



# FITT FORUM



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

## International Conference on e-Governance (ICEG)



*Inauguration of the ICEG. Standing (from L to R) Dr. M.P. Gupta, Prof. R.S. Sirohi, Director, IITD, Dr. A.P.J. Kalam, Hon'ble President of India, Prof. M.G.K. Menon, Chairman, BOG, IITD and Prof. R. Baishya, Head, DMS*

Department of Management Studies (IIT Delhi) organized an **International Conference on e-Governance (ICEG 2003)** during 18-20 Dec. 2003. **The President of India, His Excellency Dr. A. P. J. Abdul Kalam** was the chief guest and inaugurated the conference. Delegates from all parts of the world participated and shared their experiences.

The highlight of this conference was that there were three keynote sessions, eight invited talks, fourteen technical sessions, three industrial sessions. There were forty-nine speakers, including chief guest, keynote and invited speakers. In addition to that there were ninety eight technical speakers. In all one hundred and thirty seven experts spoke on the sub-themes and related issues of the conference.

A total of about six hundred delegates participated that included about 70 foreign delegates. Also included IT secretaries/Managers of central government departments, state governments, industry delegates, academicians from IITs/IIMs and students. ICEG proceeded at three levels: Keynote sessions, Invited Talks and Technical and Industrial sessions. Keynote session set the agenda for the each day which

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## From the Desk of the Managing Director

Since October 2003, the month the last edition of the newsletter *FITT Forum* was published, a number of significant events happened in the Institute. First, Dr. Abdul P J Kalam, the venerable President of the Republic of India, came to inaugurate the International Conference on e-Governance, a first of its kind in this country. Later in January, Professor R. S. Sirohi, Director of the Institute, was honoured by the Government with a Padmashree Award. One other faculty member of IIT Delhi, Dr. Sunita Jain was also honoured with Padmashree this year.

The Technology Business Incubation Unit (TBIU) programme in the Institute got a boost with a grant to the tune of Rs.8 million from the Dept. of Information Technology of the Ministry of Communication and Information Technology of the Government of India. The TBIU scheme, administered under the aegis of FITT, has been until now, operated completely from the internal resource of FITT and the Institute, and this is the first time financial support has come from outside. The Dept. of Science and Technology (DST) has also come forward with a smaller grant of Rs.1.5 million. These funds will be utilized over the next two-year for nurturing Technology Start-up Companies initiated by teams of faculty, students and alumni of the Institute and scientists/technologist entrepreneurs admitted for residency in the Institute Incubator. Meanwhile, Technology Development and Transfer as well as IPR activities in IIT Delhi have gained momentum. More than 100 patent applications have been filed over the last six to seven years from the Institute based on R&D efforts of its academic community.

The year 2004 has definitely started with good portents for the Institute. We are making progress, definitely and confidently.

Dr. A. K. Sengupta

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## RESIDENT START-UPS IN IIT DELHI TECHNOLOGY BUSINESS INCUBATOR

### KritiKal Solutions (P) Ltd.

The KritiKal team comprise some of the brightest minds in their respective fields today. The technical core of the company consists of five senior faculty members of the Computer Science and Engineering Department at the Indian Institute of Technology, Delhi and eight alumni of IIT Delhi. Besides the vision and experience gained through many years spent teaching at various premier universities around the globe, the faculty members also have many prestigious deployments to their credit, in India. One such landmark achievement of which they have been a part, is the ERNet, which now connects and enables hundreds of academic and research institutes in India.

#### Core Technology

Armed with more than three decades of combined experience in developing and deploying cutting edge technologies in the fields of Real-Time applications, Embedded Systems, Computer Networks and Computer Vision, KritiKal Solutions is dedicated to developing technology and products that would drive applications and solutions in the near future.

#### Products targeted

##### i) Vehicle Underbelly Scanner

KritiKal has developed a Vehicle Underbelly Scanner for securing your premises. Superior to the standard mirror inspection technique, the Scanner provides a convenient and fool-proof mechanism to inspect the underbelly of vehicles to detect explosives and other abnormalities in real-time. The highly functional user interface makes for very easy and efficient visual analysis. The Scanner is an ideal solution for security critical installations like power plants and government buildings. The vehicle is scanned as it passes over the Scanner, hence no inconvenience to visitors. With the optional License Plate Reader system, automatic logging of the scanned underside and license plate is possible. Moreover, the Scanner has been designed to be easily integrable with your existing security system.

##### ii) Vehicle Authentication System

The Vehicle Authentication System is a smart-card based distance-authentication system which can be used for a variety of applications depending on your needs. The system verifies the identity of the vehicle and its driver with its database in order to ensure that the vehicle is being driven by an authorized person. The system provides entry-exit logging and can be configured to operate the closing and opening of the gate automatically. The system can perform entry/exit control for sensitive zones like military areas, prison complexes and government buildings; it can also act as a security system to prevent theft of cars in residential complexes, automatic parking fee collection in parking lots, toll collection, etc. The smart-card based 3-way authentication solution protects against duplication and impersonation, while its distance authentication ensures that genuine users of the system do not have to stop their vehicles for security checks.

##### iii) Digital Camera Surveillance System

KritiKal is in the process of developing a variety of surveillance applications using digital cameras. The idea is to develop the intelligent vision based algorithms which can run on the digital cameras and assist in surveillance activities. Some of the features being targeted include

activity monitoring, instantaneous alerts, face detection, human-form tracking using multiple camera coordination.

##### iv) Talking Assistant

One of the consumer products is a handheld Talking Assistant or TA. One can take notes by just talking into the TA; TA will read out documents and e-books (supported formats); it will also play out audio books encoded in the Daisy format. Besides, it can also manage one's personal information.

##### v) HiNet: a Network Emulator

HiNet is a network emulation tool for protocol designers, developers and network service providers. HiNet is a GNU/Linux based scalable tool to emulate large networks on a small number of physical machines. HiNet can evaluate the application's performance on a given network topology. All relevant network parameters can be specified by the user, providing more flexibility and reliability.

For more information, please contact on the following address:

KritiKal Solutions, R&D Division

TBIU, Block-1 Ext., IIT Delhi, Hauz Khas

New Delhi-110016, Website: <http://www.kritikalsolutions.com>

### Sofblue India (P) Ltd.

Sofblue India has entered the residency of TBIU on October 15, 2003. The purpose of opening up an unit at TBIU was to produce electronic energy meters with wireless automatic meter reading capability. Subsequently the firm entered into a consultancy project with FITT, IIT (Delhi) to develop/ modify single-phase meters.



TBIU agreement with Sofblue. Prof. Sirohi, Director ITTD (middle) looks on

So far a single-phase energy meter has been developed with the following features:

1. Six Digit Liquid Crystal Display
2. Earth Load Indicator
3. Reverse Current Indicator
4. Four Tariff Registers and a Cumulative Tariff Register
5. Serial Data Output for AMR
6. Optical Interface as per IEC1107D

Sofblue has placed order for a fully automatic electronic calibration bench. After this equipment arrives the single-phase meter will be calibrated for its rated accuracy of class 1.0

Professor A.K.Mukherjee of the Centre for Energy Studies is the faculty mentor during the Incubator Residency of SofBlue at IIT Delhi.



## RESIDENT START-UPS IN IIT DELHI TECHNOLOGY BUSINESS INCUBATOR

### VirtualWire Technologies

VirtualWire Technologies is a wireless and communications technology company. It was set up by a team of three alumni and two faculty members from the Department of Electrical Engineering at Indian Institute of Technology Delhi.

#### Core Technology

Communication Technology is a wide and rapidly developing field with one of the highest growth rates in the world. It provides limitless opportunities for technological innovations and ideas. Communication networks need to be ubiquitous, reliable, secure with very high data rates and seamless. Technological developments have come to a stage where tomorrow, all communications at the user-end will be wireless.

VirtualWire Technologies aims to be one of the companies that will empower this wireless dream.

#### Competencies

Signal Processing, DSP algorithm design, Cryptology, design of wireless and communication modules, FPGA/ASIC based designs RF design, etc. and knowledge of the latest communication technologies and standards.

#### Vision

To provide superior, yet cost effective, solutions encompassing various design aspects of a communication system and also to build complete, high quality Communication Systems designed for specific needs.

#### Products targeted

The first one is a *speech scrambler* targeted mainly for the HF and VHF bands of operation. The scrambler operates asynchronously and overcomes limitations of typical scramblers which are all synchronous in nature.

The second product is a *complete cryptosystem design*, which can be implemented in FPGA and customized for different requirements. The design is based on chaotic functions and a patent has been filed for the same.

For more information, please contact:

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Website: [www.virtualwire.co.in](http://www.virtualwire.co.in)

### INRM Consultants Pvt. Ltd.

Some of the current activities of INRM Consultants Pvt. Ltd. in the area of IT for natural resources planning & management include: *Identification and Creating Framework of Potential small hydro-power potential sites in Nagaland* from Ministry of Non-conventional Energy Resources. The objective is to demonstrate the use of hydrological modeling with GIS for generating low flow hydrology in one of the identified catchment in the state of Nagaland and use it for

identification of potential small hydro sites.

*Water Resources Management DPR for HP – Planning Commission.* The objective is to create a vision for the water resources development and management for the State of Himachal Pradesh which shall include:

1. strategy for conjunctive and optimum utilisation of water resources.
2. implementation of technology for rainwater harvesting for meeting domestic need and recharging aquifers.
3. demonstration of technology for recycling/reuse of waste water.
4. suggesting improvement in the efficiency of existing system of water development.
5. strengthening the mechanism of resource survey, evaluation and development.

### SANMOTECH

The start-up, which has just been approved for residency in the incubator comprises a faculty professor (Prof. H.M. Chawla, Head, Chemistry Deptt.) as the Promoter/R&D Head and an IIT Delhi Alumnus.

The proposed venture is a molecular discovery start-up for developing innovative synthetic and natural molecular technologies. As part of the incubation exercise, the company would undertake R&D for formulation on new derivatives having market potential with adequate growth opportunity. To start with the start-up would target development of sun screen products which will cut down the harmful ultra violet rays of the sun on human skin etc. The market for the product is expanding with global opportunities. The product formulation is aimed to have such attributes as long lasting, water non solubility, high safety, non irritating to exposed surface on application etc. The proposed product would have unique chemicals and concentrations, wider UV spectrum and good anti aging factor. The developed product would be protected through patents and subjected to validation and market feasibility before applying for statutory approvals from authorities for obtaining necessary fitness certificate for human use.

### Touchstone Learning System

The start up envisages a better deliverance of education system by harnessing appropriate technologies in ensuring- imparting quality education, affordable for all and adaptive learning through e-Education. Harish Chaudhry of Dept. of Management Studies is associated with this start - up.

In improving the conventional educational system, the teachers will be equipped with better instruction tools and the e-Learning system would involve automated test/feedback to diagnosis areas for improvement in each of the 3 players i.e. students, instruction tools and teachers. The appropriate technology will be harnessed to develop (i) intelligence embedded diagnostic tools, (ii) instruction tailor, (iii) IT enabled natural collaboration platform and (iv) language free Learning System.

The proof of concept for the proposed learning model has already been validated in selected schools in Delhi and other parts of India. The incubation exercise would attempt to perfect the weaker links in the system validated so far and depend significantly on already identified mentors in the Institute which includes Dr. Naveen Garg, CSE, IITD, Dr. R. Bhat, CSC, IITD and Dr. B. Chandra, Mathematics, IITD.



## TECHNOLOGY BUSINESS INCUBATION UNIT (TBIU)

### IITD Hatches 3 Start-ups from Tech Business Incubation Unit

NEW DELHI: The fires of enterprise are burning bright at the Indian Institute of Technology (IIT) Delhi. The institute's technology business incubation unit (TBIU), set up to facilitate the process of moving research from the lab to the market place, has successfully incubated three student-faculty led start-up companies. The three companies operating in the areas of embedded systems and networking technologies, wireless communications, and GIS solutions were seed-funded to the tune of Rs. 10 lakh or less each and are already in talks with customers. The technology business incubation unit was set up in the year 2000 by the Foundation for Innovation and Technology Transfer (FITT), the industry interface arm of IIT Delhi. According to IIT Delhi Director Prof. R.S. Sirohi, the focus towards research has led to the creation of 'technology business incubation unit,' where students and faculty have come together to convert ideas into products and start-up companies.

The Government's Department of Information Technology (DIT) has provided grant-in aid for a total of Rs. 4 crore to fund the start-up companies. "It is a place where a technology entrepreneur starts converting his or her new idea/concept or service or a product into a commercially viable business in technological association with members of the faculty and students of IIT Delhi," FITT managing director Dr. A.K. Sengupta said. "KritiKal Solutions, set up with an initial seed funding of Rs. 10 lakh, was the first student-faculty led enterprise formed out of IIT Delhi. Today, KritiKal is self-sufficient and generating its own revenues for developing in-house technologies and products, through a few solution development projects for clients such as Xerox ModiCorp India, among others," Dr. Sengupta told eFE.

KritiKal has, in the last few months, started working on three new projects encompassing embedded systems and networking technologies. Among the projects are development of a portable metering and billing device, with network connectivity and security projects from the government's Department of Information Technology (DIT) for a vehicle authentication system and vehicle underside scanner. The expected revenue from these projects is about Rs. 1 crore over the next year.

Dr. Sengupta said that VirtualWire Technologies was the second student-faculty led enterprise, set up with initial seed funding of Rs. 9 lakh by a team of two faculty members and three alumni from the department of electrical engineering at IIT Delhi. It is a wireless and communications technology company and involved in simulation and testing of communication systems, DSP implementation, wireless communication and cryptology. It has developed an asynchronous speech scrambler for high frequency (HF) channel, and the product is targeted mainly at the defence sector and for other government agencies which use a lot of voice communication and need secrecy to conduct their business. VirtualWire is presently engaged in talks with Bharat Electronics Ltd (BEL) for mass production of the speech scrambler.

INRM Consultants is the third start-up, incorporated by faculty and alumnus of IIT Delhi, under the incubation plan. Set up with initial funding of Rs. 8 lakh, it provides integrated natural resource management solutions and product development for tailor-made solutions involving GIS, remote sensing, GPS technologies and natural resource modeling. It has developed a stand-alone GIS tool with basic functionalities like viewing, single and multi-layer analysis, charting and reporting. This GIS interface developed on Java has been supplied to Indian Coffee Board for coffee growers in Karnataka.

Dr. Sengupta said that student-faculty led start-ups essentially build on research done at the institute itself. "More than 500 industry projects are completed by graduating students every year and it is not a daunting task to identify 5-10 ideas with commercial potential," Dr. Sengupta said. IIT Delhi has completed screening of 16 applications in the areas of embedded systems, fibre optics, optical communications, biotechnology, to name a few, and 5 more start-ups are being incubated as part of the institute's programme.

(Source: The Financial Express, December 29, 2003)

### Support for Technology Business Incubation from the DIT, Govt. of India

Under the framework for National Entrepreneur Support Programme for IT/ITES at Premier Institutes, the Department of Information Technology (DIT) Govt of India has approved a grant of Rs.80 lakhs to IITD/FITT over a period of two years for supporting incubation programmes of faculty/student led ventures. This follows a proposal for fund support mooted by FITT and pursued actively over the past two years. The broad features for the programme are:

1. One or more Faculty members of the Institute would be invariably associated with the particular venture.
2. The funds are to be utilized in accordance with the requirements of a particular company or project, primarily to support
  - (a) Filling up gaps in the requirements of technology start-up companies with respect to the infrastructure and other supports readily available in the Institute.
  - (b) Meeting part of the recurring expenses of the company.
3. The support under the scheme would be provided to Registered Companies. The registration amount should be mobilized by the promoters themselves.
4. The total financial support provided for any one company will not be in excess of Rs.15 lakhs over a maximum period of two years. The financial support would be treated as a loan which is to be redeemed in the form of either equity and cash or cash in entirety.

Whereas detailed modalities for the operational aspects for the fund are being worked out in the Institute, **student-faculty teams keen to set up start-up companies with project ideas in the area of IT/ITES** with potential for commercial spin-off are invited to send in proposals. One may approach FITT for needful assistance in converting the project/venture into a commercial proposition through the Technology Business Incubation (TBI) route.



## SCIENCE AND TECHNOLOGY NEWS

### Kalam, Stallman Discuss Open Source Software

The President, A.P.J. Abdul Kalam, last Thursday played host to two radically divergent poles of the global software industry. The first to meet the President was Richard Stallman, the leading light of the free and open source software (FOSS) movement. Ironically, the people waiting in the Presidential anteroom for the interaction to end were people from Microsoft. Dr. Stallman has devoted his life to countering Microsoft's policy of selling software that cannot be changed because its code is kept a secret. It also cannot be shared because of licensing restrictions. Talking to the Hindu, Dr. Stallman said the President was "receptive" to his views that development of software should be seen as a political and social issue and not just from the technological point of view. At a meeting that lasted 40 minutes, they discussed the need to give people an alternative way to use computers by popularizing open source software (OSS). "The President said that this was a beautiful concept," said Dr. Stallman. Mr. Kalam had prepared for the meeting by downloading Dr. Stallman's biography from the Internet which in keeping with the FOSS movement guru's philosophy is available free of cost. The two also went over several common interests, including the use of software in space programming. For the first time, the Mars Rovers vehicle is using OSS and it is reported to be functioning well. They also reminisced on the development work on several software programmes in which both had taken interest. Besides explaining the political philosophy of FOSS movement, Dr. Stallman said he also spoke to the President about the real intention behind Microsoft's plan to spread the use of computers in schools which was "akin to the colonial system of recruiting the local elite to help keep others in line." "I hope my discussion had some influence on the President and he will be able to resist being used that way." Dr. Stallman gave up a cushy teaching job in a prestigious American University after he perceived that "computer colonization" was spreading rapidly.

"There were only two options. Either I stopped using computers or I help everybody to escape. I chose the latter," he said. He explained that the concept behind FOSS. The word "free" did not mean giving the software gratis. Rather, it denoted the freedom to control the computer because the seller of FOSS also provided the source code or the manner in which a particular software was constructed. "This way you can see how it works, you can change it and also share the software." By taking to FOSS, India would be able to cut down on the outflow of foreign exchange which was going to become very large in the near future. So far, Microsoft licenses were not being forced on individuals, but in the coming days, proprietary software companies would make it impossible for individuals to make copies clandestinely. The flood (outflow of foreign exchange) will then become a torrent," he said. Free software, in contrast, would encourage local information technology developers to innovate and adapt the software constantly. The result will be that money will circulate in the local economy, he said.

(Source: The Hindu, February 1, 2004)

(See page 11 for a Photo feature on Stallman's Technical Lecture at IIT Delhi)

### Chevening Technology Enterprise Scholarship Programme

The Chevening Technology Enterprise Scholarship Programme (CTES) is a 9-month prestigious international technology scholarship programme designed and operated by the UK's Centre for Scientific Enterprise ([www.cselondon.com](http://www.cselondon.com)). It is funded by the British Government and is aimed at non-EU students. This full time Programme attracts participants both from universities and companies (see box), from around the world.

#### Applicants assigned to the CTES Programme are typically:

- Development engineer/ scientist or project manager
- PhD/ MSc or equivalent technology related background.

For further eligibility details please visit [www.britishcouncil.org.in](http://www.britishcouncil.org.in)

#### **Course Structure**

During the Programme, all participants will learn how to take a technology-based innovation through to a commercial outcome, managing all the major steps on the way. The skills learned during the Programme will leave participants (known as CTES Fellows) equipped to greatly enhance their technology commercialisation and business expertise. Students will come together as a group for business training besides technical education, with classes spread across four or five intensive block modules. The business training is designed to explicitly support the development of projects as the new technology exploitation is planned, established, and grown. London Business School, Cambridge University and Imperial College are among the academic partners for the business training element. This full time Programme lasts nine months, running from approximately mid-September to end June.

#### **Fund**

The scholarship covers:

- Tuition and registration fees at the university for the academic year.
- Support such as coaching, tutorial and direct project supervision.
- Living expenses
- Return travel from the overseas country to the host country, including travel within UK.

#### **How to apply**

British Council is assisting CSEL with the recruitment of candidates in India. Please check British Council website ([www.britishcouncil.org.in](http://www.britishcouncil.org.in)) for further details and an application form. (For September 2004, the application deadline is 1st March 2004).

For more information please visit <http://www.ctesnet.com>

### Scholarships to be Raised Says Straw

Britain intends to raise the number of scholarships offered to Indians under the Chevening programmes to 3,000 a year from the present 130, its foreign secretary Jack Straw said here on Saturday. Prime minister Tony Blair has set a target and we are committed to increase the number to 3,000 scholarships a year. Straw said after distributing Chevening certificates to students who have won scholarships to study in the UK. Straw, however, did not refer to the time-frame by which the target would be achieved. "India is the largest beneficiary of Chevening programmes in the world," he said. Straw said he had fond memories of Bangalore: "I came here for the first time 25 years ago on my honeymoon". (Source: Times of India, February 8, 2004)



## Cheaper IITs? May be. More? No

Prof. P.V. Indiresan

Now that the country has seen resounding successes both on economic and diplomatic fronts, and has done well even in cricket, it is but natural to think expansively everywhere. The Prime Minister has talked of seven more IITs; others are dreaming of as many as fifty of them. Making that dream even more fascinating, the government is talking of pegging down fees in engineering colleges to Rs. 6,000 a year. Can engineering college fees be limited to Rs. 6,000 a year? Can we have 50 IITs? The short answer to the first question is yes and no. For the second, the answer is no, definitely not. The Rs. 6,000 figure has emerged from the Prof U.R. Rao Committee Report which appears to have become public knowledge. It would have been better for the Government to put out a White Paper on it, and invite all stakeholders to discuss both the original report and the White Paper. As the matter stands, the Report does not appear to be confidential any more. Hence, let me explain how we arrived at the magic figure of Rs. 6000 for engineering college fees. We were deliberating on the fee structure of renowned private universities in the United States like MIT, Harvard, Stanford and Caltech. We observed that they had all similar average fees of about \$ 11,000 a year, about 30 per cent of the American per capita income. India's per capita income is Rs. 20,000. For India to have the same democratic access to university education as America has, Indian fees should be in the same proportion of per capita income. That comes to Rs. 6,000.

Then, Rs. 6,000 is the desirable figure, not necessarily a realistic one. Indian costs, relative to the country's per capita income, are far higher than in the US. For a start, in the US, professors are paid Rs. 100,000 dollars a year, about three times the national per capita income. On that basis, Indian professors should get no more than Rs. 5,000 a month (or Rs. 60,000 a year)! Indian salaries — in per capita terms — are several times the American practice. Even then, we are unable to attract quality staff. Further, our colleges have to procure equipment at American prices, not at Indian prices. Therefore, in terms of per capita income, Indian fees cannot be as low as American ones, unless subsidies are raised substantially.

It is widely accepted that the cost of education should be shared among the three beneficiaries — by students as fees, by society as grants from the government, and by industry in the form of endowments. That is the practice in the US; that was also the recommendation of the Sarcar Committee that proposed the establishment of the first IIT at Kharagpur. However, capital costs are supposed to be borne entirely by the state or from charitable endowments. IIT facilities are poor by American standards. Even then, training costs in the IITs add up to around Rs. 200,000 a year per student. Smaller colleges could manage with Rs. 50,000 a year. Then, on the basis of equal share between students, government and industry, fees in India should range between Rs. 17,000 to Rs. 65,000 a year. If we still want to restrict engineering college fees to the affordable figure of Rs. 6,000 a year, virtually the entire bill will have to be picked up by either the government or by industry or shared between the two.

That is not impossible provided the numbers admitted are realistic

and match the economic demand. Currently, the AICTE has authorised an intake of 3,80,000 in engineering colleges. On the other hand, in early 1980s, just before the explosion in engineering education started, the intake was only 26,000. Even that was somewhat excessive. Since then, the economy has at the most trebled. On that basis, the Indian economy might be expected to support about 75,000 admissions. The actual figure will be less because, since then, productivity has increased; we are having jobless growth in many fields. Rao Committee estimate is that the country can support at the most 50,000 new entrants to the engineering profession a year. I have reason to believe that the government does not buy this argument; it wants to admit many more.

If we accept that the average cost of engineering education in India is Rs. 1,00,000 a year, and the numbers admitted are restricted to 50,000 a year (a total of 2,00,000 students in all four years), government's share will be around Rs. 1,000 crore a year — not too large a burden for the Central Government to bear. As for the industry's contribution, Rao Committee has proposed a cess of one per cent of salaries paid to engineers. That is to be placed in an escrow account to be used exclusively for engineering education. That cess will, by and large, take care of industry contribution. The Rao Committee has recommended that the cess should be distributed among the colleges by an autonomous board. It did not accept a proposal for industry to pay directly to colleges of its own choice, and thereby force colleges to compete for industry's patronage. In either case, the cess will not be enough to support the total sanctioned intake of 380,000, nor can the government make up the shortfall which will raise its burden to nearly Rs. 15,000 crores a year.

However, both the government and the AICTE are trying to bring in some discipline in engineering admissions. Even then, it is a moot question how the government can subsidise engineering education, and let fees be restricted to Rs. 6,000 a year if engineering admissions are not limited to the numbers Indian economy needs. Can we have fifty IITs? The Sarcar Committee opined that IITs should handle 10 per cent of engineering education. On that basis, IITs could expand to admit 5,000 students a year, double the current figure. However, the experience of Assam IIT shows that the capital cost per student intake for a new IIT is Rs. 3-crore. Does the government have that kind of money?

However, IITs are not built by money alone. Quality staff matter even more. There is no indication that there are enough high quality teachers to man even the existing IITs, let alone 7 or 50 more. There is a view that some National Institutes of Technology (erstwhile Regional Engineering Colleges) can be converted into IITs at low cost. Let us apply a simple rule: any college where, on a per teacher average, research papers published in refereed journals, or grants for sponsored research, or fees for industrial consultancy are at least a fifth of the IIT average will be converted into an IIT. Then, how many colleges will qualify. None! People who talk of converting existing colleges into IITs do not know how far ahead the IITs are.

(Reproduced from: Hindustan Times, January 11, 2004)



## IIT IN NEWS

### MBA Programme at the DMS of IIT Delhi

IIT Delhi's Management School does an encore; records 100% placement in 10 hours. Department of Management Studies (DMS), the Management School of IIT Delhi, saw its entire batch of students being placed in 10 hours on Day One of the Placement Week. More than 64 offers were made by 34 companies for a batch of 54 students which means that there were more than 1.18 offers per student including 4 PPOs. Companies that visited the campus include McKinsey KC, General Electric, Accenture, Wipro, Infosys, Maruti, Ashok Leyland among many others. The average salary was Rs. 5.81 lakh per annum which is around 9.4% higher than the last year and the highest salary paid was Rs. 8.5 lakh.

The Department started its placement process in the morning of the 19<sup>th</sup> and declared it shut after a mere 10 hours. It was ill luck for the recruiter slated to participate the next day as there simply were no students available. The disappointment of the companies when informed about the same was palpable and at the same time understandable. A placement committee member remarked, "We are faced with the rather unpleasant task of declining many companies that are keen on recruiting from DMS".

DMS at IIT Delhi, whose full time MBA programme was started in 1997, has emerged as one of the leading B-Schools and has been ranked consistently amongst the top 10 and has been recognized as amongst the 'Super League' of the Management Schools. Students attribute the success to the excellent faculty and the emphasis given to the understanding of real time business issues through very close association with the industry covering all categories.

(Source: Press Release, 22 January, 2004)

### IITians Abroad Have Done Us Proud, Says Prof. Sirohi

New Delhi: The death of *Satyendra Dubey*, an IIT Kanpur passout who was gunned down in Bihar recently, is no deterrent for his students, feels Prof. R.S. Sirohi, Director IIT Delhi. Sirohi is one of the recipients of the Padma Shri this year. He also feels that the Human Resource Development Ministry's claim of IITs and IIMs not performing as well as Roorkee University is untenable. "There is no doubt that the IITs and IIMs have brought international fame to the country. It's just that the Roorkee University has in the past produced people who have made bridges and contributed immensely to the development of the country. And at present everything must be seen with the background that we are working towards seeing India as a developed nation," says Sirohi.

Almost 30 per cent of IIT Delhi pass outs leave for better opportunities abroad. "But it is because of these people and the impression that they cast there that we have so much international fame. Every week, we have at least one foreign team visiting us, wanting to know about our methods of teaching and how our students are doing so well," said Sirohi. However, the Director believes that a large number of students now increasingly want to stay back here. And incidents such as the death of IIT Kanpur engineer Satyendra Dubey is no deterrent. "This has not demoralised students. There are so many Dubey's that we do not even know about. However, the pressure to enact the whistleblowers' Act is much required to allow honest people

to work." On the issue of cutting down fees, Sirohi said: "Our students are taken in on the basis of their merit. If we had to, we could even educate them for free," said Sirohi, who feels that another alternative to change in the fee structure is to charge those students who leave the country to study or work abroad and not to charge those who choose to stay.

(Source: The Indian Express, 29 January, 2004)

### IIT: India Inc Puts Its Money on R&D

For IIT, research is the road ahead. This message has come from the institute's Delhi alumni, some of whom run the country's biggest businesses. In its white paper that will be presented next week, the IIT Delhi Alumni has argued for a change in the institute's vision if it wants to be among the top five technical schools and a source of technology for the world. The white paper-IIT in the New Millennium-says that the institute's research, which is the way to the future, is not comparable to the world's leading institutions. In the 1950s, IITs aimed to produce technical graduates who would help in the country's development. The paper says that the four new areas of focus should be infrastructure, faculty, research and vision. The IIT Review Committee set up by the HRD Ministry to work out a new vision for the institute had asked the Delhi Alumni to pen down its views. Work on the paper began six months ago and involved big names, such as M.S.Banga, Chairman of Hindustan lever Limited, H.S.Bhartia, CMD of Jubilant Organosys Limited, ITC Chairman Y.C.Deveshwar, R.S.Pawar, CMD of NIIT, and McKinsey & Co. Director Rajat Gupta. "There has been a forecast that before the middle of this century, India will be the world's third largest economy. New breakthroughs in biotechnology, pharmaceuticals, nanotechnology, IT and communications will be the key drivers of growth. The growth of the Indian economy will primarily be technologically driven," states the paper. "These are real opportunities for India to be at the forefront of new technology development and application. For an academic institution to achieve academic excellence, it needs to achieve research excellence." Krishen Dhar, ex-President of IIT Delhi Association(IITDAA), says:"comparison with leading technology institutions show that while the standards of IIT graduates is at par, post-graduate studies and research are lagging." He adds that while the annual research grant per faculty is more than Rs.1 crore at Massachusetts Institute of Technology and Stanford University, it is only around 15 lakh at IIT.

IIT's lack of focus on research is already presenting a challenge in recruiting faculty. Pradeep gupta, CMD of Cyber Media says:"The IITs have produced world class undergraduates, but what next? We want to aim at becoming a top international institute for which the focus should be on post-graduate and research programmes."

Among the proposals are doubling the number of post-graduate programmes, a cutting edge research agenda and faculty retention programmes. Seventy per cent of the funds should be from the government and as research sponsorship. "We must prepare a plan to work towards this goal with the government," says Sudharshan Chawla, president of IITDAA.

(Source: The Indian Express, February 11, 2004)



## IIT DELHI TECHNOLOGIES

### Technologies from IIT Delhi Ready for Transfer to the Industries (Illustrative Examples)

**1. Anti-fungal coating from Lac wastes for obtaining gloss on leather, rexine and other upholstery articles** (Prof. H.M. Chawla, Dept. of chemistry)

A process for utilization of lac wastes obtained after hydrolysis of seed lac, shellac, kiri lac and other lac products during the production of Aleuritic acid.

**2. Detection and removal of contaminants in cotton** (Prof. Chandra Sakher, IDDC, Prof. S.M. Ishtiaque, Deptt. of Text. Tech)

Low cost Machine vision system using simple white light for detection and removal of various contaminants in cotton.

**3. Micro-Electro-Mechanical Systems (MEMS)** (Prof. Prem Pal, CARE)

A Recessed Microstructure Device for easy packaging and handling of MEMS, used in numerous applications in the field of aeronautical, space, biomedical and automobile industries and its fabrication.

**4. Instrument for measuring Torsional properties of Fibers and Yarns** (Prof. P.K. Banerjee, Deptt. of Text. Technology)

To test and characterize the torsional properties of textile fibres and yarns for achieving higher and quality production. The instrument works on the principle of torsion balance.

**5. A Trenchless Steerable Drilling Machine** (Prof. P.V. Madhusudan Rao, Dept. Mech. Engg)

For digging underground tunnels without disturbing the ground surface. The machine is capable of following a three dimensional path and automatically reorient its direction based upon feedback.

**6. Computer Software for Design of Reinforced Concrete Column** (Prof. S.N. Sinha, Deptt. of Civil. Engg)

A software programme for designing of columns of any cross section such as regular and irregular including solids or hollow sections and any reinforcement details

**7. T7 promoter based shuttle vector and shuttle vector system.** (Prof. D.B. Deb, DBEB)

A method for effectuating a specific integration of T7 RNA polymerase gene into the chromosomal DNA of Corynebacteria which enables to construct E.coli Cornebacteria shuttle vector as well as Cornebacteria - T7 shuttle vector system.

**8. Extraction and Recovery of Metal/Metal ions** (Prof. H.M. Chawla, Deptt. of Chemistry)

Enables efficient extraction of expensive and transition metal ions such as silver, calcium, copper, zinc etc. from the industrial waste. Also useful for extraction of alkali metals like sodium, potassium and calcium from acidic solutions.

**9. Method for Dyeing of Cotton with Indigo and products thereof** (Prof. R.B. Chavan, Deptt. of Text. Tech)

A new method for replacement of sodium hydroxide alkali medium by organic alkali medium. This has advantages like reduction of dye, better dye uptake, higher colour yield of dye (Indigo), uniform dyeing, etc.

**10. Geo-synthetic Clay Liner and Method of manufacture thereof** (Prof. P.K. Banerjee, Deptt. of Textile Tech)

Can be used successfully and efficiently on flat surface as well as slopes with varied degree of gradient. Possess improved structural integrity, flexibility, low permeability, self-sealing and self-healing properties.

**11. Utilisation of waste from Nylon 6 industries** (Prof. Aswin Aggarwal, Deptt. of Text. Tech)

A unique process for conversion of oligomeric waste or polymeric waste from both caprolactum recovery plant as well as nylon 6 processing units, into useful products like hot melt adhesives.

**12. Apparatus for Measuring Sieve Dimensions** (Prof. Chandra Sakher, IDDC)

Can measure diameter and spacing of the wire in the sieves with an accuracy of 1  $\mu\text{m}$  and uncertainty measurement of  $\pm 2 \mu\text{m}$  at 95% confidence level.

**13. Supercritical Fluid Extraction (SCFE) Technology** (Prof. R.C. Maheshwari, CRDT)

For extraction of oils, colours, fragrances, etc from agro-products like spices, herbs, aromatic plants, and medicinal plants for various end use applications such as cosmetics, flavours, medicines, perfumes, etc.

**14. A novel Hydro gel and its preparation** (Prof. Veena Kaul, CBME)

A biomaterial for regulated drug delivery system, sutures, artificial skin, membranes and super absorbent material in pharmaceutical industry, agro industry, biomedical engineering.

**15. Improved Antimicrobial Nylon Sutures** (Prof. Bhuvanesh Gupta, Deptt. of Text. Tech; Prof. Harpal Singh, CBME)

Enables slow and sustained delivery of antimicrobial agent for longer duration to improve healing process by eliminating the danger of infection and inflammation.

**16. Vibration Measurement/Monitoring System Using Digital Speckle Pattern Interferometry** (Prof. Chandra Sakher, IDDC)

For real time monitoring of vibration in engineering industries including power generating industry, automobile industry, aerospace industry as well as R&D laboratories.

**17. Digital Image Processing Based Pilling Tester** (Dr. B.K. Behera, Deptt. of Text. Tech)

An accurate and user friendly instrument that can be used for all types of fabric and weave patterns. Adopt universal standard testing procedure and eliminates subjective assessments.

**18. New Electronic Devices Developed by IIT Delhi Faculty For the Handicapped** (Prof. Sneha Anand, CBME, and Dr. Jayashree Santhosh, CSC)

For details please visit website [www.fitt-iitd.org](http://www.fitt-iitd.org)



## FOCUS ON A DISTINGUISHED FACULTY OF IIT DELHI

In this issue of FITT-FORUM, we are covering the Research & Development achievements of Prof. Bishnu P. Pal, one of the distinguished faculties of IIT Delhi.

### Prof. Bishnu P. Pal

**Prof. Bishnu P. Pal**, who joined IITD faculty in 1978 currently, holds the position of Professor of Physics (since 1990) and Head of Computer Services Center. He is a well-known researcher and educator in Fiber Optics and Optical Communication. He has been deeply involved in the conception and development of the Fiber Optics Laboratory in the Physics Department and in the conception, development, and running of the interdisciplinary M.Tech. programme on Optoelectronics and Optical Communication launched at IITD in 1980. Some of his major R&D contributions involved setting up of telecommunication grade fiber characterization experiments, design of speciality fibers like dispersion compensating fibers for broadband dense wavelength division multiplexed (DWDM) transmission, dispersion shifted fibers with low bend-loss sensitivity, all-fiber components for optical networks, design and development of optical fiber-based sensors. He led the core team in the Physics Department, which developed in-house the technology platform for realizing components like signal splitters and combiners, signal taps, filters, wavelength division multiplexers, and wavelength interleavers under the Technology Development Mission Project on Photonic Devices. His research publications include over 65 research papers and research reviews in international journals and over 35 papers in international and national conferences. One of his research papers (coauthored with Profs. Arun Kumar and A.K. Ghatak), which originally appeared in Electronics Letters (UK) was reprinted in the book "Progress in Optical Communication" (Ed. PJB Clarricoats and published by IEE press, UK). He was an invited faculty at the International Winter College on Optics held at ICTP (Trieste, Italy) in 1998.



Prof. Pal has delivered 10 invited talks (including one at the inaugural plenary session at the Symposium on Optical Waveguide Sciences held at Kweilin in China in 1983, and two Tutorial courses on Fiber Optic Sensors and Components) in international conferences held in India and abroad and has chaired technical sessions in 9 international conferences. He has extensively lectured abroad (over 20 invited talks) on his research at Universities in France, England, Germany, Norway, Sweden, Finland, Japan, Hong Kong and in industrial laboratories like Bell laboratories (USA), Siemens (Germany), Thomson-CSF (France), British Telecom (UK) and NTT (Japan). He has been a consultant to Siemens (India), Lucent Technology Finolex (India), Renka (USA and India), and Intelligent Fiber Optic Systems (USA). He holds one US Patent and he has filed one in India in 2003 on broadband DWDM optical communication link. He has edited a 778-page book entitled "Fundamentals of Fiber Optics in Telecommunication and Sensor Systems" published by John Wiley (New York) in 1992, which has been reprinted twice in India. By invitation, he has also authored/coauthored 10 book chapters including one contributed to *Fiber Optics and Instrumentation* published from Russia; the most recent one appeared in *International Trends in Applied Optics*

(published by International Commission for Optics, 2003). To date he has been thesis Advisor/Co-Advisor to 9 Ph.D. students and over 45 Master's students at IITD.

Prof. Pal was an awardee of the Alexander von Humboldt fellowship (Germany), International Post-doctoral fellowship of the Royal Norwegian CSIR (NTNF, Oslo), and Fulbright Travel grant (USA). For his outstanding contributions in all-fiber branching components with potential applications in optical networks, Prof. Pal was awarded (with Prof. K. Thyagarajan as co-awardee) the first (1997) "Fiber Optic Person of the Year" award by Lucent Technology and Voice & Data. He (with co-author Dr. B.D. Gupta) was also awarded the Gouri Memorial Award by IETE as a best paper of general interest in 1991 for their paper on Fiber Optic Sensors for Biomedical applications. Prof. Pal is a Fellow of IETE.

He has been a Member of the founding editorial advisory board of the research journal "International Journal of Optoelectronics" published by Taylor and Francis (UK). By invitation Prof. Pal had guest edited topical special issues of Proc. IEE Pt J: Optoelectronics (UK) on "Guided Wave Optics on Silicon," Int. J. Optoelectronics (UK) on "Research on Optoelectronics in India," a joint issue of J. I.E.T.E. and I.E.T.E. Tech. Rev. on "Optoelectronics and Optical Communication." The Optical Society of India has recently commissioned him to guest edit a special issue of their journal: J. of Optics to be devoted to "Guided Wave Optical Components and Devices."

Professor Pal has extensively contributed to sponsored research and international collaborative research in the area of Fiber Optics at IIT Delhi. Indo-French Science Council of IFCPAR has rated his recent Indo-French collaborative project "R&D on Dispersion Compensating Fibers and Amplifiers" as "Excellent." He was co-Coordinator (with Prof. A.K. Ghatak as the Coordinator) from India of a major Indo-British Collaboration project on Fiber Optics lasting for over 6 years in two phases, which had substantially contributed to creation of quality infrastructures for the Fiber Optics laboratory at IITD. He was P.I. from India of the Indo-British collaboration project on Applications of Fiber Optic Sensors for Monitoring Health of Civil Structures. He has been also extensively involved in conducting several short-term industry level courses on applications of fiber optics for industries like ONGC, Optel Telecommunication Ltd., C-DoT, which were organized by the Fiber Optics group under the aegis of FITT from time to time including the first Future Vision Seminar at IITD in 1990 and three Indo-British seminars, two of which were held in the British Council Auditorium (New Delhi).

Prof. Pal was the Chairman of the "National Technical Panel on All-fiber Components" constituted by DoE (GoI), and he is currently a member of the National Advisory Group on Nanotechnology constituted by Dept. of Information Technology (GoI), and a member of the National Advisory Board on Instrumentation set up by DST (GoI).

Prof. Pal has worked as Guest Scientist in the area of Fiber Optics for various periods at Norwegian Institute of Technology (Trondheim, Norway), Strathclyde University (Glasgow, UK), Fraunhofer Institute for Physikalische Messtechnik (Freiburg, Germany), University of Nice (France), University of Limoges (France), National Institute of Standards and Technology (Boulder, USA), and City University of Hong Kong. He may be contacted on the following address:

Prof. Bishnu P. Pal, Head, Computer Services Center  
IIT Delhi, Hauz Khas, New Delhi-110016  
E-mail: bppal@physics.iitd.ernet.in



## FITT ACTIVITIES

### List of IPR Applications Approved/Filed/Processed by IITD-IPR-SC During the Year 2003-2004

S.No.	Title of the Invention	Principal Inventor/ Deptt./Centre
1.	A novel electrocoagulator for the oily waste water	Dr. A.N. Bhaskarwar DChE
2.	PCT application 'A system and method for blind multi-user (MU) detection of BPSK-DS CDMA signals	Prof. Surendra Prasad, DEE
3.	A sieved electrode for the Electro-coagulator	Dr. A.N. Bhaskarwar DChE
4.	Process for making an improved hydrated ferric oxide for arsenic removal and the resulting adsorbent produced therefrom	Prof. R.C. Maheshwari RDAT
5.	A new technique for achieving perfect convex corners in MEMS technology	Mr. Prempal CARE
6.	Highly secure cryptographic communication system	Dr. Ranjan Bose DEE
7.	Kit for arsenic separation from water	Dr. Bhuvnesh Gupta DTT
8.	Process for making a special adhesive for glass and ceramics and the resulting adhesive produced therefrom.	Dr. A.N. Bhaskarwar DChE
9.	A System and Method for Achieving Low Power Consumption in Ad-hoc Wireless LANs	Prof. H.M. Gupta DEE
10.	A System and Method for Achieving High Throughput in Ad-hoc Wireless LANs	Prof. H.M. Gupta DEE
11.	A System and Method for Achieving Contention Free Beacon Transmission	Prof. H.M. Gupta DEE
12.	A PCT application for fabrication of recessed micromechanical structures on (100) silicon wafers.	Dr. Sudhir Chandra CARE
13.	Biodegradable Masterbatch (BioD-MB) Formulation for Packaging Film Application	Prof. A.K. Ghosh CPSE
14.	Photodegradable Masterbatch (PhotoD-MB) Formulation for Packaging Film Application	Prof. A.K. Ghosh CPSE
15.	A New Surface Accumulation Layer Transistor (SALTran) Concept for Current Gain Enhancement in Bipolar Transistors	Dr. M. Jagdish Kumar DEE

It is to be noted that all IPR related activities in IIT Delhi is co-ordinated by FITT. For further details please contact:

Mr. Mohit Mahajan  
Executive Consultant (IPR)  
FITT, IIT Delhi, New Delhi-110016 Phone: 91-011-26597116  
E-mail: mahajanipr@rediffmail.com

### IIT Delhi Technology Transfer through FITT

A License Agreement between **M/s Biotech International Limited.**, 'VIPPS' Centre, 2, Local Shopping Centre, Block - EFGH, Masjid Moth, Greater Kailash -II, New Delhi - 110048 and Foundation for Innovation and Technology Transfer, New Delhi was signed on 22<sup>nd</sup> March 2004.



(L to R) Prof. (Ms.) Suroj Mishra, Head, Dept. of Bio-Chemical Engineering and Bio-technology; Mr. Saurabh Singhal, MD, Biotech International Ltd; Dr. A.K. Sengupta, MD, FITT and Prof. V.K. Srivastava, Dean, IRD

This Agreement is to transfer the technology entitled '**Spores of *Ti choderma viride* in submerged culture fermentation and its formulation to be used as a Bio-pesticide**' developed by **Dr. Vikram Sahai** and **Dr. V. S. Bisaria** both from Dept. of Bio-chemical Engineering and Biotechnology, IIT Delhi. The product is eco-friendly and only single application is required in a crop.

### 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.

Type of Organisation	Annual Turnover	Annual Admission Fee
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 the details please visit the FITT website (<http://www.fitt-iitd.org>) or Contact

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



## FITT IN NEWS

### IIT Delhi Sets up Linkage with BVG Advisors

**New relationship to work with IIT Delhi to seek companies for investment and business support**

New Delhi, India – January XX, 2004: FITT at IIT Delhi has signed an MOU with BVG Advisors an Indian affiliate of Beacon Technology Ventures, (www.btechventures.com), a US based fund located and affiliated with the BU Photonics Center (www.thephotonicscenter.com). Beacon Technology Ventures is actively seeking investment opportunities in US based communications and IT companies that are seeking to open their development operations in India. The goal is to have the development operations located at IIT Delhi's Technology Business Incubator Unit and leverage the research capabilities, facilities and IIT Delhi network to make the company successful. The target profile of the company would be later stage VC-backed companies that are close to or already cash flow positive and are seeking to leverage low cost development resources in India.

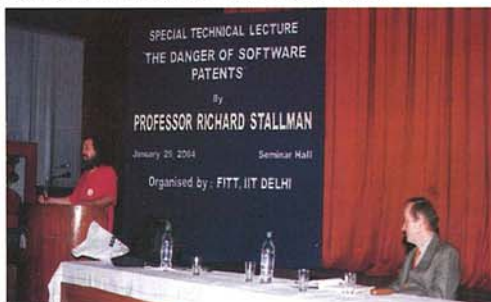
Beacon Technology Ventures with Indian fund management company Ventureast Advisors and support from McKinsey & Company, is also creating a new fund that will be linked with IIT Delhi and other research institutions in India and US. "Our relationship with BVG Advisors enhances IIT Delhi capability to support entrepreneurial activity by our alumni, faculty and student," stated Dr Arya K Sengupta, Managing Director of FITT. "We encourage alumni to contact us with business ideas".

For information related to FITT, please visit FITT website [www.fitt-iitd.org](http://www.fitt-iitd.org) or contact Dr. Arya K Sengupta, Managing Director Email: [sengupta@fitt.iitd.ernet.in](mailto:sengupta@fitt.iitd.ernet.in). For information related to Beacon Technology Ventures, please contact Mr. Alok Prasad, President, Beacon Technology Ventures, Email: [aprasad@btechventures.com](mailto:aprasad@btechventures.com)

### Technical Lecture by Prof. Stallman

Prof. Richard Stallman of MIT, USA, delivered a lecture on **The Danger of Software Patents** at the Seminar Hall of IIT Delhi on 29<sup>th</sup> January 2004. This lecture was organized by FITT. Below is the abstract:

Software patents threaten to devastate the global computer industry. Patents granted in the past decade are now being used to attack software companies for selling programs that they have independently developed. Soon new companies will often be barred from the software arena—most major programs will require licenses for dozens of patents, and this will make them infeasible. This problem has only one solution: software patents must be eliminated.



*Prof. Stallman delivering the lecture at IIT Delhi*

### Technology Transfer MOU with SICO

FITT has executed a Memorandum of Understanding (MOU) on 3<sup>rd</sup> January, 2004 with M/s. Scientific Instruments Co. Limited (SICO) for the development of products/components of a Microwave Integrated Circuit (MIC) Kit. The project, titled "Development of MIC KIT" involves the technical expertise in Prof S.K.Koul and Dr. Anjan Basu of the Centre for Applied Research in electronics (CARE) in IIT Delhi. Under the collaborative programme-phased over six months, SICO would depute its engineers to (i) understand and learn the basic technologies involved in the development, (ii) identifying the vendors for sourcing of raw materials and (iii) perfecting the product prototypes, prior to commencement of mass production in SICO for commercialization. An Implementation Agreement executed simultaneously with the MOU stipulates that the developers in IIT Delhi will fabricate the



*Prof. R.S. Sirohi, Director IITD (5th from left) and Prof. S.K. Koul (middle)*

first prototype on an agreed work-share based on the design generated. SICO will fabricate the second prototype correspondingly incorporating all improvements and certification related tests as per the agreed work-share. The ownership rights along with the intellectual properties will be transferred to SICO on a royalty consideration for commercializing the developed MIC kit. Prof. R.S.Sirohi, Director, IITD and Chairman, FITT graced the occasion and wished that the collaborative programmes like the one planned would cement the industry-academia interaction towards better deliverance for the society.

### NIIT and IIT Delhi to Offer Bio-informatics Course Under the Aegis of FITT



*Mr. Rajendra S. Pawar, Chairman, NIIT, and Prof. R. S. Sirohi, Director, IIT Delhi, (right) at a press conference in New Delhi, on March 27, 2004 to launch the Bioinformatics Course under the aegis of FITT*

*(See the page 14 and 18 for the related information)*



## WORKSHOPS / SEMINARS / CONFERENCES / MEETINGS / EVENTS / COURSES

### Inauguration of Fly Ash Resistivity Laboratory

Fly Ash Resistivity Laboratory to support Electrostatic Precipitator (ESP) performance improvement in India was inaugurated by Prof. R.S. Sirohi, Director I.I.T. Delhi at Centre for Energy Studies on Oct 31, 2003. Senior representative from US Department of Energy (DOE),



*Prof. R.S. Sirohi, Director IIT Delhi, inaugurating the Flyash Laboratory at CES, IIT Delhi*

USAID, Southern Research Institute (SRI), Birmingham USA and Centre for Power Efficiency & Environmental Protection (CENPEEP), NTPC were present on this occasion. It fulfils the long felt need of Power Sector in the Country namely NTPC and State Electricity Boards (SEB), who are greatly interested in ash resistivity modification techniques to improve ash collection efficiency and to minimize particulate emissions. The data base generated here for different ashes produced in Indian Power Plants will be used to develop Resistivity model, which in turn will be used for new design/ design modifications for ESPs in different Coal based Power plants. The necessary equipment have been arranged by US DOE's National energy Technology Laboratory (NETL), through SRI, where Prof. A.Chandra visited during the month of September in Connection with setting up of the laboratory. NTPC will supply fly ash sample from different Power plants. The facility is open to all researchers interested in fly ash properties and for investigations related with ESPs.

For further Information, please contact

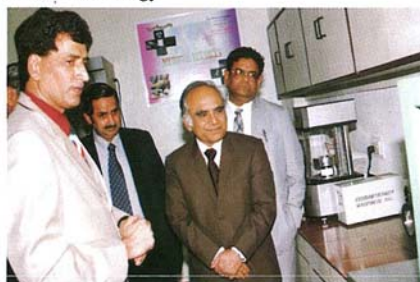
Prof. A.Chandra, Centre for Energy Studies, IIT Delhi  
E-mail: chandra@ces.iitd.ernet.in, Ph: 91-011-26596319

### Medical Textile Laboratory Inaugurated

Medical Textile Laboratory was inaugurated in the Department of Textile Technology on 10<sup>th</sup> February 2004. Prof. N.K.Ganguly, Director General, Indian Council of Medical Research was the chief guest on this occasion. Prof. D.P.Kothari, Deputy Director (Admn.) and Officiating Director blessed the occasion and appreciated the vision of the department in moving forward in such innovative domains.

The inauguration ceremony was followed by interactive discussion of faculty members from various departments with the chief guest. Dr. A.K.Sengupta, MD FITT was of the view that this facility would provide an additional environment for the research towards the development of medical products in the near future. This laboratory has been funded by FITT and offers facilities for the surface construction and analysis of materials for medical research. The laboratory is coor-

inated by Dr.Bhuvanesh Gupta, Associate Professor in the Department of Textile Technology.



*Prof. N.K. Ganguly, Director-General, ICMR along with Prof. D.P.Kothari, Deputy Director (Admn.) (extreme right) and Dr.Bhuvanesh Gupta (extreme left), Associate Professor, Department of Textile Technology*

### DFID Workshop on "Bridging The Gap Between Research And Policy Making in India"

A two day workshop on "Bridging the gap between research and policy making in India" was organized jointly by IIT Delhi and Centre for Land Use and Water Resources Research (CLUWRR), University of Newcastle Upon Tyne, UK from 3<sup>rd</sup> to 4<sup>th</sup> February, 2004 at IIT Delhi. Mr. John Young and Mr. Julius Court, Overseas Development Institute (ODI), UK, were the resource persons for the workshop. The workshop was conducted under the aegis of the DFID funded project on "Forestry and low flows, spatial modeling and open GIS dissemination of the science perception- India", being operated by FITT at IIT Delhi. The main focus of the workshop was to look into the gaps in research and policy making and find ways and means to plug the same. The workshop concentrated on the following major issues:

- Sharing of experiences about policy-research processes
- Sharing of experiences about approaches to strengthen research-policy links in India
- Learn about other tools and approaches which have been used elsewhere, and about where to access further information and resources.
- Develop a strategy to improve the policy impact of their own work.



The workshop participants were drawn from organizations involved in the water resources policy making and related issues. The Planning Commission, Department of Science and Technology, Central Water Commission, Central Ground Water Board, are some such organizations which were represented. These participants attended the first day of the workshop and contributed significantly towards providing an insight into the policy making process, its strengths and weaknesses. There were another set of participants belonging to the



## WORKSHOPS / SEMINARS / CONFERENCES / MEETINGS / EVENTS / COURSES

Winrock International India, NIT Hamirpur (HP), RRL Bhopal, Sandesh (an NGO), who are partners in the project. These participants attended both days of the workshop. The second day was devoted completely to learn new techniques and tools to improve the policy impact of the ongoing project.

For more information, please contact:

Prof. A.K. Gosain, Department of Civil Engineering,  
IIT Delhi.

Email: gosain@civil.iitd.ernet.in Tel: 91-011-26591186

### Second Certificate Course on Embedded Systems and Applications (January 14- April 20, 2004)

Based on the curriculum and courseware developed on Embedded Systems as an internal project, the first certificate course on Embedded Systems and Applications was conducted during September 8 to November 21, 2003. This course concluded with closing session on 28<sup>th</sup> of November with distribution of certificates to those completing the course of two and half months. The Second Certificate Course on Embedded Systems and Applications was launched in January 14, 2004 and is currently underway. Based on the feedback received in the last course from participants and industry, some modification were carried out and second course is of the duration of three months and will have 220 contact hours including 20 hands on practical. There are fifty participants enrolled in the second course, majority of them are with a graduate degree in Electronics and Telecommunication, Computer Science Engineering, Instrumentation and some with MCA degree. The course has 10 modules with the following broad contents:

#### Core Modules

--Introduction to Embedded Systems  
--Designing Embedded Computing Platform  
--Operating System for Embedded Systems  
--Embedded System Architecture  
--Programming Embedded Systems  
--Network Based Embedded Applications  
--Embedded System Development

#### Application Modules

-- Embedded Control Applications  
-- Applications in Telecom  
-- Multimedia Applications

The special feature in the first course was seminars of the industry-experts and this will be also salient point of this course.

### Paper Presentations/Invited Lectures by the Faculty

**Dr. Sudhir K. Jain**, Associate Professor & Coordinator, Inter-Disciplinary Program in Entrepreneurship delivered an invited lecture on 2nd March, 2004 on "Use of IPRs for Competitive Advantage by SMEs" at National Workshop on Intellectual Property Rights Issues organised by Jiwaji University, Gwalior during 1-5 March, 2004.

Earlier, he was invited to speak on "The adaptation of Micro-enterprises to Systemic or Structural Economic Change" in the Round Table organized as a part of "International Seminar on

Micro-enterprises: Innovation & Sustainability" held at Cap de Agde (France) on October 2, 2003.

Dr. Jain had also participated in SIDA sponsored "Advanced International Program on Small & Medium Enterprises Management Development- India" in Sweden during 6-17 October 2003. In this program he also made a presentation on "Contributions of SMEs to India's Economic Development".

**Professor B. Pitchumani**, Chemical Engineering Department, delivered an invited lecture on "Application of Particle Technology in Pharmaceutical Industry", at the 55<sup>th</sup> Indian Pharmaceutical Congress at Sri Ramachandra Medical College and Research Institute, Chennai organized during 19-20 December 2003.

**Dr. S. Basu**, Assistant Professor, Department of Chemical Engineering delivered a plenary lecture titled "Use of multi-fuels in Alkaline Fuel Cell" in Fuel-to-Fuel Cells Conference on invitation from Indian Institute of Chemical Technology (IICT), Hyderabad. The Conference was organized from December 4-5, 2003 on the occasion of Diamond Jubilee Year Celebration of IICT, Hyderabad.

**Prof. L.M. Das** of the Centre for Energy Studies had been invited to participate in the "Petro INDIA 2003" on the Theme "Changing India Petro Sector Challenges and Opportunities" organized by Associate Chambers of Commerce and Industry of India ASSOCHAM-INDIA ENERGY FORUM during 2-3 December 2003 at Hotel Taj Palace. Dr. Das delivered a talk on "Hydrogen-Fuel for the Twenty first Century" in the Plenary Session VII.

Professor Das also participated in the International Workshop on Hydrogen Energy organized by Indian Oil Research Lab during December 11-13, 2003 at Hotel Le meriden, New Delhi. Prof. Das presented a paper entitled Utilization of Hydrogen in Engines and Gensets Co-authored by Mr. Frank Lynch of Hydrogen Corporations Inc, USA. Professor Das also expressed his views as a member of the Panel on Safety and Economic issues on Hydrogen Energy.

**Dr. A.K. Keshari**, Assistant Professor, Department of Civil Engineering delivered an invited lecture on "Geophysical and Logging Studies for Groundwater Assessment" at CSMRS New Delhi organized by Water Technology Centre, IARI New Delhi on 25<sup>th</sup> November 2003.

**Dr. Naresh Tandon**, Associate Professor in ITMMEC participated in the National Symposium on Acoustics held at ARAI, Pune from October 31 to November 1, 2003. He delivered an invited lecture on Vibration and Noise Assessment of Computer and chaired a Technical Session on Machinery Diagnostics.

**Dr. Virendra Kumar Vijay**, Assistant Professor in the Centre for Rural Development and Technology, has presented a paper titled "Traditional Systems of Water Conservation and Rainwater Harvesting in Arid and Semi-arid Regions of Rajasthan (India): Lessons to be Learnt" in the First International Symposium on South East Water Environment during October, 22-25, 2003, organized by the Center for South East Asian Water Environment, University of Tokyo, at AIT Bangkok (Thailand).

... Contd. on page 20



## FORTHCOMING CONFERENCES / EVENTS / SEMINARS IN IIT DELHI

### Certificate Programme in Bioinformatics & Computational Biology

Bioinformatics and Computational Biology bring together expertise from diverse fields such as Computers, Information Technology, Mathematics, Physics, chemistry, Biology and Medicine. The wide-range of disciplines encompassed by Bioinformatics underscores the necessity for specialized training programmes targeting, (a) Scientists and executives in Biotech, Pharma and Agro industries to facilitate a more informed decision making in their R&D activities and (b) the next generation of students and scientists to initiate them into research in Bioinformatics.

The Supercomputing Facility for Bioinformatics & Computational Biology, IIT Delhi in association with NIIT Limited under the aegis of FITT, IIT Delhi announces the launch of a **Certificate Programme in Bioinformatics & Computational Biology**. The programme addresses requirements in both IT and Bioinformatics training. The IT modules are offered at NIIT and the Bioinformatics modules at the Supercomputing Facility of IIT Delhi. The Programme is proposed to start from June 7, 2004.

For more details, please visit the website: [www.fitt-iitd.org](http://www.fitt-iitd.org) or contact Ms. N.Lata, Supercomputer Facility, IIT Delhi  
Ph: 91-011-26596786 Or  
Ms. Orpita Bosu, CRCS, NIIT, IIT Delhi  
Ph: 91-011-26581023, E-mail: [bioinformatics@niit.com](mailto:bioinformatics@niit.com)

### Part-time Course on Information Security (February 23-April 14, 2004)

FITT in association with Computer Services Centre, IIT Delhi will conduct a part-time course on Information Security from February 23, 2004 to April 14, 2004.

The course provides a comprehensive coverage of the broad range of security aspects of information systems and internet environments comprising information security, network security, internet services, security policies, management and practices. Each topic includes sessions on the relevant information technology, security concerns related to the technology, and available solutions.

### Workshop on Cryptography & Its Application (April 9 – April 11, 2003)

Information confidentiality and integrity, user authentication and non-repudiation of electronic transactions represent major challenges in this information era, particularly as the mode of communication shifts towards wireless networks gradually. Cryptography plays an important role in dealing with these challenges. However as a person is bombarded with information on the myriad security solutions available today, it becomes difficult to grasp the essence of any single solution or compare any two of them. This workshop provides "A guided tour through the maze of information security solutions" to achieve a comprehensive understanding of various cryptographic theories, algorithms, standards and other related issues.

#### Who should attend?

System and Network Administrators / Engineers / Analysts, Technical Engineers / Managers, Data Security Officers, Information Security Analysts / Managers, Network Manager, Security Consultants and System Integrators, anybody interested in cryptography.

#### Topics

Topics included in the course will be Classical Cryptography, Cryptography principles and cryptanalytic concepts, Random Number Generation, Mathematics for Cryptography, Symmetric and Asymmetric Key Cryptosystems and associated standards, cryptography in wireless scenario, financial cryptography, security on internet, key management & certification schemes, quantum cryptography etc. Open problems in Cryptology will also be discussed.

#### Key Speaker

Dr. Ranjan Bose, faculty at Electrical Engineering Department IIT Delhi, will be the key speaker in the workshop. He has published more than 30 research papers and is the author of "Information Theory, Coding and Cryptography", a Tata McGraw-Hill publication. He has also filed for a patent for Random Number Generation using Chaotic Functions.

For details please contact:

VirtualWire Technologies Pvt. Ltd., TBIU, Block 1 Extn. IIT Delhi, Hauz Khas, New Delhi-110016, Ph. No. +91 11 2658 1526, Fax. +91 11 2658 1524, E-mail: [crypto2004@virtualwire.co.in](mailto:crypto2004@virtualwire.co.in)  
Website: <http://www.virtualwire.co.in/crypto.html>

### A Short-Term Course on Emerging Wireless Technologies (April 12 – April 16, 2004)

The short-term course organized by Bharti School of Telecom Technology and Management, IIT Delhi provides a comprehensive coverage of the various emerging wireless technologies comprising Wireless LAN (Wi-Fi), Orthogonal Frequency Division Multiplexing (OFDM), Multiple Input Multiple Output (MIMO) Systems, Space Time Codes, Wireless Ad-hoc Networks, Fixed Broadband Wireless Access and Software Design for Mobile Phones.

#### Who should attend

--Wireless Communication Engineers, Professionals and Functional managers, Engineers working in the Mobile Phone Industry  
--Faculty members of engineering colleges who want a walk through guided tours on emerging wireless technologies and standards.

Faculty members, experts in the different sub-areas, drawn from various departments of IIT and guest faculty from industry, include: Prof. Surendra Prasad, IIT Delhi; Prof. H. M. Gupta, IIT Delhi; Prof. B. N. Jain, CSE, IIT Delhi; Dr. Ranjan K. Mallik, EE, IIT Delhi; Dr. Shankar Prakriya, EE, IIT Delhi; Dr. K. V. Rangarao, EE, IIT Delhi; Dr. Ranja. Bose, EE, IIT Delhi (Course Coordinator); Mr. Jagbir Singh, (Bharti) Mr. Manoj Kohli (Bharti).

For the details, please contact

Mr. Lalit Kapoor  
405 Block II, Bharti School, IIT Delhi, Hauz Khas,  
New Delhi 110016, Phone: 91-011-2659-6200  
Email: [lalitkumar@ee.iitd.ernet.in](mailto:lalitkumar@ee.iitd.ernet.in) or  
Dr. Ranjan Bose  
Tel: 2659-1048  
Email: [rbose@ee.iitd.ac.in](mailto:rbose@ee.iitd.ac.in)  
Please also visit the website:  
[http://www.iitd.ernet.in/utilities/new/wireless\\_tech.htm](http://www.iitd.ernet.in/utilities/new/wireless_tech.htm)

**Note:** For other events/seminars/courses please visit the Websites: [www.iitd.ernet.in](http://www.iitd.ernet.in) and [www.fitt-iitd.org](http://www.fitt-iitd.org)



### The Brain Factory

As the HT team enter the compound of the Himadri hostel (for girls) at Indian Institute of Technology (IIT), Delhi, they spot a beautiful young woman, probably in her early twenties, in animated conversation with her male visitor standing by his motorcycle in the parking lot. The photographer remarks: "I didn't know they got time for all this!" His comment was genuine. After all, the stereotypical image of IITians is one of bespectacled swotters, buried in libraries or laboratories, from where they venture out to make it. Isn't that the reason why countries like Sri Lanka, Singapore, Mauritius and some others from West Asia and South East Asia have expressed their desire to set up an IIT in their country, if India agrees?

But contrary to common belief, at IIT, there is as much time and scope for fun as there is for academic pursuits. "In fact, we spend more time on non-academic activities than on tutorials," laughs Jyotsna Sharma, a second-year student of electrical engineering at IIT Delhi. "Plenty of activities like debating, competitions in eastern music, western music, choreography, dance, drama, instrumental music and literary events go on a cyclic basis every semester," says Rashmi Jha, who studied at IIT Kharagpur, and is now doing her Master's in the US.

"The best years of my life were spent in IIT," adds Rashmi. "I made my best friends during my IIT days. Every Hall (hostel) has its own garden, mess, library, common room (with magazine/newspaper corner, TV, sofa and lots of chairs, 1000W music system, etc.), TT table, badminton court, basketball court... the list just goes on..."

The fun is specially unlimited during the three-day annual fest IIT students organise: Rendezvous at IIT Delhi, Mood Indigo at IIT Mumbai, Spring Festival at IIT Kharagpur and Anataragini at IIT Kanpur. This is what alumni miss the most once they are out of the institute. During these three days, girls and boys from different IITs, and students from other technical and medical colleges, assemble as special invitees. The days are filled with debates, quizzes, cultural events while the nights are meant for dance and music with some special, couples-only events. "We have a great time during those three to four days," says Abhay Kumar, a fourth-year civil engineering student at IIT Delhi.

"Students are encouraged to lead and organize peer group to create new and useful teams that are involved in everything from mountain-climbing to starting new companies," says Balaji Krishnapuram, a 1999 batch student from IIT Kharagpur. Balaji is now doing his MS and PhD from Duke University and has been taking Vedanta classes in the cities of Raleigh, Durham and Chapel Hill in North Carolina, US to partly fund his education. Of course, the Art of Living traits he learnt at IIT Kharagpur where he was coordinator of the group help!

"Our effort is to bring out the best in each individual, be it in academics, sports or dramatics," says Prof Amit Patra who is on the faculty of IIT Kharagpur since 1987.

This freedom has not only honed entrepreneurial skills among the students but has also generated huge resources for the respective institutes. IIT Kharagpur earns something like Rs 56 crore from various research projects it undertakes. Similarly, 30 per cent of the total budget of IIT Delhi is earned through research projects undertaken by its students. Achievements are many. It was the IIT Delhi team which was behind the innovation of India's first electric car Rewa,

development of Kritikal Solutions is another example. Similarly, IIT Kharagpur is behind the development of tea gardens in the wasteland of Midnapore in West Bengal. These are just a few to count. At IIT, the emphasis is on an all round development of an individual. "Each student has to select 50 per cent of the courses other than his own department," says Prof S.M. Ishtiaque, the Dean of Students at IIT Delhi and professor in the department of Textile Technology. This is unique in the IIT education and makes a student prepared in all streams with all basic fundamentals made clear. True.

"We place high emphasis on fundamentals," says **Prof. Rajpal Singh Sirohi, Director of IIT Delhi**. Prof Sirohi echoes the perception shared by Microsoft chairman Bill Gates who finds a lot in common between his company and the IIT: "We aspire for same things, including optimism about the future, and a belief in fundamental research."

(Source: Hindustan Times, 4 January, 2004)

### ...International Conference on e-Governance (Contd. from page 1)

were deliberated upon by invited speakers and further discussed in the Technical sessions. Industrial sessions were meant for industry to share the knowledge of new technology/solutions being introduced. Keynote speakers include *Prof.MGK Menon*, Chairman, BOG, IIT Delhi, *Shri Arun Jaitley*, Minister of Commerce, Industry, Law & Justice, *Shri S.M.Krishna*, Chief Minister, Karnataka, *Shri Digvijay Singh*, Chief Minister, MP, *Shri P.Chidambaram* (Former Finance Minister), *Dr. FC Kohli*, *Shri Kiran*

*Karnik* from NASSCOM, *Shri Shekhar Dasgupta*, MD, Oracle India and *R.Ramanan* (CMC) as well as a number of leading expert from abroad such as *Keith Budge* (Oracle), *Gary Rodgers* (HP), *Tom Rabon* (Redhat). President Kalam, in his inaugural address, made a number of suggestions on promoting e-governance in India. These included-

1. Establishment of e-Governance Commission or empowered Board
2. Establishment of e-Governance grid across the state and centre; setting up of the horizontal grid across the state governments and interconnecting the horizontal grid to the vertical central grid.
3. Setting up of e-Governance DATA Centre at the Centre and State Level and real time updation of data from various units of the government.
4. Setting up a multipurpose, secure, authentic national citizen-ID database as the primary data for all the e-governance services and online issue of Citizen ID card seamlessly.
5. Electronic connectivity through dedicated Broadband, Virtual Private Network (VPN) based connectivity from the Centre to State, State to District and District to Block level and Block to village level through the options like wireless, microwave and VSAT.
6. Creating a language independent operating systems, databases, application servers, mail servers etc., in the Indian languages.
7. Ninety percent of work concerning e-governance should be outsourced and government should only manage the Data Centre and maintain it for on-line application.

Three books on e-Governance, all edited/authored by Dr.M.P.Gupta of the Dept.of Management Studies, IIT Delhi, were released during the inaugural session of ICEG..



## FITT PROGRAMMES

### HRD Programmes

Since October 2003 and till now, 6 customised HRD programmes were held under the aegis of FITT. A list of HRD programmes completed during the past few months, ongoing and forthcoming courses is given below:

<i>S.No</i>	<i>Title</i>	<i>Sponsors/Participation</i>	<i>Date &amp; Venue</i>	<i>Co-ordinator &amp; Deptt.</i>
<b>HRD Programmes (Concluded)</b>				
1.	Seminar on Textile Rope and Cordoges	Participation based	21 December, 2003, IITD	Prof. R. Chattapodhyay, TT Dr. A. Das, TT
2.	Modular Training Program for the Scientists of LRDE-M2	LRDE, Bangalore	7-17 October, 2003 LRDE, Bangalore	Prof. S. K. Koul, CARE Prof. Bharathi Bhat, CARE
3.	Fibre Optics and Applications	ONGC, Dehradun	9-20 February, 2004, IITD	Prof. A. K. Ghatak, Physics Prof. B. P. Pal, Physics
<b>Ongoing Programmes</b>				
4.	Joint Project on Technical Man-power Development by IIT Delhi and National Semiconductor, Bangalore	National Semiconductor, Bangalore	15 October 2003 to 26 July 2004 IITD & Natsem, Bangalore	Prof. D. Nagchoudhuri, EED
5.	Second Certificate Course on Embedded Systems and Applications	Participation based	9 January to 20 April, 2004 IITD	Prof. S. Chaudhury, EED Dr. Subrat Kar, EED
6.	Information Security	Participation based	23 February to 17 April, 2004 IITD	Ms. Akhila Sinha, CSC
<b>Forthcoming Programmes</b>				
7.	Short Term Course on Emerging Wireless Technologies	Participation based	April 12-16, 2004, IITD	Dr. Ranjan Bose, EED
8.	Certificate Program in Bioinformatics and Computational Biology (In collaboration with NIIT)	Participation based	June-December, 2004, IITD	Prof. B. Jayaram, Chemistry

### TECHNOLOGY DEVELOPMENT PROJECTS AT FITT

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

<i>S. No.</i>	<i>Title</i>	<i>PI</i>	<i>Deptt.</i>	<i>Client</i>
1.	Determination of Optimum Stack Height for Thermal Power Plant	Prof. Avinash Chandra	CES	NTPC, NOIDA
2.	Evaluation of Potential Membrane Applications for Water Disinfection and Alcohol Fermentation	Dr.T.R.Sreekrishnan	DBEB	Applied Membrane Technology, Inc., USA
3.	LOCOMOTIVES: Low Cost Mobility Initiatives	Dr.Geetam Tiwari	TRIPP	M/s Interface for Cycling Expertise, The Netherlands
4.	Testing and Evaluation of Garware PVD	Prof. G.V. Rao	Civil Engg	M/s Garware Wall Paper Ltd.
5.	Development of a process for the synthesis and evaluation of a new aleuritic acid based active ingredient for deodorants (Phase-I)	Prof. H. M. Chawla	Chemistry	Shellac Export Promotion Council, Kolkata



## SPONSORED RESEARCH AND INDUSTRIAL CONSULTANCY, IRD UNIT

**List of some major Sponsored Research Projects undertaken by IRD Unit, IIT Delhi during the period 01-Oct-2003 to 31-Jan-2004**

S. No.	Project Title	Sponsor Name	P.I. Name
1	Improvement of S&T Infrastructure in CARE under FIST scheme of DST (RP01608)	Department of Science & Technology (DST)	S.K.Koul, CARE
2	Increasing Life of Bituminous Roads by Utilising Waste Plastics Through a Novel Disperant Based Bitumen Emulsion Technology- A New Approach Towards Petroleum Conservation and environment Protection (RP01600)	Petroleum Conservation Res. Association	A.K.Bhatnagar, Chemical Engineering
3	Influence of land-air-ocean interaction and land surface in-homogeneity in the simulation of meso-scale circulation and micro-climate (RP01605)	Space Application Centre (Dept. of Space)	U.C.Mohanty Centre for Atmospheric Sc.
4	Wasteland Development using Biofertilizers from Domestic Biowastes (RP01597)	Ministry of Rural Development, New Delhi	Dr.(Ms) P.Vasudevan CRDT
5	Metal-Oxide Core-shell Nanostructures for removal of toxins from water and atmosphere (RP01601)	Department of Science & Technology (DST)	Ashok Kumar Ganguli, Dept. of Chemistry
6	Study on oil droplet detachment from solid substrate in simple shear flow (RP01599)	Department of Science & Technology (DST)	Suddhastwa Basu Chemical Engineering
7	Pilot scale demonstration plant for defluoridation of underground water by membrane technology (RP01590)	Department of Science & Technology (DST)	R.C.Maheshwari, CRDT
8	Development, Installation and Demonstration of a Hydrogen Genset Unit (RP01592)	Ministry of Non-conventional energy Sources	L.M.Das Centre for Energy Studies
9	Application of altered atmosphere in the storage pest management	Indian Council of Agriculture Research	Kamal Kishore Pant Chemical Engineering
10	Design of Target Classification Method for Passive Surveillance Sonar (RP01587)	AVTP Headquarter (Weapon Electrical & IT)	Arun Kumar CARE
11	Development of Adjoint Techniques for the Assimilation of Satellite Radiances in NWP Models (RP01593)	Deptt. of Space, ISRO Head.Qrts (GOI)	H.C. Upadhyaya Centre for Atmospheric Sc.

**List of some major Consultancy Jobs undertaken by IRD Unit, IIT Delhi during the period 01-Oct-2003 to 31-Jan-2004**

1	Soil Testing of Jewar Tappal Marginal bund and slope stability Assessment (CW06569)	Drainage Division No.1	GV.Rao, Civil Engineering
2	Topology optimization of Manifolds (CW06638)	Virtual engineering Services(P) Ltd	P.V.Madhusudhan Rao Mechanical Engineering
3	Implementation of Action Plan for Modernisation (CW06617)	Govt. Opium & Alkaloid Works	A.K.Gupta Chemical Engineering
4	Adequacy Report on Pollution control System for Industries(CW06579)	C.J. International & hotels Ltd. (Meridien Hotel)	B.K.Guha Chemical Engineering
5	Adequacy Report on Pollution control & Monitoring of Waste Discharge (CW06640)	National Institute of Immunology	B.K.Guha Chemical Engineering
6	Technical advice on Good Practices in Refrigeration and Alternative Refrigerants for Implementation of Refrigerant Management plan (CW06609)	United Nations Environment Programme	R.S.Agarwal Mechanical Engineering
7	Harmonization of Refrigerator Performance and energy Efficiency Test Protocols (CW06705)	Nexant SARI Energy	R.S.Agarwal Mechanical Engineering
8	Proof checking of Design Calculations of road Over Bridges on Quazigurd-Baramulla Rail link (0-45 & 75-120 Km) (CW06707)	RITES Limited	S.N.Sinha Civil Engineering
9	Vetting of Structural Design of District Court at Sector-10, Dwarka, New Delhi (Phase-II of CW05962) (CW06695)	P.W.D.	S.N.Sinha Civil Engineering
10	Structural Design/drawing of MIG/LIG DU's near G.T.Road at D/ Garden Delhi (CW06561)	D.D.A.	S.N.Sinha Civil Engineering



## FITT IN NEWS

### Presentation/Lectures by FITT Professionals

**Dr. A. K. Sengupta**, Managing Director, FITT, made a presentation on Technology Business Incubation at the **LINUXASIA 2004 conference** at the India Habitat Centre, Delhi on February 13, 2004.

He also made a presentation on *The Technology Transfer and Entrepreneurship* at the Association of Lady entrepreneurs of Andhra Pradesh (ALEAP) in Hyderabad, on Dec 18 & 19<sup>th</sup>, 2003.

Earlier he had also participated at the CII Industry-Institute Networking Forum 2003 held on 16-17 Sept 2003 at the Hotel Intercontinental, New Delhi. He chaired a session on "Creating Successful Technologies"

**Mr. Mohit Mahajan**, Executive Consultant (IPR), FITT presented a lecture on *An Over-view of Patents Filed in Textile area by IIT Delhi*, during the Workshop on **IPR Implications for Textile Industry-Post 2004** on 13<sup>th</sup> January 2004 at PHD Chamber of Commerce, New Delhi. He also made a presentation on *'Impact of IPR on technological development and the effect it has on the Technological Diffusion both from an economic perspective and an ethical one'* on February 22, 2004 during the SYNAPSE 2004, at Gandhinagar, Gujarat.

**Mr. Partha Bhattacharya**, Executive Consultant (I&D), FITT presented a paper titled "Management of IPR and Copyright issues in Digital Media: A Profile" during the XXIV IASLIC National Conference held in Dehradun from December 15-18, 2003.

He also presented a paper titled "Knowledge Management and its Utilisation: An Overview" during the 2<sup>nd</sup> International CALIBER Conference, being held in Jamia Millia, New Delhi from February 11 to 13, 2004.

**Mr. Akhilesh Kumar Gupta**, of FITT has successfully completed his PGDBA (equivalent to MBA) from Bhartiya Vidya Bhawan (AICTE Approved) for the academic year 2000-2003 with the Double Major in Finance.

**Mr. Viswaroop Bhattacharya**, of FITT has also successfully completed his PGDBA (equivalent to MBA) from Bhartiya Vidya Bhawan (AICTE Approved) for the academic year 2000-2003 with the Double Major in Finance & HRM.

### Uttara Nagchoudhuri

**Dr. (Mrs.) Uttara Nagchoudhuri**, Executive Consultant, HRD, FITT, has relinquished her office in March, 2004 after serving the organisation for a decade. Dr. Nagchoudhuri was one of the first professional members to join FITT in 1993 and played a crucial role in making it a vibrant organisation. Over the years, she coordinated around 200 HRD programs.

We wish her all the best.



### NIIT Joins Hands with IIT Delhi

IT education major, NIIT today joined hands with IIT Delhi to offer **programmes in bio-informatics** to meet the growing demand for high-skilled professionals in that field. Spread over six months, the programme in bio-informatics and computational biology would offer fundamentals of modern biology, IT and hands-on training in bio-informatics on the super computer, Mr. Rajendra Pawar, chairman, NIIT said here today.

The programme starts from June this year and the academic prerequisite for the programme is a Master's Degree in physical, mathematical, computer or life science. Engineering and medical graduates could also be eligible to enroll into the programme. The entry into the programme is based on entrance test which is scheduled to be held on 9 May. While the first batch will start from 7 June, the second batch would start from 2 July 2004, Mr. Sirohi said.

This partnership will help leverage NIIT's expertise in building an intellectual pool of trained professionals for bio-informatics", Mr. Sirohi said.

The curriculum would be offered under the aegis of the **Foundation for Innovation and Technology Transfer (FITT)** at IIT Delhi. It was set up by the Department of Biotechnology at a cost of Rs 1.2 crore. The high inter-disciplinary nature of bio-informatics calls for specialized training programmes. The current programme also includes hands on experience on the supercomputer, Mr. Sirohi said, adding the students would get an opportunity to learn with those who have developed some original indigenous software for genome analysis, protein structure prediction and in silicon drug design.

(Source: The Statesman, 29 March, 2004)

### Boston Visit of MD, FITT

**Dr. A. K. Sengupta**, Managing Director, FITT visited Boston, USA between 29<sup>th</sup> February and 3<sup>rd</sup> March, 2004. He had several meetings at the Boston University exploring the potential of collaborative interactions with IIT Delhi. He also visited the Harvard University Office of Technology and Trademark Licensing and the Sloan School of the Massachusetts Institute of Technology in Cambridge. He delivered a lecture to the Boston Chapter of TiE and also had interactions with members of the New England IIT Alumni Association. He met senior functionaries of a leading Venture Capital organization in USA, Silicon Valley Bank. Dr. Sengupta's host in Boston was Shri Alok Prasad, CEO of Beacon Technology Ventures Limited (BTVL), a VCC in Boston. Shri Prasad is an alumnus of IIT Kharagpur and FITT/IITD has recently entered into an MOU with the Indian subsidiary of BTVL.

### 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.



## FITT IN NEWS

### 2004 Annual Meeting of The Association of University Technology Managers (AUTM)

**Dr. A.K.Sengupta**, Managing Director, FITT participated in the 2004 Annual Meeting and 30<sup>th</sup> Anniversary Conference of AUTM, held from 3<sup>rd</sup> to 6<sup>th</sup> of March, 2004 at the Marriott River-Centre Convention Center in San Antonio, Texas, USA.

The AUTM was established as a professional Society (originally named Society for University Patent Administrator, or SUPA) in the USA in 1974, for people engaged in promotion, protection and commercialization of technologies developed through academic innovations in Universities and Technology Institutions. The mission of the Association is to promote, support and enhance the global technology transfer profession through internal and external education, training and communication, and to provide a window for interfacing with government policymakers regarding funding and licensing of academic innovations as well as the related intellectual property policy matters.

In the 1970s, when the primary sources of research funding in the US universities were sponsorship from federal, state or local government, the ownership of inventions out of such research activities belonged invariably to the public (that is the government agency concerned), and as a result, the process of transfer of such technology inventions to commercial and/or public utility organizations often tended to be complex, tardy, time consuming and unremunerative. AUTM was instrumental in drafting a bill for a uniform patent policy for small business, universities and non-profit organizations, which was finally passed by the US congress as the Patent Law Act of 1980, also known as the Bayh-Dole Legislation. The Bayh-Dole Act bestowed on the universities and the academic bodies ownership of patents and other intellectual property rights on outputs from research efforts sponsored by federal governments, and created right conditions towards easing the transfer of technology from the research stage to that of development and then to application.



AUTM organized its 2004 Annual Meeting on March 4-6, 2004 at San Antonio, Texas, USA. The 3-day meeting was attended by more than 1750 delegates, of which more than 300 were from outside North America. MD of FITT, became a member of AUTM in 2001 and he was personally invited by the current President of AUTM to participate in this year's meeting.

### Short Report on the Meeting

The 3-day AUTM 2004 Annual Meeting had an extremely busy schedule, with more than seventy parallel sessions (each of 2 to 4 hours duration) and two plenary sessions. One plenary session was devoted to celebrating the 30<sup>th</sup> anniversary of AUTM, in which one of the keynote speakers was the former senator Birch Bayh who had piloted the famous Bayh-Dole legislation on US Patent Policy through the Congress in 1980. In the other plenary session, the Vice Chairman of NASDAQ Stock Exchange spoke on the Economic Impact of University Technologies and ultimate Social Benefits.

The parallel sessions addressed a gamut of issues related to Industry-Academia Interface, Technology Transfer, Intellectual Properties, role of Government as regulator and facilitator in business development and so forth. MD, FITT could attend the following theme sessions, which were addressed by well known faculty from US and abroad:

- (i) Industry talks to University- A differing perspectives on Licensing
- (ii) Patent, Copyright and Trademark Primer
- (iii) Technology Transfer and University Development- Opportunities for working together
- (iv) How to operate a Small Technology Transfer Office
- (v) Special Interest Group Meeting of International Members
- (vi) Alternatives to waiving patent rights back to inventors, and
- (vii) **Incubation: exploring new frontiers for university technology transfer**

The organizers have arranged to publish all the presentations (in Power Point) made in the seventy odd sessions in a CD-ROM format, which will be mailed to each delegate. The CDs will be kept in the Information Documentation Division of FITT, for consultation.

### Key Lessons Learnt

The close interactive relationship between academia, industry and government bodies is an established practice in almost all the developed countries in the West, and is also taking root in Japan and other newly industrialized countries (NICs) in East Asia, South Africa and Latin America. Almost all the universities in these countries, especially those strong in research in Science and technology, have Technology Transfer Offices (TTOs) that act as a bridge between the academia and industry, and are dedicated to safeguarding the interests of the academic community in all respects of IPR, Technology Transfer and commercialization activities.

In three broad aspects, the TTOs have proved to be very effective in these countries:

- i) Management of IPR, namely patents, designs, copyrights and trademarks
- ii) Marketing and licensing of patented technologies, and
- iii) Promotion of Technology Start-ups, based on outputs of research, through incubation mode.

Many TTOs also participate in secondary technology transfer related functions like managing development projects and industrial consultancies as well as HRD programmes.

It was indeed satisfying to note that the primary missions and activity thrusts in FITT correspond well with those of the TTOs in US Universities. However, the difference is in the resources made available, and unified approach and support from the host institution to fulfill these

...Contd. on page 20



## AWARDS / HONOURS

### Padma Shri Awards

**Prof. R. S. Sirohi**, Director IIT Delhi & Chairman, Governing Council of FITT has been conferred the Padma Shri award for his outstanding contributions in the field of Science & Technology. The award been announced on the occasion of the 55<sup>th</sup> Republic Day on January 26, 2004. Prof. Sirohi completed his Masters in Physics in 1964 from Agra University and Post M.Sc. in Applied Optics and Ph.D in Physics both from Indian Institute of Technology, Delhi in 1965 and 1970 respectively. He worked as Assistant Professor Mechanical Engineering Department during 1971-1979, and later as Professor in the Physics Department at Indian Institute of Technology, Madras. He was Associated with several International Universities, Humboldt Fellow at Physikalische-Technische, Case Western University Cleveland, USA; Rose Hulman Institute of Technology Terre Haute, USA; Institute for Advanced Studies University of Malaya, Malaysia and National University of Singapore, Singapore. He has received a large number of prestigious awards. His research areas are Ellipsometry, Optical Metrology, Optical Instrumentation and Holography.



**Prof. Sunita Jain**, a retired Professor of Humanities & Social Science of IIT Delhi has been conferred the Padma Shri award for her outstanding writing career both in Hindi and English.



**Prof. Anurag Sharma**, Physics Department has been elected Fellow of the Indian National Science Academy at the Annual General meeting on October 10, 2003. The fellowship will become effective from January 1, 2004.

**Dr. Hitendra K. Malik**, Assistant Professor in the Department of Physics has been awarded Young Scientist Project by the Department of Science and Technology, New Delhi on "New Techniques for Energy Gain and Particle Acceleration in Wave-guides by Microwave" for Rs.11.88 Lakhs.

**Prof. R.S. Agarwal**, Mechanical Engineering Department has been nominated as Lead Author for United Nations Environment Programme PCC/TEAP special report on Safe-guarding the Ozone Layer and Global Climate System: Issues related to Hydrocarbons (HFCs) and Perfluorocarbons (PFCs). This report is expected to be completed by the end of 2005.

**Ms. Smita Srivastava and Dr. Ashok Kumar Srivastava**, Department of Biochemical Engineering and Biotechnology have been awarded

the "Best Poster Award" by the Indian Chemical Engineering Congress (CHEMCON 2003). The award carries a cash prize of Rs.1000=00 along with a certificate. The award was given to the authors in the 56<sup>th</sup> Annual Session of the Indian Institute of Chemical Engineers held during December 19-22, 2003 at Regional Research Laboratory, Bhubaneswar (Orissa).

**...Paper Presentations by the Faculty** (Contd. from page 13)

**Prof. A.N. Kumar**, Department of Applied Mechanics was invited to participate in the 5<sup>th</sup> International Conference on Fracture and Strength of Solids and 2<sup>nd</sup> International Conference on Physics & Chemistry of Fracture and Failure Prevention, organized by Far East and Oceanic Fracture Society (FEOFS 2003) at Sendai, Japan during 20-23 Oct., 2003. He also delivered lectures at Fracture Research Institute in Tohoku University and in the Mechanical Engineering Department of Tokyo Institute of Technology and Hiroshima University in Japan.

**...2004 Annual Meeting of the AUTM** (Contd. from page 19)

missions. Technology Transfer Offices in US universities invariably have a fairly strong professional staffing for IP management, marketing, technology transfer/licensing and legal advice. They maintain close interface with the Development office (that manages fund donated by outsiders, and grants from Government), as well as with R&D offices of the university. The emphasis given is on pro-active marketing and intervention on behalf of the university scientists for all the technologies disclosed to the TTO, especially those filed for patenting.

### FITT Team

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