise of IITians, as they are known, is a telling example of how global capitalism works today. By rising to the top of Corporate America, these alumni lead all other Asians in their ability to reach the upper echelons of world-class companies."

Till Dilbert struck, it was hosannahs all the way. A researcher at UC Berkeley estimates that fully 20 per cent of start-ups in Silicon Valley are IITian-owned. Amazon.com CEO and founder Jeff Bezos has described the Indian IITian as a "world treasure". Bill Gates says the computer industry has benefited greatly from them. A co-anchor on CBS 60 Minutes had gone on to describe IIT Bombay thus: "Put Harvard, MIT and Princeton together, and you begin to get an idea of the status of this school in India."

Why is Adams firing his satire bullets at this hallowed tribe? Look no further than the fear and loathing booted up by the swell in outsourcing software development jobs to India, coming on top of the ongoing BPO migration.

Says an IIT-ian : "I love it that the IITs have created so much panic. As usual, Adams is ahead of the pack in anticipating media and public opinion about IIT grads".

(Source: economictimes.com, 16 September 2003)

IIT Technology Successfully Field-tested

A novel technology developed by the team led by Prof. S.S.Murthy of Electrical Engineering Department, IIT Delhi on micro hydel power generation has been successfully field tested in a village Mensinhadya located in Western Ghats of Karnataka. This patented technology, developed under a DST project, was translated into working model as per industrial standards and installed in the above site jointly with a local NGO last month. This has resulted in electricity generation for this remote community of a few houses using local hydro potential employing this indigeneous technology.

National Digital Library

Ministry of Human Resources Development(MHRD), Government of India, has set up Indian National Digital Library in Science and Technology(INDEST) consortium. The INDEST consortium has been set up for facilitating increasing access to electronic information resources to leading engineering & technological institutions in India. Prof. R.S. Sirohi, Director, IIT Delhi is the Chairman of the National Steering Committee for the INDEST consortium.

... **Better Test for Diabetes** *(Contd. from page 6)*

the blood as a result of the excess sugar. The product, known as HbAGE, is found in the haemoglobin of patients of diabetes.

The research has been supported by the Defence Research and Development Organisation (DRDO) as well as the Council of Scientific and Industrial Research (CSIR).

Diabetes affects the metabolism of each cell in the body, these researchers say. This is one reason why uncontrolled diabetes can lead to several complications. Diabetes is the leading cause of blindness, renal failure and cardio-vascular diseases.

Diabetes is already causing concern as India is estimated to have the largest number of patients. The numbers in India are expected to far surpass those in China by 2025. While China is expected to double its number of diabetes patients and reach an estimated 35 million diabetic patients, India would have 57 million by 2025, three times its currently estimated number. While in developed countries diabetes has been known to affect people above 65, in India and other developing countries, a majority of people with diabetes will be in the age group 45 to 64. *(Source: The Times of India, 25 July, 2003)*

Should IIT Education be Subsidised?

Subsidise advance research, not education

(Vinayak Pandey, Consumer Unity & Trust Society)

The government established a number of Indian Institutes of Technology (IITs), hi-tech centres, by investing public money, primarily to create a domestic pool of world-class technologists as also to promote fundamental, technical research in the country. It was, indeed, a visionary step. Undoubtedly, the IITs have created a special niche for themselves and are truly counted among some of the best institutions the world over. The market value of an average IIT graduate is unparalleled, since the industry perceives them as versatile and competent technicians, and offers them lucrative jobs. Not just that, every year a good number of IITans make it to the Indian Administrative Service as well or leave for greener pastures abroad, which is hardly desirable.

Sadly though, the placement data for the last few years, shows that the IITs produce superior technologists to cater to the industry's demand, but they do not contribute towards the cutting-edge fundamental research. Subsidising the IITs to conduct a high class of fundamental research has to remain a national priority; but at the same time, spending the tax-payers' money solely to meet the industry's demand of competent manpower sounds unfair. More so, as banks are now more than willing to extend educational loans.

It would be worthwhile to draw a distinction between hardcore technology research and providing superior technical manpower, and to treat them separately. While the former still requires consistent government support, the latter must self-sustain, at least its operating part, if not more. This emerging trend can be seen across the country, where higher education is increasingly relying on the self-financing model. In case of IITs, a two-fold approach would meet the challenge in a better manner. First, the course-fee must be raised to the levels at which they more than partially reflect the costs. Second, it must be ensured that increased course-fee does not deprive the talented from access to these world-class institutions. A sponsorship scheme should be developed by the government and industry to support meritorious students from the economically backward strata of the society.

Yes; not all meritorious students are well-off

(R.S. Sirohi, Director, IIT Delhi)

The admission to B Tech programmes in IITs is through the Joint Entrance Examination (JEE) — a well recognised and admired system in India and abroad. The admission to PG programmes is through GATE and to management programmes through JMET. Therefore, only meritorious students succeed in getting admission in IITs: the system encourages meritocracy.

Analysis of the data about the candidates appearing for JEE-2003 shows that the maximum number of students qualifying in the entrance examination belong to the category whose parental income lies between Rs 1 to 2 lakh. There is a significant number of students whose parental income is lesser than Rs 1 lakh. The fee paid by a student in B Tech programme, in many cases, puts severe burden on parents.

It is also known that about 25% of our undergraduate students go abroad for higher studies, significant percentage takes up management programmes, and a good percentage tries for civil and allied services. Some choose their career in engineering, particularly in multinational companies and a very few in Indian companies. A significant number joins the IT companies. All M Tech students, admitted through GATE, receive fellowships/assistantships during the programme. These students join for Ph D programmes, take up jobs in laboratories, also attempt for civil services etc. In short, these are the drivers of development engine of the nation.

In order to reward merit, and also to provide education to all sections of the society, I am of the opinion that the IIT education should be considerably subsidised. India presents unity in diversity. There is cultural diversity, economic diversity, social diversity and so on. IITs should be able to embrace meritorious students from all segments of society and all parts of the country. It is the fusion of the students of diverse socio-economic background that takes place in these institutes of excellence, which will drive the nation to prosperity. The amount of fee to be paid by the students should not dictate this. It is the citizen's right to demand quality education and State's responsibility to provide this at a reasonable cost.

(Source: The Economic Times, 8 October, 2003)

Full Course or hors d'oeuvre

Prof. Devinder Kumar Banwet of IIT-Delhi claims that employers favour 'MBA-OR-IT-enabled' people

Should students go the whole hog of Operational Research (OR)? Professors at management institutions maintain that it's too much of a good thing (read too much theory). They assert that OR and subjects like Finance and Marketing blend well enough to prepare students to apply their knowledge in the industry, so why go the whole hog and do a separate course in OR?

Prof. Devinder Kumar Banwet, Group Chair, Operations Management, Department of Management Studies, Indian Institute of Technology, Delhi, shares his views on the subject.

How is studying OR as part of an MBA or Industrial Engineering course better than doing an M.Sc. in OR, or Applied OR?

Usually, in the OR departments of universities, teachers are primarily from the Mathematics or allied departments. Here, the subject is viewed more as a bunch of mathematical techniques, dealt with great

...Contd. on page 22

IIT Delhi Technology Transfer Through FITT

During March-June, 2003 two Technology Transfer agreement have been executed with industries which are as follows:

1. License Agreement dated 18th March, 2003 executed between FITT and **M/s SofBlue India Pvt. Ltd.**, New Delhi for transfer of Technology on **"Three phase Watt-hour Meter"** developed by **Prof. A.K. Mukherjee**, Centre for Energy Studies (CES), IIT Delhi.

Dr. A.K. Sengupta. MD (FITT) exchanging Tech. Transfer Agreement with Mr. K.C. Pandey, CEO, (M/s SofBlue India Pvt. Ltd.) Prof. V. K. Srivastava Dean (IRD) looks on.

Prof. V.K. Srivastava Dean, IRD (IITD) exchanging Tech.Transfer Agreement with Mr.Surinder Singh Jaswal, Director (M/s Multitrade Transactions & Solutions Pvt. Ltd.) while Dr. A.K.Sengupta, MD (FITT) looks on.

2. License Agreement dated 26th June, 2003 executed between FITT and **M/s Multitrade Transactions & Solutions Pvt. Ltd**, New Delhi for transfer of Technology on **"RUSTGARD (Industrial and Superior Grades)"** developed by **Dr. A.K.Ghosh**, Centre for Polymer Science & Engineering (CPSE), IIT Delhi.

A Presentation by MD at ELITEX 2003

Dr. A. K. Sengupta, Managing Director Foundation for Innovation and Technology Transfer (FITT), IIT Delhi delivered a lecture on *"Technology Business Incubation: IIT Delhi Experience"* in ELITEX 2003 at India Habitat Centre on 28 April, 2003.

For more details, please contact:
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Technologies for Commercialization Developed at IIT

Some of the selected technologies developed by IIT Delhi for commercialisation are:

S No.	*Technology Title*
1.	Environmentally degradable Plastic films
2.	Dyeing of cotton fabric with Indigo
3.	Anti- microbial and biocompatible surgical sutures
4.	Utilisation of waste from Nylon 6 industries
5.	Wound dressing material
6.	Computer software for design of RCC columns
7.	Detection and removal of contaminants in cotton
8.	Vibration measurement system (Laser based)
9.	Reversible Contraceptive for males
10.	Negatively Charged Prostheses and Products
11.	Improved Apparatus for carrying out a bioreaction
12.	Intrinsically gain flattened Erbium Doped Fibre Amplifier (EDFA)
13.	Fiber Array Block for Integrated Optics curcuit
14.	Isolation and Purification of Avidin by affinity elution from a cat ion exchanger Diagnostic Signature Comparison Register with built-in Self Test and Self Check Thermoforming of plastic sheets

For further enquiry, please contact:
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ASIST International Paper Contest

Mr. Partha Bhattacharya, Executive Consultant (I&D), FITT, has Secured Fourth Position in ASIST (American Society of Information Science & Technology) SIG-III International Paper Contest for the year 2003.
The title of his Paper was *"Advances in Digital Library Initiatives: A Developing Country Perspective"*.

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Best IT User Award to IIT Delhi

Best IT User Award-2003

The Indian Institute of Technology Delhi has been awarded the BEST IT USER AWARD-2003 by the Economictimes.com and NASSCOM under Category Education Institutions. The Award carries a citation and a Memento. The Award was received (on behalf of the Institute) by Prof. R.S. Sirohi, Director on July 29, 2003.

NRDC Invention Award to Prof. R.S. Sirohi and the Team

Prof. R.S. Sirohi , Chairman, Governing Council of FITT and Director of IIT Delhi has been awarded the ***NRDC Invention Award*** . National Research Development Corporation (NRDC) has conferred this award for the meritorius invention titled *" Opto-Electronic Apparatus for Static & Dynamic Measurements (OEASDM)"*. The inventor team has been jointly conferred an award of Rs. 75,000/-(Rupees Seventy five thousand only).Prof. Sirohi was presented the award by Hon'ble Vice-President of India **Shri Bhairon Singh Sekhawat** on National Technology Day, i.e. 11 May, 2003 in a glittering ceremony at Hotel Ashoka, New Delhi.

Prof. R.S. Sirohi, Director IIT Delhi receiving the award from Hon'ble Vice-President of India, Shri Bhairon Singh Sekhawat

Prof. R.S.Sirohi, Director IIT Delhi has received the *Pandit Jawaharlal Nehru Award in the field of Technology for the year 2000*. He received the award from Madhya Pradesh Chief Minister, **Mr. Digvijay Singh** on March 27, 2003.This award carries a cash award of Rs. 1.00 lakh besides a citation. On this occasion former member of planning commission **MGK Menon** was the special guest. Minister for Science and Technology **Pratap Singh Ulkey** presided over the function.

Dr. (Ms) M.G. Dastidar, Associate Professor, Centre for Energy Studies has been conferred with *" Scientist of the Year Award-2002"* by the International Board of Awards of the National Environment Science Academy, India for her outstanding contributions in the field of "Energy & Environment". She was given the award at the XVIth Annual Conference of the Academy held on 7th March, 2003 at the Indian Science Congress Association in Kolkata. She also presented a research paper at the Conference.

Prof. N.K.Gupta, Department of Applied Mechanics has been elected as Honorary Member of the World Innovation Foundation.

Prof. D.P. Kothari, Centre for Energy Studies has been nominated the member of the Advisory Editorial Board of the International Journal of Electrical Power & Energy Systems, published by Elsevier Science, U.K. for 2003-2005.

Prof. S.S.Murthy, Department of Electrical Engineering has been elected as a Fellow of the prestigious Institution of Electrical Engineers (London). He has also been nominated as the International Membership Advisor of IEE for North India. Prof. Murthy has also been elected (unopposed) as the Chairman of the Delhi Section of the Indian Society for Technical Education for current year.

A paper entitled "Use of Microfiltration to obtain long shelf life milk" authored by **Prof. G.P. Aggarwal**, Department of Biochemical Engineering & Biotechnology, has been awarded the first Best Paper Award by Indian Dairy Association (IDA), New Delhi.

Prof. Ajay K. Ghatak gets Esther Hoffman Beller Award for his outstanding contributions to Optics Education and for Leadership of a major Fiber Optics and Optoelectronics Research and Training Programme in a Developing Nation.

Dr. Suneet Tuli, Associate Prof., CARE has been selected for the 10th IETE Professor K.Sreenivasan Memorial Award in recognition of his distinguished contributions in the field of " Teaching Electronics & Telecommunication Engineering in the broadest sense" during the past ten years.

IETE Gowri Memorial Award for Best Paper on Topic of General Interest has been conferred on **Prof. Sneh Anand**, CBME and Jayashree Santosh, CSC, IIT Delhi for their paper on " Bioinformatics in Clinical Medicine".

FITT Awards for Best Industry Relevant Ph.D. and M.Tech./ M.S. (R) Projects

Foundation for Innovation and Technology Transfer (FITT) has instituted two awards, one each for Ph.D. and M.Tech./M.S. (R) projects adjudged as the best Industry Relevant Projects. The award carries an amount of Rs. 60,000/- for Ph.D. & Rs. 40,000/- for M.Tech/M.S.(R) Projects. The award money will be shared 50:50 between the concerned faculty supervisor (s) and student (s) for both Ph.D. and M.Tech./ M.S. (Research) work.

Accordingly, the undermentioned students are declared eligible for the FITT Awards as follow:

Mr. Maung Maung Mya- Research Scholar in the Centre for Bio-Medical Engineering. Project titled : *" An Imunological Study of Plasmodium Falciparum Malaria Field Conditions"*

...contd on page 13

SOME DISTINGUISHED FACULTIES OF IIT DELHI

In this issue of FITT-FORUM, we are covering the Research & Development Achievements of Some of the Distinguished Faculties of IIT Delhi.

Prof. Chandra Shakher

Prof. Chandra Shakher is a distinguished and renowned Professor in the field of Optical Instrumentation. He is a versatile scientist in both the areas of Applied & Pure Research. He has the experience of working in Industries, Scientific R&D Institutions & Academic Institution. Prof. Chandra Shakher is Professor in the Centre of Instrument Design and Development Centre of IIT Delhi. His Field of specialization is Optical Instrumentation. Prof . Shakher has Significant Contribution in R&D: Some of his work in the Area of Applied Research are laser speckle techniques for condition monitoring of joints and vibrations; Design and development of fiber optic current sensor to measure current upto 1000 amps on h.v lines; laser based alignment system for electrical power and other industries; developed colloidal silica monitoring system; development of holographic gratings and holographic optics.

Some of his on going R & D Work includes**:** Design and development of indigenous opto electronic instrument for detection of contaminant in indian cotton; texture characterisation and defect detection using wavelets; measurement/monitoring of vibration using digital speckle pattern interferometry and **i**nterferometric techniques. His basic research area includes: developing algorithms and computer program for studying the imaging through holographic lenses; measurement of temperature/temparature profile of burners; developed holographic technique for ndt of mechanical components/composite building materials; Developed imaging system by using holographic lenses for speckle meterology.

Prof. Shakher has received a number of awards for his pioneering work, some of which are NRDC Independence Day Award in 1993 for development of laser based alignment system for electrical power machinery and other industries for Novelty, Technical Feasibility and Commercial Viability of the product; Institute Outstanding Faculty Award for 1994-1995, for significant research and development work in holographic techniques and laser based systems; Chairman of a Session in an International Conference on Laser Technologies in Industry June 6-8, 1988, Porto, Portugal. Conference was sponsored by Commission of European Communities, European Physical Society, International Society of Photo-Optical Engineers etc; Chairman of session in the International Conference on Optics and Opto-Electronics ICOL 98 held at Instrument Research Development Establishment, Dehradoon(India) from December 9-12 (1998). Prof. Chandra Shakher has published 45 papers in various International and National Journals. He has contributed 24 papers in various International & National Conference Proceedings. There are 37 citations of his articles in various journals. In 6 books, his papers have been cited.There are already 3 patents registered in his name.He has supervised 5 Ph.D. thesis and 30 M.Tech thesis. He may be contacted on the following address:

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Prof. S.N.Maiti

Prof S.N. Maiti, Professor in the Centre for Polymer Science and Engineering at IIT Delhi is a well-known and distinguished Professor of polymeric materials. His field of specialization is in the Polymer and Rubber Technology. He has significant contributions in R& D. Some of the examples of his R&D contributions are Development and analysis of polymer blends and alloys for improved performance; Development and characterization of natural fibre-thermoplastic composites; Development of high performance particulate filled thermo plastics for commercial uses; Development of Heat conducting Composites etc. His Current and On-going R& D work includes Development of high performance polymer blends of Polyamides/fluoroelastometers and their particulate and nanofiller reinforced composites; Studies on high performance blends of I-PP and PBT with fluoroelastomers and silicone rubbers and nanofiller reinforced systems and Development and characterization of hot melt adhesives based on styrene block copolymers.

Prof Maiti has supervised 44 M.Tech thesis and 6 Ph.D thesis. He has contributed 50 papers in various International journals & 11 papers in various national and International Conference Proceedings. He has published two books. Prof. Maiti's working experience has been in the academic institution for the entire span of his career.

Prof. Maiti can be contacted on the address mentioned below

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... Awards/Honours *(Contd. from page 12)*

Mr. Kapil Chandra Agarwal- Student of M.Tech. Programme in Solid State Materials in the Physics Department. Project titled: *" Spectroscopic Analysis of Low-Dimensional Structures".*
The concerned faculty supervisor (s) are:
Dr. R. K. Saxena, Associate Professor, Centre for Biomedical Engineering, India Institute of Technology Delhi & All India Institute of Medical Sciences, New Delhi;
Dr. Arati Roy, Deputy Director, Malaria Research Centre, Delhi.
Prof. D.K. Pandya & **Prof. S.C. Kashyap**, Department of Physics, Indian Institute of Technology Delhi;
Prof. C.F. Klingshirn & **Dr. M. Hetterich**, Institute of Applied Physics, Universitat Karlsruhe (TH), Germany.
The above awards were conferred on the students concerned at the Convocation 2003.

IMPLAST'03

The Eighth International Symposium on Plasticity and Impact Mechanics(IMPLAST) was organized by Indian Institute of Technology, Delhi, on 17-18 March 2003 in Vigyan Bhawan, New Delhi. It was attended by around 60 well known scientists from all over the world, and 200 scientists from India. The Inaugural session was chaired by **Prof U.R. Rao**, the former chairman Space Commission, and **Dr V.K. Aatre** inaugurated the symposium. **Prof. D.V. Singh**, former Vice Chancellor, Roorkee University, **Shri P.U.Deshpande**, Director, ARDE Pune, **Prof.R.S.Sirohi**, Director , IIT Delhi and **Prof N.K. Gupta**, Chairman of the Organising Committee, spoke on the occasion.

Prof. N.K. Gupta addressing the distigushed gathering. L to R: (seating) Shri P.U. Deshpande, Director, ARDE Pune; Prof. D.V. Singh, former Vice Chancellor, Roorkee University; Dr. V.K.Aatre, Scientific Adviser, Ministry of Defence; Prof. U.R.Rao, former Chairman Space Commission; Prof. Norman Jones, Chief Editor, International Journal of Impact Engineering; Prof. R.S. Sirohi, Director, IIT Delhi.

This series began in 1973, and first six of these were organized by Indian Institute of Technology, Delhi. The seventh in the series, was held in Melbourne, Australia, under the chairmanship of **Prof R.H. Grzbieta** and **Dr. X.L.Zhao**, of Monash University, in October 2000. The present Symposium is again organized by IIT Delhi, and it coincides with the thirtieth year since the first in the series was held. Nearly 250 delegates from more than 20 different countries attended the symposium. Results of numerous studies in the areas of Plasticity and Impact Mechanics were presented and discussed over two days from 17-18 March 2003 in parallel sessions.

Workshop on Embedded Systems and Applications

Foundation for Innovation and Technology Transfer, IITD and the Indian Institute of Technology, Delhi organized a three day Intensive workshop on *'Embedded Systems and Applications'* during July 3 – 5, 2003.

The Workshop covered tutorials on

(i) Hardware for Embedded Systems
(ii) Software Development for Embedded Systems
(iii) Operating System issues
(iv) Networking in Embedded Systems
(v) Applications in Home Appliances, Telecommunication and Media Processing

For further information, please contact

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ROBOCON 2003

ROBOCON is an annual international competition organized by the Asia-Pacific Broadcasting Union (ABU) that throws challenges in the field of robotics to the students in the form of games. Doordarshan being a member of ABU organizes the same in India named as **DOORDARSHAN ROBOCON**. This year the competition was held in Ahmedabad during July 13-14, 2003 to pull the Indian team to be sent to the international competition to be held in Thailand during August 2003. The game for this year was the Takraw-ball playing, a popular game in Thailand, which resembles basketball game.

IIT Delhi participated for the first time and reached the semi-finals. It should be noted that the four teams out of the seven [IIT- Delhi: 1; IIT Kanpur: 1; IIT Bombay: 2; VESIT, Mumbai: 2; Nirma Institute of Technology (NIT), Ahmedabad: 1] reaching the semi-finals were IIT Delhi, IIT Kanpur, VESIT, and NIT. Amongst the semi-finalists IIT Delhi was the only first timer. The team had students from mainly 2nd years, namely, Piyush Kumar and Himanshu Gupta (P&I, Mechanical), Vibhor Maheshwari (Mathematics And Computing), Sathyanarayanan Anand (Electrical), and one M. Des student, Purvag Nanavati (IDDC). The IIT Delhi team was supervised by Dr. S.K. Saha and supported by the Department of Mechanical Engineering.

A Snapshot of the Competition
(Source: The Times of India, July 14, 2003)

The recorded competition was telecast in the DD-National channel on July 27, 2003 at 9:45pm. One robot made by IIT Delhi students was reassembled in the Mechatronics Lab of the Mechanical Engineering Department of IIT Delhi and available for demonstration. The photographs show three postures during picking up and placing the balls onto the baskets:

WORKSHOP/SEMINAR/CONFERENCE/MEETING/COURSE

Certificate Course on Embedded Systems and Applications (September 8-November 21, 2003)

Recognising the importance of the area in the market at present and in future, FITT had undertaken as an internal project 'development of curriculum, courseware and laboratory experiments in Embedded Systems' with a group of faculty members from various departments/ centres of IIT Delhi. This material was developed over the past few months and is now complete.

As a logical extension of this project FITT has offered a 2 ½ months' Certificate Course on 'Embedded Systems and Applications' for those with a graduate degree in Electronics/Electrical Engineering, Computer Science and Engineering, Electronics & Telecommunication, Instrumentation and MCA degree.

Embedded systems have become the next inevitable wave of technology, finding application in diverse fields of engineering. Core elements of computing and communication, sensors and actuators have become embeddable in almost everything. Technologies that are inexpensive, low-power, and radically different from classical chip-and-pc-board variety are leading to newer applications and products.

The goal of this course is to impart training to interested graduate engineers with basic background in Hardware & Software, in specialized area of Embedded Systems, so that they can develop expertise in developing and deploying embedded systems over a wide range of applications.

The course consists of 10 modules. The core modules of the course will provide an exposure to a gamut of technologies associated with embedded systems and cover Introduction to and Programming Embedded Systems, Designing Embedded Computing Platform, Embedded System Architecture and Real time Operating Systems. Advanced modules will cover a large number of the relevant enabling technologies and applications of embedded systems, like applications in Controls, Telecom, Multimedia and Networks.

The course covers theory and practical classes spread over a period of 2.5 months, and will have 175 contact hours including hands-on practical sessions.

The theory classes are to be conducted at IIT-Delhi in the evenings for 3 hours on weekdays and lab practicals on the weekends to enable working professionals to join the course.

The course has begun with an enrollment of 17 engineers on September 8, 2003.

For further information please contact:
Dr. U. Nagchoudhuri,
Executive Consultant(HRD/EP)
Foundation for Innovation and Technology Transfer (FITT)
Indian Institute of Technology (IIT)
Hauz Khas, New Delhi – 110016
Email: naguttara@yahoo.com

Proposed Certificate Program in Bioinformatics and Computational Biology

There is a proposal for a ***Certificate Program in Bioinformatics and Computational Biology*** to be conducted jointly by Supercomputing Facility for Bioinformatics and Computational Biology (SCFBCB) IIT Delhi and NIIT.The Course is expected to be started in the month of January, 2004, which will be of six months duration. Prof. B. Jayaram, Department of Chemistry and Co-ordinator of SCFBCB will be the Cordinator of this course.

For further information please contact:
Dr. U. Nagchoudhuri, Executive Consultant(HRD/EP)
Foundation for Innovation and Technology Transfer (FITT)
Indian Institute of Technology (IIT)
Hauz Khas, New Delhi – 110016
Email: naguttara@yahoo.com

IEEE Workshop On "Recent Advances in Power Electronics & Sensorless Control of Drives" (Sep. 26-27, 2003)

The workshop was organised by Delhi Chapter of Power Engineering and Industry Applications Societies (PES/IAS) of IEEE, IEEE Delhi Section and Department of Electrical Engineering, IIT Delhi. The main resource person for the workshop was Prof. Alfio Consoli, IAS Distinguished Lecturer from University of Catania, Italy. He is an eminent scientist and has made significant contribution to the advancement of power electronics and sensorless control of drives.The workshop was centred on the *Sensorless Control Techniques of Motor Drives.*
For details please contact:
Prof. B. P. Singh / Prof. Bhim Singh (Coordinators)
Dept. of Electrical Engineering, IIT Delhi New Delhi - 110016
Phone : 26591064(O), 951292513121(R), 9868082083 (M)
: 26591045 (O), 26591890(R), 26516223 (R)
Email : bpsingh@ee.iitd.ac.in , bsingh@ee.iitd.ac.in

Paper Presentation by Faculties

Prof. A.K. Gosain, Department of Civil Engineering presented a paper titled *"New Technologies for Integrated Watershade Management"* in the International Workshop on "Preparing the Next Generation of Watershade management Programmes" conducted by FAO and ICIMOD (International Centre for Integrated Mountain Development) held at Kathmandu, Nepal during September 11-13, 2003.
Dr.A.K.Keshari, Assistant Professor, Department of Civil Engineering presented a paper on *" Comprehensive Quantitative and Qualitative Appraisal of Groundwater Resources in Integrated Planning"* authored jointly with S.D.Dhiman and M.J.Kaledhonkar in the National Workshop on " Fresh Water Related Issues" organised by ENVIS Centre in Biogeochemistry, JNU and supported by EMCB-Node, WWF International and UGC-DRS in the first week of April 2003.
Dr. Keshari also presented a paper on *"Quality Appraisal of Groundwater Resources with Emphasis on Rajasthan"* in a National Seminar on "Water and Environment" held on the World Environment Day, 5th June 2003 at Jaipur, and organised by Rajasthan University and Japan International Cooperation Agency.

FORTHCOMING CONFERENCE/EVENTS/SEMINARS IN IIT DELHI

International Conference on Laser Applications and Optical Metrology –ICLAOM-03 (1-4 December, 2003)

The conference provides an international forum for students, teachers, researchers and participants interested in Advanced Scientific and Industrial Applications of Lasers and Optical Metrology. It is an opportunity to present and observe the latest research results and emerging ideas in these areas. All papers submitted to this conference will be peer reviewed by National/International Advisory Committee. Acceptance will be based primarily on the originality and usefulness of the research work in the Industry and Laboratory.

For further details contact :

Prof. Chandra Shakher,
Chairman, ICLAOM-03,
Instrument Design Development Center,
Indian Institute of Technology Delhi (IIT Delhi),
Hauz Khas, New Delhi-110 016, India.
Phone: 91-11-2659-1432 (Office); 91-11-2659-1835(Residence).
Fax: 91-11-2686-2037., E-mail:iclaom@iddc.iitd.ernet.in

3rd National Symposium and Conference on Solid State Chemistry and Allied Areas (December 4-6, 2003)

The third National Symposium and Conference on Solid State Chemistry and Allied Areas will be organized by the Department of Chemistry, Indian Institute of Technology, Delhi, in Association with the Indian Association of Solid State Chemists and Allied Scientists (ISCAS) during December 4-6, 2003. The programme will provide an opportunity to the scientific community at the national level to discuss latest developments in solid state chemistry and allied areas and their applications. The main topics to be discussed include: Advanced Synthesis and Characterisation techniques of Solids, Crystal Engineering, Crystal Growth and Design, Electronic, Magnetic, Dielectric, Optical Properties of Solids, Layered compounds, Intercalates, Microporous and mesoporous compounds, Nanomaterials and Nanocomposites Biomaterials, Nuclear Materials and Effect of Radiations on Solids.

For details please contact:

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Hauz Khas New Delhi-16, INDIA
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email:aramanan@chemistry.iitd.ac.in ,aramanan57@hotmail.com

Workshop on System Level Design and Modeling (December 16-24, 2003)

The Department of Computer Science and Engineering, IIT Delhi will be organizing a workshop on System Level Design and Modelling from December 16-24, 2003. Topics included in the course will be Introduction, Specification Languages and Models, Estimation of Hardware, Software, Communication and Power, Behavioural Synthesis , Memory Synthesis, ASIP Synthesis, Retargetable Code Generation. Laboratory Components consist of SystemC for Modeling and Validation, ASSET and SUIF Framework for Hardware Software Estimation and Synthesis, IMPACT/Trimaran for Retargetable Code Generation, LEON Processor Synthesis and Customizations.The Speakers will be Prof M. Balakrishnan, Prof. Anshul Kumar and Dr. Preeti Ranjan Panda of Department of Comp. Sc. & Engg., IIT Delhi.

For details please contact:

Prof. M.Balakrishnan
Department of Computer Science and Engineering
Indian Institute of Technology Delhi,
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Ph. No. +91 11 2659 1291, Fax. +91 11 2658 1060
E-mail: mbala@cse.iitd.ernet.in
Website: http://www.cse.iitd.ernet.in/esproject/workshop-2003/

11th National Conference on Machines and Mechanisms (NaCoMM-2003), 18-19 December, 2003

The National conference on Machines and Mechanisms is held every two years under the auspices of the Association of Machines and Mechanisms (AMM). It will be held on 18-19 December, 2003 at IIT Delhi. This is one of the most important occasions during which researchers, designers, and practicing engineers working in the area meet and exchange ideas. The peer-reviewed papers are published in the proceedings of the conference and some of the selected papers may appear in the journal of Mechanism and Machine Theory published by the International Federation of the Theory of Machines and Mechanisms (IFToMM).

For sponsorship and other details, please write to:

Dr. S.K. Saha, Organising Secretary, NaCoMM-2003
Dept. of Mechanical Engg., IITD, Hauz Khas, New Delhi -16
Email: saha@mech.iitd.ernet.in, nacomm2003@yahoo.co.in
TEL: (011)2659 1135/6320

Please also visit: http://in.geocities.com/nacomm2003

First International Conference on E-governance (18-20 December, 2003)

This International conference will be held on 18-20 December, 2003 at IIT Delhi, which is sponsored by IIT Delhi with a theme "Information Technology for Development". Electronic government is very timely development being recognized as a potential driver as well as enabler in the way governance can be reinvented to deal with problems efficiently and deliver the services in a more responsive and responsible manner. e-government solutions are meant to ensure a more connected infrastructure across federal, state, and local government organizations. Purpose of ICEG- 2003 is not only to provide a forum of discussing research findings, strategies, policies, and technologies supplemented by the learning from the innovative experiments to enable business of government. It also aims to resolve agenda for future research/activities and give impetus to this.

For further details, please contact :

ICEG 2003 Secretariat,
Department of Management Studies
Indian Institute of Technology (IIT), Hauz Khas, New Delhi (India) ***http://www.iitd.ac.in/iceg/***
Phone: +91 11 26591173, 26596407, 26591171, 26521299, 9811027530, Fax: +91 11 26862620,
Email:egov@dms.iitd.ernet.in
& Dr. M P Gupta, Conference Coordinator, E-mail mpgupta@dms.iitd.ac.in

National Technology Day Celebration

The National Technology Day was celebrated at IIT Delhi on Sunday, the 11th of May 2003 with a well attended seminar meeting in the Senate Room of the Institute. The function was organized under the aegis of the Foundation For Innovation and Technology Transfer (FITT),the Industry Interface Organization of the Institute.**Prof. Surendra Prasad**, Dy.Director(Faculty) presided over the function. He welcomed all the participants, which included a large number of members of the academic staff, students and young people. In his address, Prof. Prasad emphasized on the importance of technology and technology education as vehicles towards rapid industrial development of the nation, eradication of poverty and spreading of education amongst the masses.

Thereafter, three eminent faculty members of the Institute made presentations on some of the path breaking research work being pursued in IIT Delhi in emerging technology areas. These were:

Speakers	*Title*
Prof. S.Chand: (Deptt. of Biochemical Engineering & Biotechnology)	Biotechnology as a catalyst for Industrial Growth
Prof. A.K. Gosain : (Deptt. of Civil Engineering)	Some Applications of Geographical Information Systems
Prof. Subhashis Banerjee: (Deptt. of Computer Science and Engineering)	Vision-based Graphics

The Seminar concluded with a vote of thanks proposed by **Dr.A.K.Sengupta**, Managing Director of FITT, IIT Delhi.

FITT-Corporate Membership

An information support service unit had been set up in FITT since its inception in 1992 in order to keep abreast the industry with the technological developments, research activities and faculty and expertise of IIT Delhi and also to help IITD faculty to access details on industries as well as technology development information worldwide. In this endeavour a project has been developed at FITT known as **Corporate Membership Scheme** of FITT. FITT invites the industry/ industry associations/R&D organizations and financial institutions to become corporate members of FITT at a nominal fees.

The Corpoprate members have access to all the CD-ROMs and also 700 on-line electronic journals subscribed by IITD Central Library as well as CD-ROMs available at FITT. They can also borrow Library books as per the rules of the Central Library as well as CD-ROMs available at FITT. All these services can be availed over phone/fax or e-mail also. There is also facility of linking the Corporate Members home page to FITT website.

A Corporate Member client can participate in Technology Transfer and joint R&D programmes of the Institute on a priority basis, with FITT providing the interface.

The list of Corporate Members of FITT include such valued clients like Reliance, Modi Xerox , Bharat Heavy Electricals Ltd, Tata Infotech, NTPC, Software Technology Parks of India, DCM Shriram Consolidated Ltd., Bhartia Industries Ltd., R&D Center for Iron and Steel of SAIL, ICICI Knowledge Park, RRL Bhopal etc.

To become a corporate member of FITT, please send the corporate membership form duly filled with a nominal fees, which can be available on request from FITT office or can be downloaded from the FITT website (http://www.fitt-iitd.org).

Industry/Organisations/Industry Associations eligible to become Corporate Members at the following rates:

Type of Organisation	*Annual Turnover*	*Annual Admission Fees*
Large Scale Industry	Rs. 100 crores & above	Rs. 10,000
Medium Scale Industry	Between Rs.2.50 crores to Rs. 100 crores	Rs.5,000
Small scale Industry	Rs.2.50 crores or less	Rs.1,000
R&D Org/Financial Institutions/etc	Not Applicable	Rs.5,000

For further details, please contact:
Partha Bhattacharya
Executive Consultant (Info. & Doc.)
FITT, IIT Delhi
E-mail: parthab@fitt.iitd.ernet.in
Phone- 91-011-26581013

Participation in IPR Workshop at Geneva

Mr. Mohit Mahajan, Executive Consultant (IPR & TT) attended the Special Programme on **Practical Intellectual Property Rights Issues** at WIPO Hqrs. Geneva during October 6-9, 2003. The Workshop was conducted jointly by World Intellectual Property Organisation (WIPO) and World Association for Small & Medium Enterprise (WASME), and was attended by participants from India, Malaysia, swaziland, Nigeria, Cameroon, Italy, etc.

The Workshop focused on the management aspects of the Intellectual Property Rights in Industry and Institutes. It also focused on mechanisms for transfer, funding and other business aspects of IPR in addition to legal and enforcement issues thereof. Speakers for the different sessions were arranged by WIPO and comprised of experts and representatives from different sections of WIPO.

For more information, please contact
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India's Science and Technology Policy 2003 is Upbeat on Intellectual Property Rights

The Science and Technology Policy, 2003 released by the Prime Minister during the Indian Science Congress this year shows the commitment of the nation for ensuring leadership of Indian science and technology in the coming days through generation of intellectual property and its protection. Prof. Murli Manohar Joshi, Minister of Science & Technology, Human Resource Development and Ocean Development needs to be congratulated for this novel and bold initiative.

This is perhaps for the first time that an Indian policy document has placed such a great emphasis on intellectual property rights, their generation, protection and management. In spite of the fact that Indian laws on patents, design, copyright and trademark did exist when the Scientific Policy Resolution and Technology Policy documents were brought out in 1958 and 1983 respectively, IPR hardly found any place in these documents. No wonder that this subject was not given any place in the curriculum of technical education in the country.

The theme of IPR runs through the document as a common thread from the preamble to policy objectives and the implementation plan.

The preamble states " Knowledge has become a source of economic might and power. This has led to increased restrictions on sharing of knowledge, to new norms of IPR, and global trade and technology control regimes. Scientific and technological developments today also have deep, ethical, legal and social implications." Obviously, the relationship between science, technology and law has been emphasized directly which may usher a novel thought process in Indian science.

"To establish an Intellectual Property Rights regime which maximizes the incentives for the generation and protection of intellectual property by all types of inventors. The regime would also provide a strong, supportive and comprehensive policy environment for speedy and effective domestic commercialization of such inventions so as to be maximal in the public interest" is one of the policy objectives. The government wishes to utilize IPR for public good, which clearly shows an understanding of the fact that by owning intellectual property one is free to use it in any manner, including public interest.If you do not own then you cannot use for public interest even if you want to do so.

There are more than one indirect references to the importance of IPR in addition to a separate paragraph on IPR in the chapter on 'Strategy and Implementation Plan'. It states, " Intellectual Property Rights (IPR) have to be viewed, not as a self contained and distinct domain, but rather as an effective policy instrument that would be relevant to wide ranging socio-economic, technological and political concepts. The generation and fullest protection of competitive intellectual property from Indian R&D programmes will be encouraged and promoted. The process of globalization is leading to situations where the collective knowledge of societies normally used for common good is converted to proprietary knowledge for commercial profit of a few. Action will be taken to protect our indigenous knowledge systems, primarily through national policies, supplemented by supportive international action. For this purpose, IPR systems, which specially protect scientific discoveries and technological innovations arising out of traditional knowledge will be designed and effectively implemented". This would be a great challenge for all. The reference to supportive international action has appeared on the basis of our experience in case of the famous turmeric patent, which was first located and identified by the PFC, leading to the creation of TKDL. The Policy further promises that our legislation will ensure that maximum incentives are provided for individual inventors, and to our scientific and technological community, to undertake large scale and rapid commercialization, at home and abroad. It has keenly identified the long term actions required to be taken for effective management of IPR. It states " The development of skills and competence to manage IPR and leveraging its influence will be given a major thrust. This is an area calling for significant technological insights and legal expertise and will be handled differently from the present, and with high priority." Quick and high priority action in this area has been assured by the Policy. There are many indirect and implicit references to IPR in the document, which establishes beyond doubt the intention of the government in this regard. Recognizing that Indian exports today derive their comparative advantage through resource and labour rather than through the power of technological innovations and that transformation of new ideas into commercial successes is of vital importance to the nation's ability to achieve high economic growth, it advocates special emphasis on technological factors of innovations and transfer of innovations. It goes on to say "Innovation will be supported in all its aspects. A comprehensive national system of innovation will be created covering science and technology as also legal, financial and other related aspects."

Integrating science and technology with law will help in enhancing understanding of the role of science and technology in the society by common people. The political will enshrined in the Policy should help the practitioners of science and technology and science managers like head of the scientific institutions in charting a course of action and providing conducive environment for encouraging generation of intellectual property rights in its right earnest, their protection and management.

(Source: Intellectual Property Rights (IPR), a Bulletin from TIFAC Vol. 9 No. 1 January, 2003)

Public Notice from Government of India Patent Office, Kolkata (Dated, June 2, 2003.)

In view of the amendments of the Patents Act 1970, as amended by the Patents (Amendment) Act 2002, along with the Patents rules,2003, which came into force on 20th May 2003, the general public is hereby informed that:

Publication of applications

* All the patent applications filed up to 31st October ,2001 other than those for which secrecy directions have been imposed and continued under section 35, shall be deemed to have been published under section 11 A of Patents Act, 1970.

The particulars of the application and abstract may be introspected at the appropriate offices.

Publication of applications

* All the patent applications filed up to 31st October, 2001 other than those for which secrecy directions have been imposed and continued under section 35, shall be deemed to have been published under section 11 A of Patents Act, 1970.

The particulars of the application and abstract may be introspected at the appropriate offices.

Request for Examination

* The application or any other interested persons may make **request for examination** on form 19 within **48 months** from the date of filing of the application for patent under section 11B.

* In case the application has been filed before the commencement of this Act, the request shall be made within a period of **twelve months** from the date of commencement of the act i.e. 20th May, 2003 or **48 months** from the date of application, whichever is later.

* In case the request for examination is filed by the applicant without prescribed fee and same is not paid within 1 month from the date of filing of such request, the application shall be treated as withdrawn and no further request for examination shall be entertained.

* In case the applicant is interested to withdraw the application, the request for withdrawl should be submitted at least 3 months prior to the expiry period of 18 months from the date of filing.

Consequence of non-receipt of request for Examination

* The application shall be treated as ***withdrawn*** by the applicant under section 11B(4) in case no such request for examination is made by the applicant or any other interested person within the stipulated period.

* The applicant shall have to comply with all the requirements under the Act within a period of ***12 months*** from the date of first statement of objections forwarded and extension of time beyond 12 months is not permissible under the Act.

Sealing of patents

* Request of sealing of patent may be made at the appropriate office where the application was filed on the prescribed form 9 within a period of six months from the advertisement of acceptance of complete specification under section 43(2).

Term of patent

* The term of every patent shall be 20 years and shall be counted from the date of application of patent.

* The term of every patent which has not expired and has not ceased to have effect on the date of commencement of this Act i.e., 20-05-2003 will be 20 years from the date of filing of the application for the patent. The interested persons may renew their patents accordingly.

(For further information, please log onto www.ipindia.nic.in)

(Source: The Statesman, 4 June 2003)

Symposium on "Intellectual Property Rights (IPR)" and World IPR Day Seminar

A one day ***Symposium on IPR*** was organized by FITT on 27 March 2003 in the seminar hall of IIT Delhi. Some distinguished speakers delivered lectures in the area of IPR. The noted speakers were **Prof. M.M. Pant, Mr. S.K. Pangasa, Mr. P.K. Patni, Mr. D.P.S. Parmar,** leading IPR advocate **Mr. Chander Lall**, and **Dr. A.K.Sengupta**. Except Mr. Lall , Prof. Pant & Dr. A.K. Sengupta, the other speakers were from Patent office, Govt of India. This symposium was mainly an awareness Programme on IPR, for the faculty members and researchers of IIT Delhi.

In the after noon session there was a panel discussion on IPR Protection in Technical Universities, which was held at the senate room of IIT Delhi.

World Intellectual Property Day was celebrated this year on 26th April with an invited address by **Dr. K.V. Swaminathan**. Dr. Swaminathan is the Chairman of Waterfalls Institute of Technology Transfer (WITT), New Delhi. He delivered the lecture on **"IPR in Academic Environment"**.

All the lecture-presentations of the two above events have been compiled in the CD version by FITT.

For further information please contact:

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Patent filed/ready to be filed at FITT during March 2003 to August 2003

SNo.	*Title of the Invention*	*Principal Inventor/ Deptt./Centre*
1.	A novel electrocoagulator for the oily waste water.'	Dr. A.N. Bhaskarwar, DCh.E
2.	A sieved electrode for the Electro-coagulator.'	Dr. A.N. Bhaskarwar, DCh.E
3.	PCT application 'A system and method for blind multi-user (MU) detection of BPSK-DS CDMA signals'	Prof. Surendra Prasad, DEE
4.	A novel biopesticide.	Prof. R.C. Maheshwari, CRDAT
5.	Process for making an improved hydrated ferric oxide for arsenic removal and the resulting adsorbent produced therefrom.	Prof. R.C. Maheshwari, CRDAT

It is to be noted that all IPR related activities in IIT Delhi is coordinated by FITT.

For further details please contact:

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FITT, IIT Delhi, New delhi-110016 Phone: 91-011-26597116
E-mail: mahajanipr@rediffmail.com

FITT PROGRAMMES

HRD Programmes

Since March 2003 and till now, 9 customised HRD programmes were held under the aegis of FITT. A list of HRD programmes completed during the past few months and forthcoming courses is given below:

S.No	Title	Sponsors/Participation	Date & Venue	Co-ordinator & Deptt.
	HRD Programmes (Concluded)			
1.	Training Programme in Coir Geotextile Testing	Central Coir Research Institute, Kerala	13-16 March 2003, IITD	Prof. G. V. Rao, CE
2.	Design Issues in ADC & DAC	National Semiconductors Ltd., Bangalore	27 - 31 March 2003, National Semiconductors Ltd., Bangalore	Prof. D. Nagchoudhuri, EE
3.	Training Programme on Mechatronics Technologies for Samtel Color Ltd.	Samtel Color Ltd., Ghaziabad	7 June - 7 July, 2003 (For 6 days), IITD	Dr. S. K. Saha, ME Dr. I. N. Kar, EE
4.	Modular Training Programme for the Scientist of LRDE , Bangalore (M1)	LRDE, Bangalore	3-14 June 2003, Bangalore	Dr. Arun Kumar, CARE Dr. Shankar Prakriya, EED
5.	NATCOM V&A Workshop on Water Resource, Coastal Zone and Human Health	Winrock International India, New Delhi	27-28 June 2003, IITD	Prof. A. K. Gosain, Civil
6.	Workshop on Embedded Systems & Applications	Participation based	3-5 July 2003, IITD	Prof. S. Chaudhury, EED
7	Certificate course on Embedded systems & applications	Participation based	8 September 2003- 21 November 2003	Prof. S. Chaudhury, EED Dr. U.Nagchoudhuri, FITT
8	Training Programme on Construction Management	Water Sector Restructuring Project, Lucknow	17-20 September, 2003 IITD	Dr. K.C. Iyer, CE
9	Modular Training Programme for the Scientist of LRDE , Bangalore (M2)	LRDE, Bangalore	7-17 October, 2003 Bangalore	Prof. S. K. Koul, CARE
	Forthcoming Programmes			
10	Seminar on Textile Rope and Cordoges	Participation based	12 December, 2003, IITD	Prof. R. Chattopadhyaya, TT

Technology Development Projects At FITT

List of some major Technology Development Projects at FITT during the last few months

S. No.	Title	PI	Deptt.	Client
1.	Development of an Automated Security System for Vehicle entry-exit control consisting of vehicle authorisation system and under carriage vehilce inspection system.	Prof Anshul Kumar	CSE	Ministry of Communications and Information Technology, DIT, New Delhi
2.	Managing Executive Recruitment of a PSU	Prof R K Baisya	DMS	Bharat Sanchar Nigam Ltd., New Delhi
3.	Application for DR Ferrography for condition monitoring of Electric Locomotives of Western Railway	Dr Naresh Tandon	ITMMEC	Western Railways
4.	Research Project "New Delhi Traffic Data Evaluation	Dr Geetam Tiwari	TRIPP	General Motors
5.	Technology Devt cum transfer for Mouth Freshener	Prof R C Maheshwari	RDAT	M/s S A V India Pvt Ltd., New Delhi
6.	Software devt for filter design in suspended substrate stripline and finline configuration upto ka-band frequencies	Prof S K Koul	CARE	DEAL, Dehradun

SPONSORED RESEARCH AND INDUSTRIAL CONSULTANCY, IRD UNIT

List of some Major Sponsored Research Projects Undertaken by IRD Unit, IIT Delhi during the period 01-Feb-2003 to 30-Sep-2003

S. No.	*Project Title*	*Sponsor Name*	*P.I. Name*
1	Execution and Operation of EKLAVYA Technology Channel (RP01519)	Deputy Educational Advisor, Dept. of Secondary Education	Kushal Sen, Centre for Educational Technology
2	Sustainable Urban Transport in Less Motorised Countries: Research and Training (RP01507)	The Volvo Reseach Foundations	Dinesh Mohan, Centre for Bio-Med. Engg.
3	National Programme on Technology Enhanced Learning (NP-TEL) (RP01518)	Deputy Educational Advisor, Dept. of Secondary Education	Kushal Sen, Centre for Educational Technology
4	Site Characterisation and Liquefaction Assessment for Delhi Region (RP01571)	Department of Science & Technology (DST)	K.S. Rao, Civil Engineering
5	Modeling of Air-Sea Interaction Processes to Study Genesis, Intensification and Dissipation of Cyclonic Vortices Over Indian Seas (RP01512)	Indian National Centre for Ocean Information Services	U.C. Mohanty, Centre for Atmospheric Science
6	Fund for Improvement of S&T Infrastructure in Universities & Higher Educational Institutions in Engine and Unconventional Fuels Lab (RP01495)	Department of Science & Technology (DST)	Avinash Chandra, Centre for Energy Studies
7	Novel studies on Propagation and Signal Processing of Thermal Waves for defected localization with applications to Non-destructive Characterisation (RP01469)	Naval Research Board, Ministry of Defence	Suneet Tuli, Centre for Applied Research in Electronics
8	Production of Biodiesel from Non-edible Oils and Field Trials of Diesel Car with Bio-diesel Operation (RP01557)	Ministry of Non-conventional Energy Sources	L.M. DAS, Centre for Energy Studies
9	An Operational Integrated Indian Ocean State Forecasting System Including Wave-current-storm Surges (RP01501)	Indian National Centre for Ocean Information Services	A.D. Rao, Centre for Atmospheric Science
10	Fabric Based Material for Canal Lining (RP01581)	Ministry of Water Resources (R&D Divn.)	B.L. Deopura, Textile Technology
11	Design, Development and Setting up of Washing & Drying Plant for Carpet Industry of J&K State (RP01574)	J & K Handicrafts (Sales & Export) Corporation	Rajendra Prasad, Centre for Rural Development & Technology

List of some Major Consultancy Jobs Undertaken by IRD Unit, IIT Delhi during the period 01-Feb-2003 to 30-Sep-2003

1	Development of Low Cost Computing Platforms and Applications (CW06203)	Media Lab Asia	M. Balakrishnan, Computer Science & Engineering
2	Research & Development of Self-Configurable Ad-hoc Networks, with Applications to Sensor Networks (CW06164)	Media Lab Asia	B.N. Jain, Computer Science & Engineering
3	Technology Development for Collecting Bone and Tissue Properties and Development of Human Body FE Model-Phase-II (CW06446)	Japan Automobile Research Institute	Anoop Chawla, Mechanical Engineering
4	Culture Media and Fermentor Operating Conditions Optimization for Growth of Acenetobacter (CW06350)	Gupta Agro Industries Private Limited	Vikram Sahai, Bio-Chemical Engg. & Bio-Technology
5	Strategic and structural changes in Directorate General of Supplies and Disposals (CW06305)	Directorate General of Supplies And Disposals	Sushil, Management Studies
6	WIPO: Wireless Internet Post Office (CW06244)	Pan Asia ICT Grants Programme AMIC	Huzur Saran, Computer Science & Engineering
7	Development of Methodology for Modeling of Airbags for OOP Study (CW06500)	Japan Automobile Research Institute	Anoop Chawla, Mechanical Engineering
8	Remedial Masures for Pipeline Crossing of 18 Dadiri DESU Natural Gas Pipeline at Shadara Drain in Noida (CW06391)	GAIL (India) Limited	N.K. GARG, Civil Engineering
9	Analysis and Design Improvements of a Motor (CW06274)	LG Electronics INC. Korea	K.R.Rajagopal, Electrical Engineering
10	Advise and Technical Support for Human and Institutional Development for Ecological Refrigeration (CW06254)	IT Power India Pvt. Ltd.	R.S. Agarwal, Mechanical Engineering

IIT IN NEWS

Appointments

Prof. Surendra Prasad, Deptt of Electrical Engineering has been appointed as the **Deputy Director (Faculty)**, IIT Delhi initially for a period of two years on contract basis with effect from 2nd April 2003.

Prof. D.P.Kothari, Centre for Energy Studies has been appointed as the **Deputy Director (Admn.)**, IIT Delhi initially for a period of two years on contract basis with effect from 2nd April 2003.

The " School of Information Technology" has been established at IIT Delhi in terms of the decision of the Senate. **Prof. Anshul Kumar**, Department of Computer Science & Engineering has been appointed as **Co-ordinator of the 'School'**, with immediate effect. He has also been appointed as **Dean , Undergraduate Studies (UGS)** w.e.f. from August 1, 2003.

Prof. Chandra Shakher of IDDC**,** has been appointed as **Director of National Institute of Technology (NIT) Hamirpur (H.P.)** for a period of five years.

Prof. S.S. Murthy, Department of Electrical Engineering has been appointed as **Director of National Institute of Technology (NIT) Surathkal** for a period of five years.
Prof. S.M. Ishtiaque, Deptt of Textile Technology has been appointed as **Dean of Students** w.e.f September 1, 2003

Prof. M.N.Gupta, Deptt of Chemistry has been appointed as **Dean, Postgraduate Studies & Research** w.e.f. September 1, 2003

Prof. Kushal Sen, Deptt of Textile Technology has been appointed as **Dean, Alumni Affairs & International Programmes.**

...Nine Indians enter Elite US Academy *(Contd. from page 6)*
Also elected to the National Academy of Engineering are **Debasis Mitra**, vice-president of the Mathematical Science at Bell Labs(for contributions to the modeling, analysis, and design of communication networks), **Vinod Sahney**, senior vice-president of the Henry Ford Health System(for improving health care systems), **Anjan Bose**, dean, College of Engineering and Architecture, Washington State University (for contributions to tools, education and research on power systems) and **Sanjit Mitra**, professor, department of electrical and computer engineering, University of California, Santa Barbara (for contributions to signal and image processing, for research supervision, and for writing pioneering textbooks).
Besides the six US-based Indians, the academies also elected three Indian delegates based outside the US- **R.A.Mashelkar**, director general, Council of Scientific and Industrial Research in New Delhi (for outstanding engineering contributions and exceptional leadership and management of the Indian National Laboratories); **Bindu Lohani**, secretary of the Asian Development Bank in Manila, and **Obaid Siddiqi**, professor and director, National Center of Biological Sciences, Tata Institute for Fundamental Research, Bangalore. Election to membership in the Academy is considered one of the highest honours that can be accorded to scientist or engineer.

(Source: The Times of India, May 9, 2003)

...Convocation IITD 2003 *(Contd. from page 1)*
sion, Hydrogen Energy, Material Science and Power Technology. He mentioned that several faculty members have been bestowed with honours/ awards and elected as fellows of professional national/international bodies during the year. He also mentioned about the Indian National Digital Library in Science and Technology (INDEST) Consortium, which the Central Library of IIT Delhi have recently entered.

Delivering the convocation address on *" Technology Imperatives of National Development"* **Shri Bhairon Singh Shekhawat** said " I believe that the key issues and challenges coming in the way of our development must be addressed with a sense of urgency. It is my humble effort to build up national consensus in favour of such an approach for nation's development and in particular for measures such as population stabilization, reforms in administration, judiciary and electoral system for better governance." He mentioned that our achievements in defence, space and atomic energy have been spectacular. We are on the IT super highway. Our economy is stable and resilent; we are aiming at 8% growth of GDP in the Tenth Plan.

Post graduate degrees in Ph.D., M.Tech., M.B.A., DIIT, M.Sc. were awarded to 865 students and 391 their students received their undergraduate degrees. 44 Awards/Medals/Cash Prizes were received by the graduating students for their special achievements. The President's Gold Medal at the B.Tech level was awarded to Mr.Deepak Garg of Department of Computer Science & Engineering.

...Prof. Banwet's Views *(Contd. from page 10)*
mathematical rigour. Unfortunately, students get bogged down with proving certain properties. In contrast, management courses on Operations Research and Decision Theory essentially combine statistics, operational research and management science systems techniques. The emphasis is on conceptualising problem situations in totality and perceiving them holistically.

So, is it futile to have a full-fledged course in OR?
The lemma-ites (pure OR people) are more involved in proving theorems. Nonetheless, this is important because practice without sound theory is not sustainable. Moreover, there is no point gauging the credibility and viability of one programme over another. Instead of frightening practitioners with mathematical rigour, it is imperative to become more user friendly and be a bit more IT-savvy.

Should an OR aspirant go for a stand-alone programme, or do it as part of an MBA, engineering or designing course?
An MBA takes the lead, followed by industrial engineering and pure OR. Certainly, an 'MBA Operational Research IT-enabled' person would be the preferred choice of employers.

What kind of a mental framework does the subject require?
An open mind, a holistic outlook, reasonably good analytical skills coupled with an IT-orientation and the ability to conceptualise problems of the real world are necessary to be a good problem-solver and an effective decision-maker.

(Source: The Hindustan Times, 8 October, 2003)

IIT-D alumnus gets key IMF job

For the first time, the International Monetary Fund (IMF) has chosen an Indian as its chief economist. **Raghuram G. Rajan**, currently with the University of Chicago's Graduate Business School, will take over from Kenneth Rogoff.

The 40-year-old Rajan is a gold medallist from IIT Delhi (1985) and IIM Ahmedabad (1987). He wrote his doctoral dissertation on banking from MIT in 1991.

Vital Role

What will Rajan do?
Direct IMF's research activities

What role does research play?
Gives inputs for its main jobs — surveillance of global financial developments and lending

Before moving to Chicago, he had been a visiting professor at MIT, Northwestern University and the Stockholm School of Economics.

Announcing the appointment, IMF managing director **Horst Kohler** said: "Rajan has been at the forefront of work on banking and financial sector issues. With his exceptional rise within the economics profession as well as with his extensive experience, Rajan will bring a strong and proven record of intellectual leadership to the IMF."

"It's a very exciting prospect and a challenging one," Rajan told the Hindustan Times from Chicago. Since the IMF has a strong research group, he does not propose to do anything radical. But he will attempt to bring greater focus on the stability of the financial and banking sectors, Rajan said.

Rajan, who has also been a consultant to the US Federal Reserve Board, the World Bank and the IMF, has published extensively on economic and financial matters.

A recipient of numerous awards, Rajan was awarded the inaugural Fisher Black Prize by the American Finance Association in January. The prize is given to a person under 40 who has contributed the most to the theory and practice of finance.
Rajan has been a director of the American Finance Association and an associate editor of the American Economic Review.

(Source: Hindustan Times, 4 July 2003)

FITT MISSION

To be an effective interface with the industry to foster, promote and sustain commercialisation of Science & Technology in the Institute for mutual benefits.

Engineers Day Celebration at IIT Delhi

(L to R: Prof. Anshul Kumar, IIT Delhi; Mr. Ratish Jain, Resistoflex Pvt. Ltd.; Mr. Ashok K. Manchanda, Director, NUCON Engineers Pvt. Ltd.; Prof. R.S. Sirohi, Director, IIT Delhi; Dr. A.K. Sengupta, Managing Director, FITT; Prof. Shashi K. Gulhati, former IIT Professor)

IIT Delhi Celebrated Engineers Day on 14th September 2003 to commemorate the birthday of the great visionary engineer of the Century Bharat Ratna Sir M. Visvesvaraya. The morning session of the programme began with a panel discussion *on " Engineering as a Profession in Changing Global Scenario"*, which was followed by a documentary film about the Institute. The afternoon session was organized in the form of an open house. *(See photographs below:)*

The visiting delegates, primarily students and teachers from various engineering institutions, went around the laboratories of various departments, saw educational films at National Resource Centre for Value Education in Engineering (NRCVEE) and visited an exhibition set up by the Transportation Research and Injury Prevention Programme (TRIPP) Research.

The departments which presented their research work and facilities includes Chemical Engineering, Civil Engineering, Computer Science & Engineering, Electrical Engineering and Mechanical Engineering.

M.DES DESIGN SHOW

Design Degree Show 2003

The Design Degree show is an integral part of the M. Des. Industrial Design Curriculum of the Instrument Design & Development Centre (IDDC) of IIT Delhi. Its purpose is two fold:
(i)To provide an opportunity to the industry to come, see, and probe the industrial design manpower being produced for the market challenges of tomorrow and
(ii) To provide a forum to the designers to interact with the general public who in the end are the final judges of design appropriateness.

The Design Degree Show 2003 of IIT Delhi was organized from May 31 to June 2, 2003. The Final Year Students of M.Des Programme presented their projects during this show. Some of the projects displayed at the show includes: Styling of Tractor; Styling of Eicher tractors; Futuristic color television; Design of an electric two wheeler; Futuristic color television; 29"conventional color television; Wheel chair for paraplegic patients; Design of a Sporty Watch for Reebok; Exploration with wind to make a wind interface product; Design of plastic seating cum chassis for electric wheel chair; Design of sports accessory kit for maruti wagon - r (city sport); Thematic approach to Design of door handle plate set and pad lock; Design of a electric two wheeler etc.

Some of the minor projects of the students were: Lampshade ; Styling of Striking Car; Design of Hands Tools for Cane Craft; Appliances design of hand held dry masala grinder of Indian market; Designing a side car for the Hero Honda etc.

The projects were sponsored by Samsung India Electronics Limited, Noida, U.P.; Maruti Udyog Limited Gurgaon, Haryana; Godrej & Boyce Mfg. Co. Ltd., Mumbai; Hero Global Design, New Delhi; Eicher Tractors, Faridabad, Haryana; Timex Watches Noida; IDDC, IIT Delhi.

Design of a Sporty Watches for Reebok

Design of a 21" Flat CTV in Indian Scenario

Styling of Striking Car

CVT MOTORBIKE DESIGN on Hero Winner Platform.

Styling of Tractors

Wheel chair for paraplegic patients.

Tap Design

A side car for the Hero Honda

Design of Rural Refrigerator

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