



FITT FORUM



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

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Technology License Agreement with SICO



Prof. K.D.P. Nigam, MD, FITT (Right) exchanges license agreement to manufacture and sell of MIC Kit with Shri. B.N. Sinha, Managing Director, SICO (Left); Prof. R.S. Sirohi, Ex-Director, IIT Delhi looks on.

FITT had partnered with the Scientific Instrument Company Limited (SICO), a public Limited Company and a leading manufacture of the Microwave Passive Wave guide Components for the design and development of a Microwave Integrated Circuit (MIC) Kit. Whereas the development project under a MoU has been funded by SICO, the design and development has been done by the IIT Delhi faculty, namely, Prof. S.K. Koul and Dr. Ananjan Basu of the Centre for App-
...contd. on page 7

I²TECH 2005 : IIT Delhi Technology Exhibition



I² TECH 2005, IIT Delhi's Open House, was a celebration of IIT Delhi's research and technology development activities. The day-long events which was held on April 23, 2005 included lectures by eminent faculty members and more than 100 exhibits covering nearly all areas of science and engineering. The Open House was intended to bring experienced as well as budding scientists and technologists in the metro and beyond, to the campus.

This exhibition also showcased the unique success of IIT Delhi in encouraging its graduating students and faculty to set up student-faculty led startups in the campus under the Technology Business Incubation (TBI) programme.

I² TECH 2005 had been conceived with multiple objectives of projecting IIT Delhi as a research and technology "happening" place; providing a forum for researchers including students to showcase their projects to a wider audience; and to be accountable to society at large by providing access to its faculty, laboratories and facilities. The exhibition itself was spread over the academic complex. It included seminars, posters, exhibits and visit to laboratories and other "unique" facilities. Further, the efforts towards transformation of knowledge to products through young entrepreneurs was on display through TBI units.

New Managing Director of FITT

Prof. K.D.P. Nigam from the Department of Chemical Engineering, IIT Delhi has taken over as the new M.D. of FITT w.e.f. March 1, 2005.

Dr. A.K. Sengupta, Managing Director of FITT superannuated on attaining the age of superannuation on February 28, 2005, after serving the organization for nearly twelve years.

FROM THE DESK OF THE MANAGING DIRECTOR

A Message from the Managing Director

My Dear Esteemed Colleagues,

It is a matter of great honour and privilege to reach you all through this newsletter.

First of all, I would like to congratulate all my colleagues for soliciting their support to meet the goals and mission of FITT. During my nearly 30 years at IIT Delhi and last three months of association with FITT what I understood is that each of my faculty colleagues would like to see FITT as a brand equity name which goes synonymously with same creditability and prestige associated with her mother institute i.e. IIT Delhi.

You may recall that I wrote a personal letter to all of you in the first week of March 2005, requesting for your valued suggestions and greater interaction / involvement with FITT. I am pleased that some Centers and Departments have interacted and provided their inputs. FITT has taken the following measures during the last three months:

1. Further strengthening the infrastructure facilities at FITT: In this regard, we have now made available Audio-Conferencing and installation of multimedia facilities at TBIU.
2. Providing modular programmes to TBIU resident companies, upgradation of knowledge in the area of entrepreneurship, finance business practices by making use of resources available at our own Management Department.
3. Initiating a dialogue with FICCI to have MOU with FITT, so that the expertise of FICCI and IITD can be shared at the same platform.
4. Take FITT globally so that over a period we can bid our technologies at international platform. To achieve this goal, perhaps we have to further strengthen our cooperation at both levels i.e. with similar sister organizations of foreign countries and also our cooperation with TBI companies in prestigious international universities. Initial efforts have been started by sending out a letter along with a brochure of FITT to the Ambassadors of different countries at New Delhi. In some cases, we have also visited them for further discussions.

I would also like to mention that our staff at FITT is very sincere, dedicated and faithful to the organisation and, all of us are looking forward for your suggestions and discussions to meet our common goal. Therefore, may I request your inputs before you go to your vacation, so that while you are on vacations, we work on it and bring it back to you for discussions on an open platform in August, 2005.

Prof. K.D.P. Nigam
Managing Director



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.

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

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

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

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

(**Note: 10.2 % Service Tax + Education Cess in addition to the Annual admission fees)

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

TECHNOLOGY BUSINESS INCUBATION UNITS AT IIT DELHI

Elfsys Embedded Solutions Pvt. Ltd.

Elfsys Embedded Solutions is an innovation driven company with the main thrust in the area of security solutions. It was founded in Summer-2004, by alumni and professors of the Dept. of Electrical Engg. IIT Delhi.

The main thrust area of Elfsys is on using Wireless Sensor Network technology for solving a variety of real life problems. Sensor Networks, as the name suggests is a wireless network of sensors. The special features of this network are its robustness & resilience and ease of deployment. These networks are very versatile and can be used in a number of applications, just by changing the sensors on the nodes.

For example by using proximity sensors, these networks can be used for perimeter security. Sensor networks find applications in industrial monitoring where temperature, humidity and light sensors are used. They can also be used for supply chain management by the addition of smart card readers and RFID.

Elfsys has the complete vertical capability required for the design and development of such networks, from the basic sensor integration, network protocol development, to intelligent application development based on the data gathered by the network.

Elfsys has already set up a test bed of such a wireless network inside the TBIU in IIT Delhi. The network monitors the temperature and light inside TBIU and such a set up can easily be deployed for industrial monitoring application with only minor modifications. Elfsys is currently in talks with, and also looking for like-minded partners for the marketing of various applications of these networks.

For further information, please contact:

Elfsys Embedded Solutions Pvt. Ltd.,
TBIU, Block-I Extn, IIT Delhi, Hauz Khas,
New Delhi-110016, Phone: 011-26581524 Extn.-1
E-mail: info@elfsys.net, Website: <http://www.elfsys.net>

Genie Network Systems Pvt. Ltd.

Genie Network Systems is an IP based wireless technology startup by the faculty and alumni of the Department of Computer Science & Engineering, IIT Delhi which commenced its operations from Sept 2004. Started with a vision that sees wireless devices penetrating into every possible sphere of life, we at Genie believe that the technologies like Wi-Fi and WiMAX will lay the path for low cost broadband connectivity for businesses and consumers. With this vision, our mission is to work with IITD to provide technologies and services that will allow wide adoption of wireless broadband connectivity at acceptable costs for the users and profitably for carriers and enterprises. The team has expanded to include well known people from India & abroad to cater to the needs of company strategy formulation, finance and marketing and is now gearing towards getting Venture funds to scale-up its operations.

For more information, please contact –

Genie Network Systems Pvt. Ltd.
TBIU, Block I Ext, IIT Delhi, Hauz Khas,
New Delhi – 110016
Email: contact@genienets.com
Website: <http://www.genienets.com>

GridSolv

GridSolv has been admitted as startup company into the FITT-sponsored Technology Business Incubator Unit (TBIU) at IIT Delhi on 1st February, 2005. The company's vision is to develop advance software solutions that leverage Web/Grid Computing Technologies and Open-Source Software. It focuses on building reference architectures, frameworks and reusable compute and data services with an emphasis on delivering the end product through composition and refinement. It results in lower cost, higher quality and lower delivery times.

"FITT sponsorship of GridSolv will contribute immensely to our growth", said Vikul Khosla, CEO of GridSolv, "our association with IIT Delhi, faculty, students, and leading-edge research as well as having access to the large pool of computational resources at IIT Delhi provides a strong foundation to grow the company."

Services Offered

A) Product Life Cycle Collaboration

--For early stage software startups looking to build Grid enabled platform products or business applications that leverage a Grid enabled infrastructure.

B) Enterprise Solutions

--For Enterprises that wish to deliver business functionality through composition of Compute and Data Services on top of a grid enabled infrastructure leveraging commodity hardware.

Industry Focus

--Enterprise Analytics --HPC in Automotive, Aerospace
--Seismic Data Processing --Scientific Applications
--Bioinformatics --Telecom converged Applications

Technology

Open Source	GridSolv
Globus WSRF	Horizontal SOA Frameworks
LAMP Stack	Vertical SOA Frameworks
Data Grid	Core infrastructure Services
Other Grid Middleware	Utility Services

For more information please contact

Mr. Vikul Khosla, CEO
TBIU Block 1, Suite 5, IIT Delhi, New Delhi, India 110016
E-mail: vkhosla@gridsolv.com Website: www.gridsolv.com

VirtualWire Technologies

VirtualWire has completed several projects and technology development in the wireless and communications domain. These technologies cover design of algorithms, implementation in FPGA, DSP, embedded systems, and have been displayed in the open house in Communications Lab, MS 202, IIT Delhi, on 23rd April, 2005.

VirtualWire has been working in ZigBee. It is building a SoC which will target the wireless sensor network market. The Soc design will be licensed to wireless chipset manufacturers for production.

TECHNOLOGY BUSINESS INCUBATION UNITS AT IIT DELHI

VirtualWire is also soon going to launch its first product, a VOIP phone. This device will enable enterprises, contact centers, etc to engage in internet telephony, without needing a PC.

For more information please contact

Virtual Wire Technologies

TBIU Block-I Ext. IIT Delhi, Hauz Khas, New Delhi-110016

E-mail: info@virtualwire.co.in,

Website: http://www.virtualwire.co.in

KritiKal Solutions Pvt. Ltd.

KritiKal Solutions, first faculty student led start up in IIT Delhi, is fast maturing to a full grown enterprise. It is a clear example of how technical strength of IIT faculty and enthusiasm of young entrepreneurial minds can make a viable business proposition.

It was incubated in August 2002 by students and faculty of Computer Science & Engineering Department at IIT Delhi, under the Technology Business Incubation (TBIU) Program. It is trying to embody its vision, which is 'Creations for Tomorrow' by working on innovative products and challenging projects.

Business focus and current status

KritiKal is proud of being a high end design house in Embedded and Imaging technologies. The business model that the firm is following is **IP licensing**, wherein technologies developed in the Embedded Systems and Computer Imaging domains as part of paid projects can be translated into separate commercial ventures or products.

The organization is structured into two main business units, 'Imaging' and 'Embedded systems and networks'. The same is reflected into the organization structure.

It is currently working on 11 projects, adding 6 projects in last 6 months only. Currently there are a total 23 full time employees which are expected to rise to 40 by the end of FY 2005-06. KritiKal has shown a net profit in the FY 2004-05 and a healthy cash flow.

Main events in last 6 months:

Apart from the growth in the number of projects, increase in employee strength, visibility and recognition in the industry, there are some additional developments which are worth mentioning.

-KritiKal entered into a MOU with IIM Ahmedabad for mentoring and support in Corporate Strategy, HR development and Business model. The mentoring panel includes Mr. Vishnu Varshney (CEO, Gujarat Venture Capital Limited), Mr. Madhu Mehta (CEO and founder, Nirma Labs), Prof Biju Varrkey (IIM-A), Prof M. R. Dixit (IIM-A).

-KritiKal has set up another office at Sector-16, Noida (UP), which is adjoining to New Delhi and fast coming up destination for new age IT industry. The new premise is about 2500 Sq Ft in area and has seating capacity of 40.

-KritiKal has become registered vendor of Embedded, Computer vision and Network products/services with DRDO Labs.

For more information, please contact:

Mr. Kapil Bardeja, KritiKal Solutions (Pvt) Ltd.

TB-I, TBIU, Block-I, IIT Delhi, Hauz Khas, New Delhi - 110016,

Ph: +91 11 26581643, Fax no: +91 11 26581526,

Email id: kapil@kritikalsolutions.com

Website: http://www.kritikalsolutions.com/

Sanmotech Labs Pvt. Ltd.

Sanmotech laboratories are engaged in the development of new generation of multi-tasking sunscreen activities for protection from ultraviolet radiation and prevention of photoageing and sunburns. The new activities are based on the research work carried out by **Prof. H.M. Chawla**, Department of Chemistry and his co-workers at IIT Delhi. The active molecules are based on macrocyclic metacyclophane molecular framework. During the course of past six months, Sanmotech Labs have narrowed down the search for sun protectants and one active ingredient has been identified and synthesized in the laboratory. It has been completely characterized by UV, IR, NMR and FAB-Mass spectroscopic methods and preliminary efficacy data on the compound has been collected. New formulations are being developed for dermal applications.

It has been observed that the new sunscreen active can counter effects of UV-B (280-310 nm) as well as UV-A (310-350nm) as against existing sun protectant organic molecules which are usually active only in the UV-B region. The Sanmotech active component is roughly four times potent than the commercially used octyl-methoxy-cinnamate. It also offers protection from UV-A which has recently been implicated in the development of skin cancers and melanoma. Thus the Sanmotech active avoids the necessity of use additional active chemical components. The new Sanmotech active is water insoluble and can remain effective for a longer duration as compared to octyl-methoxy-cinnamate and does not penetrate the skin for 96 hours as against 4 hrs of commercially employed control samples.

Sanmotech Labs are exploring the use of the sun protectant for coating spectacles, glasses and buildings. Sanmotech Labs are collecting data on other molecules submitted to FDA (USA) for sun protection by competing companies for comparison and market evaluation while simultaneously negotiating with commercial organizations for synergy and launch in the world markets since the Sanmotech active seems to be superior to all existing organic sun protectants in many respects.

For further information please contact:

Prof. H.M. Chawla, Department of Chemistry, IIT Delhi

Hauz Khas, New Delhi-110016

E-mail: hmchawla@chemistry.iitd.ernet.in

5 Fs of FITT

1. Friendliness

2. Flexibility

3. Freedom

4. Focus

5. Facilitation

SCIENCE & TECHNOLOGY

Innovative Heat Exchanger to Save Energy

Energy saved is Energy produced' is not just a cliché but in-things in most of the industries of the world. Heat Exchanger is one such device that conserves the use of energy resources like coal, oil, gas etc. It has the potential to bring the Indian fertilizer industry at par with the most efficient fertilizer industries of the world. State-of-the-art – production developed by the Department of Chemical Engineering, IIT, Delhi under **Prof. KDP Nigam**, the pilot plant facility of the Innovative Heat Exchanger was recently inaugurated by **Shri Ram Vilas Paswan**, Union Minister of Chemicals & Fertilizers and Steel. The cost of the pilot project is Rs.2.46 crores which took three years of research and design to materialize. Heat exchangers contribute to about 25 per cent of the equipment installed in fertilizer industry. Presently, shell and tube heat exchangers, plate type exchangers and helical pipe exchangers are in practice in the process industries. Fertilizer plants are highly energy intensive and 70-80 per cent of the total production cost of fertilizer is spent on energy alone. The fertilizer industry made a landmark 11.20 million tons production during 1996-97, comprising of about 8.38 million tons of nitrogenous fertilizer and 2.82 million tons of phosphatic fertilizer. Today, the industry is not only an essential link in the food chain, but also has made its impact on the national economy. Plant designers continue to design and build ammonia plants with lower energy consumption. This has resulted in reduction of energy consumption from the earlier levels of 16-18 Giga Calories/Metric Tonnes to the present levels of 7.5-8.0 G cal/MT of ammonia for Naptha based plants. Energy conservation measures in Fertilizer industries have gained importance in the recent past and all new plants are constructed with the latest concept of low energy consumption. The theoretical thermodynamic heat requirement for ammonia production is about 4.47 G Cal/MT, as against the current average consumption of 8 G Cal/MT for natural gas based and 9 G Cal/MT for oil based ammonia plants. Thus, about 3.5 G cal/MT to 4.5 G Cal/MT is lost in cooling water or ambient air through stack or radiation losses. Though all processes will have some losses of energy from the system, the potential to reduce the energy consumption is substantial. The innovative heat exchanger consists of flatter velocity profiles and lower temperature gradient, which improves its performance, reduces residence time and thermal time distributions can be obtained by increasing the mixing between fluid elements of different age groups and temperatures. Innovative Heat Exchanger also finds extensive use owing to the cross-sectional mixing induced by centrifugal force. Uniform thermal environment is an extremely desirous factor for the improved performance of any heat exchanger. The idea of the innovative heat exchanger is based on the concept of centrifugal force. In the present device technique has been innovated for effective utilization of the centrifugal force to advantage. The flow generated in this device due to curvature of a stationary surface bounding the flow changes direction continuously causing a local deflection of the velocity vector. This results in complex secondary flows, which is one of the principal features of fluid flow in this device. The new flow geometry is capable of rotating the plane of vortex formation by any angle thereby exploiting the advantage of centrifugal force. The occurrence of this phenomenon increases mixing between the fluid elements of different age groups and temperatures. This leads to considerable increase in the heat transfer

coefficient. After the technical discussion with the management and technical group in fertilizer industry, various potential areas where this innovative heat exchanger can replace the existing heat exchangers were identified. Some of which are: In Ammonia plants: Methanator feed preheater, CO_2 strip reboil/shift effluent coolers feed gas, CO_2 stripper overhead trim cooler, Lean-solution cooler (Air cooler), CO_2 stripper condensed air cooler, CO_2 ejector steam generator, CO_2 ejector steam reboiler, NH_3 refrigeration condenser, Lean solution/BFW exchanger and in the Urea plants: Distillation pre-heater, HP hydrolozer preheater and Distillation tower reboiler. There is 15-20 per cent improvement in heat transfer with 60-70 per cent reduction in the exchanger area as compared to shell and tube heat exchanger. This device has two-fold advantage of intensifying the convective transfer processes (i.e., increase heat and mass transfer co-efficients) and also provide increased transfer area per unit volume of space. It offers higher film coefficient (i.e. the rate at which heat is transferred through a wall from one fluid to another) and more effective use of available pressure drop result in efficient and less expensive designs. The Innovative Heat Exchanger geometry permits handling of high temperatures and extreme temperature differentials without high-induced stresses or costly expansion joints. The compact size provides a distinct benefit and ease of fabrication and its performance is substantially closer to plug flow system. It cannot only work as a heat exchanger but also as inline mixer, separation devices and in chemical reactors. It has a variety of applications: in coiled membranes blood oxygenators, kidney dialysis devices due to their effectiveness in reducing concentration polarization, chemical reactors due to increased residence time and minimized axial dispersion, heat exchangers, cryogenic systems, bio-sensors, clean steam generators, natural gas heaters, freeze condensers, chromatographic columns, sample coolers and room heaters.

(Source: Press I B, November 01, 2004)

Cracking the Jantar Mantar Code

Days after scientists got permission to study the 17-century-old iron pillar at Qutab Minar, the archaeological Survey of India (ASI) has decided to ask IIT-Delhi to examine the 18th century observatory Jantar Mantar. "We are inviting IIT astrophysicist to study the accuracy of several instruments at Jantar Mantar and also their relevance today. Their help would also be sought in restoring these yantras in such a way that their accuracy is retained in full," a top official told HT. The scientists would be asked to calibrate the instruments as their markings have got worn down in many places. In others, stones bearing the marks have over the years replaced with lime. "The instruments need to be computer simulated to find out how they take the recordings so accurately. Based on that, we would want to restore the observatory," the official said. The Nehru Planetarium would also be roped in for the study. But now that the observatory is surrounded by several high rise structures, its effectiveness would also have to be studied. At present, the observatory has six instruments or their remains. In addition, there are two vertical columns and a small porch.

(Source: Hindustan Times, March 22, 2005)

SCIENCE & TECHNOLOGY

Zero-emission bus

After seven years of research, funded by the Union Ministry of Petroleum and Natural Gas's Oil Industry Development Board, IIT-Delhi is ready with a zero-emission bus that can carry 150 people and move at a speed of 65 kmph. Powered by a battery, the bus can cover a distance of about 160 km at one go. After a test-drive of the bus on the campus, **Professor R Arockiasamy** of the Eco-Friendly Transportation Group of the Instrument Design Development Centre at IIT-Delhi — the project's brainchild — said: "Prototypes of this model are used in Brazil, China, Japan, Belgium and the US."

The models used in other countries are much smaller, he said. "We started work on this project in 1996 with smaller buses. It was much appreciated by the government then. But before they could get commercialised, CNG buses came in." The governments of Delhi, West Bengal, Andhra Pradesh and Tamil Nadu have made enquiries. Project member V K Ranjan of the Department of Political Science at Delhi University said: "In Delhi, we think this is a good solution to the 9,000 diesel buses that were grounded due to a Supreme Court ruling. To convert them into CNG would be much more expensive than converting them into battery-operated or hybrid electric vehicles." Other team members include **Satish Patki**, a designer, **S P Rai**, former collector and MCD deputy director and **Sendyl Solai** of IIT.

The cost involved in manufacturing a zero-emission bus is Rs 21 lakh as compared to Rs 14 lakh on diesel buses and Rs 19-20 lakh on CNG buses. The team, which was gifted a bus by Tata, used a home generator and some batteries. "There are two types of vehicles. The first, the hybrid vehicle charges itself while running and can, therefore, run much longer. The battery-operated ones would need power connections at depots, but that's not very expensive," said Arockiasamy.

(Source: *The Indian Express*, 30 March, 2005)

Vehicle Underside Scanner

Vehicle Underside Scanner (VUS) is a system to facilitate checking of vehicles with the purpose of determining the existence of explosives and other potentially undesirable objects at the underside of any vehicle. It forms a highly secure and efficient replacement for the traditional mirror based system. VUS can work seamlessly along with a companion product called **Vehicle Authorisation System (VAS)** which can check the identities of the vehicle and the driver against a database of registered vehicles and persons authorized to drive these.

The Vehicle Underside Scanner has been developed by the Indian Institute of Technology, Delhi in collaboration with KritiKal Solutions, NetGlobe Technologies and Export Software Consultants, under the sponsorship of the Ministry of Communications and Information Technology.

At **ELITEX 2005** (Electronics and Information Technology Exposition) of DIT, MCIT, Govt. of India, on 25th April, 2005, Hon'ble Union Minister of Communication and Information Technology, **Shri Dayanidhi Maran** released the VUS CD. Prof. D.P. Kothari, Director-in-charge, IIT Delhi was also present on this occasion.

Hi-tech Vehicle Checking Tools

While the spectre of the terrorists' attack on Parliament three years ago must be haunting our 'netas & babus', indigenous R&D promises to bring them a big relief: affordable vehicle authorisation systems and vehicle underside scanners—customised technology developed by IIT, Delhi and funded by the Department of Information Technology (DIT).

Fully tested, field trials have been completed last month. Bharat Electronics Limited (BEL) and the Electronics Corporation of India Limited (ECIL) are among the companies which have come forward to commercialise it.

At present, the Parliament and some embassies are the only buildings where vehicles and their drivers are being screened through imported equipment. After the attack on Parliament in 2001, screening is being done through video cameras and a single camera underside scanner which costs Rs 35 lakh. DIT launched a Rs 1.62 crore R&D project in March 2003 to develop an access control system to restrict the entry of unauthorized vehicles into government buildings.

Now, the indigenous scanning units which were first unveiled in April at the Electronics and Information Technology Exposition—Elitex 2004—have been tested at buildings in the Cabinet Secretariat premises. User agencies, including intelligence wings from state governments and the Centre have been given a demo.

Unlike the imported unit, this VUS is equipped with four high-resolution cameras that can cover all nooks and corners of a vehicle's underside. The captured images of the under carriage passing over the scanning unit are passed on to the gate unit which are stitched together using a computer vision algorithm to form a composite image that is displayed on monitors at the control station. Also ready is a more sophisticated smartcard based "distance" vehicle authorisation system which protects against duplication and impersonation through radio frequency links. A unit is installed inside authorised vehicles (government offices, defence establishments, prison complexes and other sensitive ones) which sends data across to a receiving unit which then verifies the information with a database.

The good news is that users don't have to stop their vehicles for security checks. The system has also been integrated to work with existing automated gates and provides entry-exit logging. The improved prototype is now being offered for technology transfer by DIT. Two companies, BEL and ECIL have been identified in the initial round, while others are also lining up DIT sources said.

"There is demand as the technology can be used as a security system to prevent theft of vehicles in residential complexes, automatic parking fee collection in parking lots and as a tool for efficient toll collection," sources pointed out.

BEL and ECIL which have been associated with the Rs 1.62 crore R&D effort hope to begin commercialisation soon and have estimated that the equipment would cost Rs 5-6 lakh only.

(Extracted from the *Economic Times*, 17 December, 2004)

FITT ACTIVITIES

Technology Transfer

FITT has signed Technology Transfer agreement with **M/s Innovative Engitech (P) Ltd** in respect of the technology 'Drape Meter based on Digital Images Processing' developed by **Dr. B.K. Behra** of Textile Technology Department of IIT Delhi on 21st December 2004 in FITT office.

Since February 1994 till date, there were 33 technologies transfer-agreements with the industries by FITT. Some of these are: AC Static Watt Hour Meter Class 1 & 2, Solar Photovoltaic Lantern, Heat sealable coatings for packaging applications, Development of Software and Hardware for LNA, VCO & DRO (Phase-I), Low Molecular Weight Organic Compound using Liquid Carbon Dioxide, RUSTGARD (Industrial Grade & Superior Grade), Three phase Watt Hour Meter, Microwave Integrated Circuit (MIC) Kit.

FITT has brought out the revised edition of the Compendium of IIT Delhi technologies developed by various Centres and Departments with inclusion of many patented technologies. For the details about the technologies please visit the website- <http://www.iitd.ernet.in/tech/>

...Technology transfer to SICO (Contd. from page 1)
 lied Research in Electronics (CARE) of IIT Delhi. The prototype developed in the Institute has been replicated in SICO and the results validated by the faculty experts in IIT Delhi supplemented with detailed specification/operational manual for the benefit of users of the kit. The commercial rights for the manufacture and sale has been transferred by FITT to SICO at a function organized on the 5th April 2005 in the FITT Conference Room. **Prof. R.S. Sirohi**, the then Director of IIT Delhi and Chairman, FITT congratulated the partners for harnessing their efforts in coming out with a product at an affordable cost which can be very useful for technical institutions in India and abroad for imparting education in the area of Microwave Integrated Circuit. The licensing function was attended by **Prof. K.D.P. Nigam (MD, FITT)**, **Shri B.N. Sinha (MD, SICO)**, **Prof. Surendra Prasad (DD(F), IITD)**, **Prof. V.K. Srivastava (DIRD, IITD)**, **Shri M. Sen (GM, SICO)** besides other officials of FITT and SICO.

Paper Presentations

Dr. A.K. Sengupta, Ex-MD, FITT presented a paper titled "Technology Transfer Mechanism through Academia-Industry Linkages – IIT Delhi Experience" on 7th October 2004, at Bengal Engineering College, Kolkata.

Mr. Partha Bhattacharya, Executive Consultant (Information & Documentation) presented a paper Titled 'IPR Issues in Digital Environment: An Overview' during the ICIM (International Conference on Information Management) during February 21-25, 2005 at Mumbai.

Mr. Mohit Mahajan, Executive Consultant (IPR) delivered an expert lecture on 'Creativity in Business Enterprise' at TBIU Complex on 15th October, 2004 along with a visit as an Expert Guide for the audience SVC Industries, Faridabad. The event was organized by 'World Association for Small and Medium Enterprises and International Network for SMEs' between 12-16 October 2004.

List of IPR Applications Approved/Filed/Processed by IITD-IPR-SC during September 2004-March, 2005

S.No.	Title of the Invention	Principal Inventor/ Deptt./Centre
1.	A Thermography based method for detecting defects in materials	Dr. Suneet Tuli CARE
2.	Use of alkaline extract of lingocellulosics as an inducer for xylanase enzyme production	Dr. Vikram Sahai DBEB
3.	Petrol-Alcohol-Water based microemulsion fuel	Dr.A.N. Bhaskarwar DChE
4.	Development of a Lactic Acid Bacterial Strain for exclusively L(+) Lactic Acid Production in Anaerobic Fermentation Process	Dr. A. Srivastava DBEB
5.	Method for obtaining highly pure L(+) Lactic Acid using a mutant	Dr. A. Srivastava DBEB
6.	Design Registration for a coil for a heat transfer apparatus	Prof. K.D.P. Nigam, D.Ch.E
7.	A US application for Heat Transfer Apparatus	Prof. K.D.P. Nigam, D.Ch.E
8.	Innovative Heat Exchanger	Prof. K.D.P. Nigam, D.Ch.E
9.	Segmented-Clad Fiber Design with Tunable Leakage Loss	Prof. K.Thyagarajan, Physics
10.	Compact Electron Cyclotron Resonance Plasma Source	Prof. Ashish Ganguli, CES
11.	Scheme for production of Large Volume High Density Plasmas for Industrial applications using Compact ECR plasma sources	Prof. Ashish Ganguli, CES
12.	Fast and Efficient Algorithm for Global Optimization	Dr. Jayadeva DEE
13.	A Chaos based system for public key encryption	Dr. Ranjan Bose DEE
14.	A New Asymmetrical Double-Gate Poly Si TFT with Modified Channel Conduction Mechanism for Highly Reduced Off-state Leakage Current	Dr. M. Jagadesh Kumar, DEE
15.	Synthesis of Mercury Cadmium Telluride Nanoparticles by Solvothermal Technique	Prof. Viresh Dutta CES
16.	High Breakdown Voltage Lateral Schottky Collector Bipolar Transistor	Prof. Jagadesh Kumar, DEE
17.	Development of Contact Microbial Killer Quaternary Amine Acrylate Based Hydrogels for Water Disinfection	Prof. Harpal Singh CBME

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-D IN NEWS

IIT among top global universities

The Indian Institute of Technology has been adjudged one of the top universities in the world for science, according to a global survey of academics. The IIT is ranked 31st among the top 100 universities in the world.

(Source: Financial Express, December 11, 2004)

Khosla gifts \$5 m to IIT Delhi

If you thought Sun Microsystems founder **Vinod Khosla** only has venture capital and micro-financing on his mind these days, you have another thought coming. The California-based VC and General Partner at Kleiner Perkins Caufield & Byers has gifted Rs.22 crore for a school at his alma mater - IIT (Delhi). The school on information technology will come up within the IIT campus and is Khosla's second major personal donation to IIT Delhi where he pursued a Bachelor's degree in electrical engineering. Under his drive to give back to the society, he donated \$5 million to his alma mater in January last year. According to sources in IIT Delhi, the curriculum and courseware for the school, the name of which is yet to be decided, is being worked out by the faculty. In addition to his non-profit ventures, Khosla is bullish about the micro-financing opportunity in India on the lines of Bangladesh's Grameen Bank. Khosla, who visited India and Bangladesh earlier this year, is of the view that micro-finance initiatives in these countries "run more efficiently than most Silicon valley organizations. They have sophisticated credit algorithms." (Source: Hindustan Times, December 9, 2004.)

IIT-D turns to Centre for promoting scientific research

With more and more students turning to professional careers in engineering, medicine, computer science and management, there seems to be hardly any takers for careers in science. "Many students-including parents-feel that a career in science is not rewarding in terms of money. So they don't go for it," said **Arvind Kumar**, professor, Indian Institute of Technology (IIT) at a seminar on 'Attracting young people to careers in Science'. To avert any such, IIT has come up with certain recommendations to the Central government. It says that the Scientific advisory Committee to the Cabinet (SAC-C) report's suggestion for creating high-quality undergraduate educational institutions structured around integrated M.Sc programmes and linked to existing leading research institutions should be put into operation on a priority. SAC-C constituted a committee in April 2003 to look into the problems of decreasing interest in talented young students in taking up careers in basic sciences and the other report was produced in July 2004. Other recommendations include expanding science undergraduate courses in IITs, increasing the number of Central Universities, reducing curriculum loads in school sciences, reducing the multiplicity of entrance examinations among others. "These recommendations are not for the benefit of IIT only. The aim is to reverse the trend of diminishing interest in a science career," said **Ratna Mala Chatterjee**, professor, IIT. The recommendations will be finalized within a week and sent to the Central Government.

(Source: The Times of India, April 1, 2005)

IIT Delhi shares knowledge to fight faultlines

At IIT Bhuj's tremors haven't died down yet. Since 2001, the institute has turned its focus on increasing awareness on earthquakes - ranging from refresher courses and workshops for field engineers to setting up libraries on earthquake engineering in 100 colleges across the country. Post-graduate students of structural engineering have to study a paper on the subject while a few courses have been introduced at the undergraduate level. "Over the past few years, many PhD students have also worked on issues related to earthquake engineering..." "After the Bhuj earthquake, all professional bodies in civil (engineering) felt awakened and even the HRD Ministry decided on running a few courses through the IITs", said Professor T.K.Datta who coordinates the programme. "One of our tasks was to spread this knowledge and at IIT Delhi, we decided to set up libraries for 100 engineering colleges across the country," he added. The IITs also hold short-term training courses for teachers from engineering colleges across north India. Next, IIT Delhi will work with the six other IITs under the National Programme for Earthquake Engineering Education, funded by the HRD Ministry. On home ground, the department works closely with the Delhi Development Authority (DDA) and other civic bodies to assess buildings for earthquake resistance. "Under the re-zoning of the country, there is no area which is in Zone 1 (the least prone area). In Delhi if an earthquake was to take place 50-60 per cent of the structures would show signs of distress," said Datta. "The institute works with the DDA and NDMC to assess buildings in the capital for earthquake resistance as Delhi falls in Zone-IV. They are now looking at hospitals and schools and some residential areas as existing buildings can also be worked on." The Ministry of Home Affairs and Urban Development have also started a parallel course for field engineers." The first course will be held in March or April next year," said Datta.

(Source: The Indian Express, October 23, 2004)

Moser Baer, IIT-Delhi to work on tech for optical data storage

MOSER Baer India Ltd has joined hands with the Indian Institute of Technology, Delhi, to work jointly in the frontier areas of thin film sputtering technology suitable for optical data storage devices. Towards this end, the two organizations signed a memorandum of understanding for a period of five years to jointly scour this hi-tech field.

While Padmashree Professor R.S. Sirohi, Director of IIT Delhi, signed the MoU on behalf of his institute, Mr Giriraj Nyati, Head of Engineering and Technology at Moser Baer, signed the MoU on behalf of the optical storage media major. The Moser Baer's Chairman and Managing Director, **Mr Deepak Puri**, said, "Moser Baer has always focused on applied research and development, and this is one of the corner stones that have enabled the company to develop new and innovative products-both in dye technology and the inorganic thin-film based optical data storage space. While we invest 2 per cent of our revenues on R&D, it is agreements like this one with organisations like IIT that really hold the potential to rewrite technology."

"This agreement marks a giant step-a leading corporate and a top in-

...Contd. on page 9

IIT-D IN NEWS

IIT-Delhi girl masterminds Motorola's technology drive

Padmasree Warrior took the Indian entrepreneurial spirit to new heights when she became the chief technology officer (CTO) of the \$31-billion Motorola. The fact that she was chosen to drive a conglomerate's tech initiative was a proud moment for India. Today, Warrior's operational responsibilities include leading a global team of 4,600 technologists. A voracious reader who enjoys music, theatre, ballet and other forms of dance, Warrior seems to be loving every moment of her time in Motorola ever since. "It is a privilege to lead breadth and depth of technical talent at Motorola. It is also a stimulating and constant learning experience to be surrounded by creative people. I have a great deal of fun driving technology for a global technology company," says Warrior.



Mostly, this high-flying CTO unwinds by keeping herself occupied in art and paint in different media from time to time — mostly water colours and acrylics on ceramics. "I have fun in cooking and inventing new recipes. I spend most of my spare time with my family — my husband and our 11-year-old son. All of us love the outdoors and our vacations often involve some exciting hikes — many times ending up in unplanned adventures, good and bad."

To be heading a firm like Motorola is not an easy task. Her greatest challenge is to reduce the complexity of numerous technologies and distill issues to the essence. "I like to keep things simple and crisp. It requires tremendous intellectual bandwidth — to absorb a lot of deep, fast paced technical information, to understand global market dynamics, to maintain close customer interaction and synthesise all of this input into a few key business strategies. To sort through a series of data, trends and disruptions and prioritise what is important is very challenging."

(Source: Times of India, April 18, 2005)

...Moser Baer, IIT-Delhi (Contd. from page 8)

stitute have come together to work jointly to develop technologies the country would often seek support for from outside the country. India offers a plethora of young and talented Scientists who possess tremendous R&D capabilities. Collaborative R&D activities like this one are what will help break the confines of national boundaries and countries of origin," Professor R.S. Sirohi said.

Moser Baer's Mr Giriraj Nyati said there was enormous scope for the development of new technologies to enhance the current data storage capacity of optical formats—from 50 Gb to 200 Gb—using both organic and inorganic materials as the recording media. "The current maximum recordable/rewritable capacity of optical media ranges from 4.7 to 8.5 Gb, which will be enhanced to a maximum of 50 Gb between 2007 and 2010. This enhancement will be attributed to the advent of Blu-ray technology," he said. High-density DVD and Blu-ray discs are the two formats that are finding favour with top media companies today—the two formats are competing to become tomorrow's optical media standards.

(Source: Business Line, January 19, 2005)

It's Raining Jobs at IITD

The echoes of booming placements at B-school across the country can be heard at the Capital-based Indian Institute of Technology, Delhi (IITD) as well. The placement season at IITD, stating August in the year that went past and culminating in June this year, has already seen some of the who's who of corporate sector picking graduating engineers in droves. This year IITD will witness close to 1,100 students at the bachelor's and master's level graduating from different engineering disciplines. The professor in-charge, placements and training at IITD, **Kushal Sen** said: "With three months still to go before the placement process comes to an end, 75 percent of the Class of 2006 which includes B Tech, Master's and five-year integrated programmes have already been absorbed in different sectors including manufacturing and IT sector". Some of the prominent recruiters at the IITD this year include Infosys, Satyam, Wipro and Tata Consultancy Services. Across the board, the salary package, too has jumped by the least 25 per cent compared to last year. Sen exclaimed, "Till date, the average salary offered to the graduating engineers has been about Rs.3.5 lakh per annum." The Department of Management Studies (DMS) at IITD, which conducts the MBA programme has a separate placement process. The graduating MBAs at DMS have already been placed in January. The average salary of the graduating MBA students was around 6.4 lakh. "As far as Ph D students are concerned, the number of passing of passing graduates vary on a monthly process. Their placements, if students are interested, are taken care of by the respective supervisors in concerned areas", added Sen. About the work profile, Sen said: "Being application-based, the majority of IT companies recruit engineers for different positions. They do not need specialists, as companies feel that engineers from any stream are equipped to handle different work profile. The Under Graduate programme, moreover at IITs have a system where 50 per cent of the credits are awarded for non-specialists stream. So, a graduate might have done a specialization in mechanical engineering but he or she is well versed with other streams in engineering as well". This year, Indian companies in the manufacturing sector, too, have started hiring graduates for R&D work. "The Indian companies have started understanding the importance of investments in R&D. Rather than buying the technology off-shelf, Indian companies have realised that fruits of investments in R&D might come late, but is very important, in a competitive world market," added Sen. The placement process, too will undergo a change in IITs for students passing out in 2006. "The IITs have finally agreed that placement process will commence from December-January rather than in August. The master's level students used to pass out in December-January period, so we used to commence the process in August. They, now will be passing out at the same time as the UG students." Even the final-year UG students are going to benefit from this step. "The final-year UG students, generally, find it difficult to concentrate in their studies if they have already been placed in a company. It shows in their performance in terms of final-term projects. The companies, too, find it difficult to recruit in terms of their manpower needs at least one year in advance," remarked Sen.

(Source: Times of India (Education Times), April 04, 2005)

PAN-IIT 2004



Prof. M.G.K. Menon, Chairman, BoG, IIT Delhi with Dr. A.P.J. Abdul Kalam, Hon'ble President of India at PAN-IIT-2004 Conference held on 24-25 December, 2004 at Pragati Maidan, New Delhi.

The PAN-IIT, a global IIT Alumni, organized PAN-IIT 2004 - Exhibition-cum-Conference on 24th and 25th December 2004 at Pragati Maidan, New Delhi. The theme of this event was 'IITians - Empowering India' which was witnessed of congregation of over 2500 IITians from across the globe and was organized with the aim of taking a proactive interest in the contribution of nation building, provide networking opportunities for IITians and contribute actively to one's alma mater.

This two-day conference had sessions on wide-ranging issues like global practices for sustainable success; harnessing Indian brain power and IPR; brand building and reaching out to international markets; business process outsourcing; automotive sector; biotechnology; future of computing and defense and space research, to name a few.

Besides these sessions, the exhibition showcasing the products and services of IITian entrepreneurs and their substantial contribution to technology, research and development and in visualizing a powerful India for the future were the highlights of the exhibition.

In addition, all IITs had been provided space to display their R&D activities. IIT Delhi had also put-up a stall in the exhibition which was visited by the Chief Guest, **Shri Sunil Mittal**, Chairman of Bharati Group. The stall was also visited by the Directors of all IITs as well as by our alumni. The contents and presentation of the exhibits of IIT Delhi stall were widely appreciated.

The Chairman of Bharti Group, Sunil Mittal inaugurated this exhibition-cum-conference. Delivering the keynote address, Shri Mittal said: "Nothing else, but application of science will put the country forward in today's context. We have the natural resources, the people and brainpower as assets, which allow us to take risks and to create products and services. The next 10 to 20 years belong to India."

Speaking on global practices for sustainable success Saurabh Srivastava remarked, "The necessary condition for growth is that the country has to be globally competitive."

Shri Pradeep Gupta, Co-Chairman, PAN-IIT India executive council and chairman, Cyber Media Group said, "It's an attempt to look at the role of technology and technologists in the nation building process." He further added that "it gives alumni from the seven IITs an opportunity to do whatever we can for the nation."



Prof. R. S. Sirohi, Director, IIT Delhi with Shri Sunil Mittal, Chairman, Bharati Group and the Chief Guest at the IIT Delhi stall, during the inauguration of PAN-IIT Exhibition - 2004.

The IITians who attended the conclave included **Shri Jeet S. Bindra**, President, Chevron Texaco Global Refining, **Saurabh Srivastava**, Chairman, Xansa, **Hari Bhartia**, CEO, Jubilant Organosys, **Vijay Thadani**, CEO, NIIT, and **S. Gopalakrishnan**, Deputy MD and COO, Infosys, among others.

The congregation was also addressed by **Dr. A.P.J. Abdul Kalam**, the Hon'ble President of India. The presentation by the President was titled "What I can do for my nation." In his address, the President said that IIT Alumni had excelled in all fields due to their knowledge. "They have become knowledge scientists, knowledge managers", the President said. He also complimented the initiatives taken by IIT alumni that had helped them to succeed. "Nobody achieves anything without taking risks," he said.

The various topics discussed at the conference included "Global Practices for sustainable success", Harnessing Indian brain power Intellectual Property rights" and Brand building.

Other issues of interest to the common man debated, include water and sanitation, education, rural development, electricity and roads and transportation.

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.

WORKSHOPS/SEMINARS/CONFERENCES/MEETINGS/EVENTS/COURSES

Fourth Certificate Course on Embedded Systems and Applications (February 9 - May 15, 2005)

Based on the curriculum and courseware developed on Embedded Systems as an internal project, the **Fourth Certificate Course on Embedded Systems and Applications** was launched on February 9, 2005 and is currently underway. Based on the feedback received in the last three course from participants and industry, some modification were carried out and fourth course is of the duration of three months and will have more than 200 contact hours including hands-on practical sessions. There are fifty two participants enrolled in the third 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

The special features in the previous course were seminars of the industry-experts and this will be also salient point of this course. For more information, please visit our website www.fitt-iitd.org or contact

Shri K. K. Roy, Manager (Tech/Admin.),
Foundation for Innovation and Technology Transfer (FITT),
Indian Institute of Technology Delhi,
Hauz Khas, New Delhi-110016,
E-mail: kirityroy@hotmail.com

A Short Course on CRYPTOGRAPHY (February 18-20, 2005)

A short-term course on '**Cryptography**' was organized by Bharati School of Telecom Technology and Management, IIT Delhi under the aegis of FITT, IIT Delhi for the Employees of SafeNet Infotech Pvt Ltd, New Delhi from February 18 to 20, 2005. There were 18 participants for the programme. The objective of this program was to conduct an advance level course on PKI (Public Key Infrastructure) and Cryptography. The faculties were **Dr. R.K. Sharma & Dr. A. Tripathy** from Department of Mathematics, **Prof. S. Prasad** and **Dr. Ranjan Bose** from Department of Electrical Engineering, **Prof. B.N. Jain** from Department of Computer Science & **Mr. Vishal Chandra** from TBIU unit, Virtual Wire Technologies. Dr. Ranjan Bose, Department of Electrical Engineering was the program co-ordinator.

The course included the theories and practicals and covered the topics on RSA public key cryptography, DH Protocol, Elliptic curve cryptography, Key and certificate generation, usage and management, Digital signatures, Message authentication protocols and Industrial standards.

Training Programme on 'Fibre Optics Communication & Networking' (March 14-24, 2005)



Faculty with Participants from ONGC for the training program

A training programme on '**Fibre Optics Communication & Networking**' was organized for the employees of Oil and Natural Gas Corporation (ONGC) Ltd. Dehradun during March 14-24, 2005, under the aegis of FITT. The total no. of participants were 12. The faculties were from the Department of Physics, Electrical Engineering and Computer Service Center, IIT Delhi; CGCRI, Kolkata and C-DoT, New Delhi. The program co-ordinators were **Prof. B.P. Pal** and **Prof. A.K. Ghatak** from the Department of Physics, IIT Delhi.

The programme included theoretical concepts and Lab demonstrations and covered the topics on Fiber basics, Non-linear effects & dispersion compensating fibers, Temporal dispersion of signals, DWDM components, EDFA & optical network simulation, Polarization and Polarisation Mode Dispersion in fibers, Single-mode fiber characteristics and computer simulation to demonstrate importance of the same, Bit errors in signal transmission, Design of a Fail-safe fiber optic LAN, Fiber Optic chemical sensors, Power and dispersion budgeting in single wavelength and DWDM optical system design including SDH and Access networks, Optical broadband networks-design issue, IIT Delhi optical fiber campus LAN as a case study, Optical fiber fabrication technology, Vibration sensing and Nano-technology. The participants visited Computer Service Center for IIT's optical backbone as a Case Study. They also visited C-DoT and Aksh India Fiber Cable factory.

Training Programme on 'Basics of Radio Frequency and Microwave Circuits' (March 28 - April 1, 2005)

A short-term HRD programme on '**Basics of Radio Frequency and Microwave Circuits**' was organized by Centre for Applied Research in Electronics (CARE) under the aegis of FITT for the employees of Tata Infotech Ltd, Goa, from March 28 to April 1, 2005. Faculties were from CARE (Centre for Applied Research in Electronics) and EE (Electrical Engineering Department) of IIT Delhi. The programme co-ordinator was **Prof. S.K. Koul**, CARE, IIT Delhi.

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MEETINGS/EVENTS IN IIT DELHI

Chinese Premier's Visit to IIT Delhi (April 12, 2005)

His Excellency **Mr. Wen Jiabao**, Premier of the State Council, People's Republic of China visited IIT Delhi on April 12 2005 and addressed the students and faculty of IIT Delhi. His emphasis was on enhanced political trust between India and China, expansion of economic cooperation, roles of the two countries as complementing each other and not as competitors, support of China for greater role of India at the United Nations and promotion of peace and harmony for the good of humanity.



Mr. Wen Jiabao mainly emphasized on the healthy relationship between India and China. He stated that many new avenues are opening up in the near future in the fields of IT, trade and commerce, education, science and technology and much more. He also stated that the two nations will work together to maintain their integrity and security for their development and growth at the global level.

When asked what special measures should be taken in between the two nations for greater exchange of students, he answered that an agreement is signed in which every year 100 students of each country can visit the other nation. He was also asked about the possibility of new educational institutions being setup in China at the level of IITs in India. He said that China has many renowned institutions. There are more than 2000 institutions for higher learning in China and 20 millions students are enrolled in various programs. He however acknowledged that IIT Delhi is amongst the top institutions of the world.

Chinese Prime Minister disagreed with the opinion that India and China are competitors. Instead, he pointed that the two countries can complement each other and work together for an Asia-centric world. In the loud applause of the audience he ended up his speech by saying "Hindi Chini Bhai Bhai".

...Programme on Basics of Radio Frequency (Contd. from page 11)

The course included: Introduction to Radio Frequency and Microwave Circuits, Smith charts and its applications, Network Analysis including S-parameters, ABCD parameters, Filter design, Directional couplers and power dividers, different types of amplifiers, Mixers, Planar Antennas and CDMA/GSM. The hands-on covered Fundamentals of Network Analysis and Spectrum Analysis, Microwave Integrated Circuit fabrication using photolithography including mask making using Intelicad and Circuit simulators such as PUFF and Serenade.

FORTHCOMING EVENTS IN IIT DELHI

National Workshop-cum-Conference on Emerging Technology for Controlling groundwater pollution: Drinking Water Perspectives (May 19-20, 2005)

A National Workshop-cum-Conference on '**Emerging Technology for controlling groundwater pollution: Drinking Water Perspectives**' is scheduled to be held at Department of Civil Engineering, IIT Delhi during May 19-20, 2005.

The event will enable to take stock of groundwater pollution concerns and to come out with strategic plans, improved scientific methods and technologies for controlling groundwater pollution and ensuring safe drinking water supply.

The themes of the workshop will include these topics: Groundwater problems and issues, groundwater quality monitoring, contaminant transport and groundwater chemistry, environmental consequences of developmental activities, technologies for controlling groundwater pollution, water treatment technologies, alternate options for drinking water in rural & urban areas, sustainability of groundwater sources and human health risk assessment.

For the registration and other details, visit the website:
<http://www.iitd.ernet.in> or contact

Dr. Ashok K. Keshari, Department of Civil Engineering
Indian Institute of Technology Delhi, Hauz Khas, New Delhi-110016
Phone: 011-26591236 (O), 26591548 (R); Fax: 011- 26581117
E-mail: akeshari@hotmail.com, keshari_ak@rediffmail.com

Symposium on Modern Trends in Inorganic Chemistry (MTIC-XI) (December 8-10, 2005)

A Symposium on '**Modern Trends in Inorganic Chemistry (MTIC-XI)**' is going to be organised by Department of Chemistry, Indian Institute of Technology, Delhi, New Delhi from December 8 to 10, 2005. This Symposium on Modern Trends in Inorganic Chemistry (MTIC-XI) is eleventh in the series of biennial national meetings. It aims to focus on the current status and future projections of research in various frontier areas of Inorganic Chemistry.

The Symposium will cover the topics on: Transition Metal & Main Group Chemistry; Organometallics; Bioinorganic Chemistry; Inorganic Solids & Molecular Materials; Inorganic Reaction Mechanism; Metal-Mediated Organic Synthesis and Catalysis; Clusters and Supramolecular Chemistry; Photochemistry and Electrochemistry and Theoretical Chemistry

Participation

It is generally by invitation. Others are also encouraged to submit abstracts for poster presentation. They will be invited if their work is relevant to the theme of the symposium. Presentations at the symposium will consist of INVITED LECTURES. All lectures will be published in a National Journal. Some posters [10-15] will be selected for flash presentation (5 min) by research students.

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FORTHCOMING SEMINARS/CONFERENCES/EVENTS IN IIT DELHI

CHEMCON 2005 (December 14-17, 2005)

The 58th Annual Session of the Indian Institute of Chemical Engineers will be held at IIT Delhi, New Delhi from 14 to 17 December 2005. The Conference theme is '*Sustainable Technologies for Efficient Energy Utilization in Process Industries*'. This is organized by INDIAN INSTITUTE OF CHEMICAL ENGINEERS (Northern Regional Centre) in association with International partners.

It is expected that the CHEMCON 2005 will have the benefit of active support and participation of many developed countries as the joint organizers of the congress. All sessions will be guided by prominent professionals in the specific fields of their specialization. Besides, there will be plenary lectures by delegates from various countries. Poster sessions will be arranged during the congress. The challenges for Chemical Engineers require harnessing knowledge and expertise in several related fields and call for periodic upgrading of their professional skill.

Technical sessions will focus on the theme of the congress and the topics being covered with interaction through plenary sessions, invited lectures, presented papers and poster sessions are: Hydrocarbons and Other Fossil Fuels; Hydrogen Energy and Fuel Cells; Fertilizers; Electrochemical and Electro thermal Technologies; Polymer Engineering and Technologies; Biotechnology; Pharmaceutical Industry; Green Technologies; Membrane Separation; Novel Separation Processes; Instrumentation and Process Control; Materials of Construction and Protective Coatings; Process Safety Management; Environmental Engineering; Nano-Technology; Particle Technology; Catalysis and Reaction Engineering; Interfacial Engineering; Transport Phenomena; Modeling and Simulation of Processes; Computational Fluid Dynamics; Emerging Changes in Chemical Engineering Education; Energy and Environmental Policy Issues and Global Treaties.

For more information please visit the website: <http://www.iitd.ernet.in/>

ICPQR 2005 (December 12-15, 2005)

The 11th International Conference on Productivity and Quality Research (ICPQR 2005) is going to be held during December 12-15, 2005, organized by Indian Institute of Technology Delhi in association with International Society for Productivity and Quality Research Miami, USA. ISPQR (International Society for Productivity and Quality Research) is a premier international society dedicated to the creation and dissemination of cutting edge and relevant knowledge in productivity and quality research.

The theme of the conference is '*Emerging Issues In Productivity and Quality*'. The conference includes: Productivity and quality concepts and measurement issues; Managerial issues; Impact of emerging technologies on productivity and quality; Strategic and organizational perspectives; Sector and industry-specific issues; Productivity and quality challenges and Socio-cultural issues.

Registration

The last date for registration is as following:

---Online registration: August 31, 2005

---Pre-registration: November 15, 2005

---Spot registration: Starts from December 12, 2005

For more information please visit the website :

<http://www.iitd.ernet.in/icpqr/index.html>

You may also send queries to: icpqr2005@rediffmail.com

International Conference on Mesoscale Processes in Atmosphere, Ocean and Environmental Systems IMPA 2006 (February 14-17, 2006)

An International Conference on Mesoscale Processes in Atmosphere, Ocean and Environmental Systems (IMPA 2006) is going to be held at Indian Institute of Technology (IIT) Delhi, India during February 14-17, 2006.

The aim of the conference is to review the current knowledge of the complex interactions between physical and chemical processes within the earth-atmosphere system, and to identify remedies and strategies for sustainable development plans in both industrialized and developing countries. The objective of the conference is to bring together the scientists/engineers from industry, research organizations, government and academia who are involved in monitoring, measurements, simulation and management of the various problems related to weather and pollution. A special session is proposed to be organized on natural hazards such as cyclones and tsunami waves.

The Conference is organized by Centre for Atmospheric Sciences, Indian Institute of Technology Delhi and the topics include: Monsoon Variability and predictability, Regional Climate Change, Advanced Observational Systems and Data assimilation, Natural hazards and Coastal Zone Management, Air Quality Modeling and Impact Assessment, Urban Pollution, Coastal/Estuarine Processes, High Performance Computing in Environmental Modeling, Weather-climate environment and sustainable development

For more information please visit the website: <http://www.iitd.ernet.in/> or contact

Organizing Secretary

Professor Mailthili Sharan, Head, Centre for Atmospheric Sciences
Indian Institute of Technology, Hauz Khas, New Delhi - 110 016

Tel(O): 91-11-26591301, 26596029, Res. 91-11-26591946, 26515480

Fax: 11-26591386, 26582037, E-mail: impa2006@cas.iitd.ernet.in

...Symposium on Modern Trends (Contd. from page 12)

For registration and other details please visit the website
<http://www.iitd.ernet.in/utilities/new/mtic.pdf>

or contact

Professor Ajai K. Singh, Convener MTIC-XI

Department of Chemistry, Indian Institute of Technology, Delhi
Hauz Khas, New Delhi - 110016, India.

Phone : 011-26591379(O) 011-26591979(R)

E-mail : aksingh@chemistry.iitd.ac.in , ajai57@hotmail.com

INDUSTRY-ACADEMIA: ARTICLES

The gains from industry-academia interaction

By P. K. Doraiswamy

TEACHING, research and extension are known as the trinity of higher education. Teaching is the basic activity of communicating knowledge to students and stimulating their interest in it. Research not only extends the frontiers of knowledge but lends depth, breadth and a certain authority and authenticity to teaching.

Extension exploits existing knowledge for economically and socially beneficial purposes and puts the validity of this knowledge to test in real world conditions, raising new questions for research which again feeds back into teaching and extension, and so the cycle continues.

Attempts have always been made to achieve productive interaction between academia and industry. Sandwich courses were introduced in the second year of polytechnic courses whereby students spend a semester with a local industry and get hands-on experience of real-life situations and industry also gets an idea of the strengths and weaknesses of the kind of students academic institutions produce.

Engineering college students also have an industry visit in their final year. But no continuing, substantive collaborative relationship between academic expertise and industry needs was built up. In 1982, a concept called 'science and technology park' was sought to be promoted by the government.

The idea, borrowed from the West, envisaged universities encouraging technocrat-entrepreneurs to establish pilot plants (instead of straightaway starting a full-fledged commercial venture and taking a big risk) within the university campus to try out any new, promising technological ideas with the academicians providing research and consultancy support to solve any problems the units may encounter.

When many of our universities lacked even basic teaching and research facilities and were financially dependent on the government for even their day-to-day running, it was naive to expect such a sophisticated scheme to succeed, and it did fizzle out.

Universities are, or at least ought to be, the prime repositories of up-to-date and advanced levels of knowledge in different fields. Especially in a knowledge society, industry and business are the main users and beneficiaries of such knowledge. One would, therefore, think it natural, almost inevitable, for universities and industry to come together in a close, constructive collaboration to use such knowledge for mutual benefit and that of society.

This, in fact, is what has happened in developing countries. But in India, unfortunately, notwithstanding the recommendations of the various education commissions set up after Independence and the emphasis in the National Education Policy, industry-academia interaction still remains marginal and largely confined to a few top institutions such as the IITs, the IIMs and a few CSIR laboratories.

The exception, of course, is agriculture, where there is a long and

continuing tradition, started during the British times, of agro-based industries depending on the outcome of the research of agricultural universities, but this broad sectoral involvement is qualitatively somewhat different from the individualised and customised partnership that industry-academia interaction is, though customisation is also entering agriculture through biotechnology.

This article examines:

- the likely benefits from industry-academia interaction,
- the factors inhibiting such interaction, and
- the policy and structural measures likely to encourage such interaction.

Benefits

--For industry: Using the academic knowledge base to improve industrial cost, quality and competitive dimensions, reducing dependence on foreign know-how and expenditure on internal R&D, updating and upgrading the knowledge base of the industry's professionals through management development programmes designed by the academia, the faculty's exposure to industry leading to improved curricula and widened and deepened teaching perspectives resulting in professional graduates of a high calibre to man industry.

--For academia: The satisfaction of seeing knowledge and expertise being used for socially useful and productive purposes, widening and deepening of the curricula and the perspectives of teachers and researchers; earning additional resources for a system severely constrained in this regard; securing training and final placements more easily for students based on the respect earned from and the relationship established with industry.

Inhibiting factors

--From the industry's side: Insensitivity to, and/or lack of awareness of, the resource potential of the academia, a blind, herd-like obsession with expensive, high-profile professional consultants, easy availability of foreign know-how, compulsions of existing technical collaboration agreements, bad experience of earlier interactions with academia, anxiety to keep problems and breakthroughs confidential for fear of losing the competitive edge.

--From academia's side: Apathy towards applied research and extension and reluctance to leave the comfort zone of pure teaching; inadequate marketing of its strengths to industry; lack of a critical mass of experts and specialised technical infrastructure; overspecialised loyalties and reluctance to collaborate in inter-disciplinary problem-solving; unhelpful, restrictive internal policies and procedures discouraging or frustrating academicians' attempts to collaborate with industry.

Suggested measures

Of the three major systems in academia — CSIR laboratories, IITs/IIMs and universities — the first two are distinctly stronger in terms of management, resources, expertise and reputation. They should, therefore, provide the major thrust by co-opting reputed university departments as partners in all major research and consultancy projects.

As teaching is a major responsibility of universities, research and consultancy should not be at the expense of teaching but only as a

INDUSTRY-ACADEMIA: ARTICLES

value-adding activity. Teachers, junior or senior, should be encouraged to engage in both teaching and research/consultancy as synergising modules.

The accreditation process now introduced for technical institutions (offering engineering, management and computer courses) should specifically highlight the potential and capabilities of departments for training, problem-oriented research and consultancy and give a separate star rating for this aspect in addition to the overall institutional rating now being given. This should also be given for social sciences disciplines such as economics, commerce, psychology and sociology.

Before drafting a new Five-Year Plan, the Planning Commission used to farm out research projects on specialised sectoral studies to university departments. This practice deserves to be continued and expanded further. Apart from motivating the academics, this would enable industry to readily identify competent departments for giving assignments with confidence. Though the public sector is shrinking, major PSUs should, as a matter of policy, utilise available expertise in academia, wherever feasible.

In addition to the accreditation rating mentioned above, the UGC, the AICTE and the CSIR could prepare a list of departments and their area of specialisation and consultancy competence and operate an industry-academia interaction exchange in every State (on the lines of an employment exchange) which any academic institution or industry can access.

While sanctioning departments of excellence in universities, the University Grants Commission should keep in view the relevance of these to the needs and problems of industry. Every major academic institution should have a suitably structured academia-industry interaction council headed by the director of the institution which will take steps to promote and de-bottleneck such interaction. At the annual conferences of trade and industry, associations such as FICCI and CII, as well as academics should make presentations on academia's problem-solving, research and consultancy capabilities.

Once the industry does not generally have a high opinion of academia's capability, it is for the latter to take the initiative to break the ice. Some ice-breaking initiatives would be:

- including pro-active and positive-minded professionals from industry and business in syndicates and boards of study,
- using practising professionals from industry as part-time guest faculty,
- securing training/project attachments for senior students and research scholars in industry,
- exploiting contacts with alumni who are successful in industry and business,
- offering management development courses for professionals in industry, as this is a safe, inexpensive trial interaction for the latter,
- offering inexpensive, if necessary free, consultancy to small and medium industries which cannot afford expensive consultants.

The recent successes of Indian entrepreneurs in IT and process and product outsourcing have generated a new self-confidence in Indian industry to take on global competition, unlike in the past when there was near-total dependence on foreign collaboration for achieving any breakthrough.

Groups such as the TVS, Bajaj and Tata have successfully developed models in-house, without any foreign collaboration. The garments and made-ups industry, even in small towns like Karur and Tirupur, is looking forward confidently to facing global competition after the removal of quotas from January 2005.

Indian companies have won prestigious international awards such as the Deming prize. Wipro and Infosys recently signed MoUs with some universities for collaboration. The atmosphere, therefore, is ripe for academia to exploit to its advantage this new ambience of confidence and self-reliance in industry.

(Source: Reproduced from Business Line, March 29, 2005)

'You really have to walk the fine line in industry-academia interface'

(Part of the Interview with renowned computer scientist C L Liu (Taiwan) in Financial Express, who talks how public-private participation can take industries to scale new heights.)

What role should the centres of excellence play? In other words, should there be more industry-academia interface, say in the case of IITs and ISIs of India?

You really have to walk the fine line in this industry-academia interface. On one hand, what the institutes are doing is very close to commercial cutting-edge technology. So we have to maintain a close relationship with the industry and learn what the issues are. On the other hand, we have to maintain distance so that we can carry out fundamental research work and provide ideas and inventions to the industry. Research institutes should hire people with as many different goals and objectives as possible, so that there are some who are close to the industry and can bring in consulting jobs, but perhaps more importantly, bring in funds for the institute.

Another interesting observation I would like to make here is what happened to Taiwan about 25-30 years back. A large number of college graduates went to the US to pursue higher studies. The government was criticised for failing to hold them back. Interestingly, after having made good use of the US education system, about 80% of these people have actually come back to Taiwan just as the country had been making a headway. But, we now have a situation where there are not many students who are keen to leave Taiwan for higher studies. This will lead to a bigger problem, as according to our estimate about 15 years from now, the number of students to come back and make a contribution to Taiwan will be substantially less. We foresee an alarming situation and the government is doing its bit by giving mild encouragement to students by offering scholarships, etc., to send students abroad.

(Source: Financial Express, January 17, 2005)

FITT PROGRAMMES

HRD Programmes

Since October 2004 and till now, 17 customised HRD programmes were held under the aegis of FITT. A list of some HRD programmes completed during the past few months, ongoing and forthcoming courses is given below:

S.No	Title	Sponsors/Participation	Date & Venue	Co-ordinator & Deptt.
HRD Programmes (Concluded)				
1.	Basics of Radio Frequency and Micro-wave Circuits	Tata InfoTech Limited, Goa	March 28 to 1 April, 2005, IITD	Prof. S. K. Koul, CARE
2.	Training Programme on Fibre Optic Communication and Networking	ONGC Academy, Dehradun	March 14-24, 2005, IITD	Prof. B. P. Pal, Physics Prof. A. K. Ghatak, Physics
3.	Short Course on Cryptography: Public Key Encryption	SateNet Infotech Pvt. Ltd., New Delhi	Feb. 18-20, 2005, IITD	Dr. Ranjan Bose, EED
4.	Workshop on Issues in Low Power VLSI Design: Digital Circuits and Memory	Participation based	Feb 28 & March 1, 2005, IITD	Prof. Jayadeva, EED Dr. R. Potluri, EED
5.	Workshop on Global Land Cover Network	Food and Agriculture Organisation (FAO), New Delhi	Feb. 15-19-2005, IITD	Prof. A. K. Gosain, Civil Engg.
6.	Training Course on Safety Biomechanics and Crashworthiness Module-II of "International course on Transportation Planning and safety"	WHO, SEARO, Fort Motor Co., Min. of Transport & Highways	9-15 Dec. 2004, IITD	Prof. Dinesh Mohan, TRIPP Dr. Geetam Tiwari, TRIPP
7.	Maintenance Engineering-II Training Program Electrical Engineering Graduates	ARI, New Delhi	3 months w.e.f 29-11-2004, IITD	Prof. R. Sagar, ME
8.	Third Certificate Course on Embedded Systems & Applications	Participation based	Aug-18 to Nov. 15, 2004, IITD	Prof. S. Chaudhury, EED Dr. Subrat Kar, EED
Ongoing Programmes				
1.	Fourth Certificate Course on Embedded Systems and Applications	Participation based	Feb. 9 to May 15, 2005, IITD	Dr. I. N. Kar, EED, Dr. Lipika Dey, Maths
2.	Joint Project on Technical Manpower Development by IIT Delhi and National Semiconductor, Bangalore	National Semiconductor, Bangalore	15 October 2003, to 15 October 2005, IITD & Natsem, Bangalore	Prof. G. S. Visweswaran, EED
Forthcoming Programmes				
1.	Training Programme on Unix System/Network Servers Administration	DIPAC(Defence Services), New Delhi	To be decided	Ms. Akhila Sinha, CSC, Prof. B. P. Pal, Head CSE

TECHNOLOGY DEVELOPMENT PROJECTS AT FITT

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

S. No.	Title	PI	Deptt.	Client
1.	Development of Dry Ice Pelletizer / Extruder	Dr Naresh Bhatanagar	Mech. Engg.	M/s S S Foundry Chemical Industries Ltd, Delhi
2.	Advice on the training and exposure of the technical personnel to Finite Element Analysis	Prof G S Sekhon	Appl. Mechanics	Hero Honda Motors Ltd., Dharuhera
3.	Tech Development for Collecting bone & tissue properties & Development of human body FE Model	Dr Anoop Chawla	Mech Engg	JARI, Japan
4.	Tech Development for "Study of RF MEMS Phase Shifter and Switch Using GaAs"	Prof S K Koul	CARE	RCI, DRDO, Hyderabad
5.	Development of eco-friendly and value added jute based materials	Prof P K Banerjee	Text. Technology	National Centre for Jute Diversification, Kolkata
6.	Structural & Thermal Analysis of Large Apert. Silicon Mirror upon high power laser radiation	Dr Sudipto Mukherjee	Mech. Engg.	LASTEC

IPR NEWS & ARTICLES

2 CSIR journals in compulsory reference list of patent treaty

In a move that could have a great significance for the protection of the Indian systems of traditional knowledge, the World Intellectual Property Organisation has decided that two science journals brought out by the Council of Scientific & Industrial Research (CSIR) must be compulsorily referred to by patent offices across the world before granting any patent. The achievement is significant as it would effectively block any misappropriation of India's traditional knowledge at the outset. In other words, the country would not have to spend enormous amounts to challenge patents granted abroad on products and processes that were based on knowledge already available in the country. For instance, the CSIR itself had to mount a costly litigation a few years ago before it could make the U.S. patent office revoke a patent it had granted for use of turmeric for healing wounds. The journals that have been selected as mandatory reference literature for international patent authorities are the **Indian Journal of Traditional Knowledge (IJTK)** and the **Medicinal and Aromatic Plant Abstract (MAPA)**. Both are brought out by the CSIR's National Institute of Science Communication and Information Resources (NISCAIR). The inclusion of the two journals, however, was not automatic. It was brought out after a protest from India. According to CSIR officials, initially, WIPO had issued a draft list of 90 journals, including 11 from India, that could be included in the list of "minimum documentation" under the Patent Cooperation Treaty (PCT). But, a meeting of the international authorities of PCT decided to include only 11 journals from the list and they were mainly from the developed world. India then lodged a strong protest against the decision. In a letter to the Deputy Director-General (Legal Council) of WIPO, Francis Garry, the Director of NISCAIR, V.K. Gupta, in October last year pointed out that IJTK and MAPA at least should be included as they met all the criteria set for the selection process. He also pointed out that the meeting had decided to include six journals — two each from the USA and the U.K. and one each from the Netherlands and Italy, even though they did not form part of the original document listing possible candidates. Following the letter, a meeting of the international authorities under PCT was again held and this time it decided to include the two Indian journals. With this, India has become a part of a select group of 13 countries, whose science journals are included in the PCT's "minimum documentation" list. The other countries are the USA (85 journals), the U.K. (20), Germany (15), Russia (six), Japan (five), the Netherlands (3), France and Switzerland (two each like India) and Denmark, Czech, Italy and Croatia (one each).

(Source: *The Hindu*, March 22, 2005)

IPR Chairs at IITs, IIMs, DU & JNU

The HRD Ministry, Govt. of India has announced 10 chairs for Intellectual Property Rights (IPR) in IITs, IIMs, DU and JNU. IPR will now become a regular subject at these institutions, studies for which will begin in the coming academic session.

The aim is to create a new avenue of study and employment. Three such chairs are being set up at IIMs in Ahmedabad, Kolkata and Bangalore. The other seven chairs will come up at IITs in Delhi, Kharagpur, Chennai, Mumbai and Kanpur, besides Delhi school of Economics (DU) and the Centre for Economic Studies (JNU).

Intellectual Property Crime

(An Article by By Sudhir Ravindran & S. A. Chenthil Kumaran)

ABSTRACT

The article focuses on intellectual property crime by addressing the problems and the factors contributing to its growth. This article has tried to analyze the cost to the right holder and the legal protection relating to intellectual property crime while also providing the Indian perspective to the whole issue.

KEYWORDS

Intellectual Property Crime, Piracy, Counterfeiting, Organized Crime, Intellectual Property, Patents, Trademarks, Copyrights, Geographical Indications, Enforcement, Customs and Border Measures

INTRODUCTION

Increasingly, the global economy is dependent upon the creation and distribution of intellectual property (IP) to drive economic growth. However markets are plagued by fakes, be it stamps, watches, cigarettes, cosmetics, pharmaceuticals, FMCG products, auto components, software, music, films etc resulting in significant loss to companies, corresponding evasion of tax duties and violation of the rights of the consumer. Studies by industry associations bear this out, the CII Alliance estimates that the FMCG sector loses approximately 15% of its revenue to counterfeit goods with several top brands losing up to 30% of their business due to Intellectual Property Crime. The nature of the crime, its size, diversity and scope has hindered the task of coordinating a dynamic response. Lack of consumer awareness and advancement of technology are the major factors which encourage counterfeiting which is further fuelled by lax enforcement laws which make things easy for counterfeiter. The continuity of socio-economic growth and industrial competitiveness depends upon high level of IP protection and enforcement raising profound concerns of the rapidly growing piracy of IP rights and production of counterfeit goods.

INTELLECTUAL PROPERTY CRIME

INTELLECTUAL PROPERTY (IP) crime is more generally known as counterfeiting and piracy. Counterfeiting is, willful trade mark infringement, while piracy involves, willful copyright infringement. These are very similar and often overlapping crimes. IP crime is not a new phenomenon but due to globalization and advances in technology counterfeiting and piracy has become big business.

OVERVIEW OF PROBLEMS

During recent years the scope and scale of the problem has grown at a rate previously unknown. The counterfeit traders with whom most people come into contact are small-scale operators or street vendors. However, such vendors are only the front end of much wider and more sophisticated networks. Although the term "organized crime" should be used with caution in describing the counterfeiting industry, Interpol states that "extensive evidence is now available which demonstrates that organized criminals and terrorists are heavily involved in planning and committing intellectual property related crimes."

IPR NEWS & ARTICLES

Further, online piracy is facilitated by increase in transmission speed, since faster connections enable users to send and download larger files (such as software programs) more quickly. Without strong online copyright laws and enforcement of those laws, online piracy via spam, auction sites and P2P systems will continue to grow along with increase in Internet usage. There are 4 main factors contributing to the growth of IP crime:

- Widespread availability of technology
- Increased globalization of world trade; it is easier to manufacture in one geographic location and distribute elsewhere. The result of more open borders and more trade is that it is also easier for counterfeits to flow across borders.
- Legal penalties are low; if they do exist at all.
- The influence of organized crime.

Counterfeiting and piracy have emerged as clear and serious threats to business, consumers and government. Counterfeiting is obviously a breach of consumer affairs, health, trade, and employment law. It is the negation of all the major legislation protecting individuals. Without coordinated action and policy to clamp down on the criminals and to dissuade consumers by bringing about increased awareness, a cycle of economic destabilization occurs with control slipping into the hands of the criminals.

Costs to the right holder

Industries which find themselves in direct competition with counterfeiters suffer a direct loss in sales. Indeed, some markets are even dominated by counterfeiters, creating barriers of entry for the producers of the genuine product. Some would argue that the buyers of the fakes would not have bought the genuine item but that is a very narrow argument and can only apply to a small segment of luxury goods. Many counterfeit products today are of higher quality and compete directly with the genuine items. In addition, consumers who are deceived into believing that they bought a genuine article when it was in fact a fake, blame the manufacturer of the genuine product when it fails, creating a loss of goodwill. Even cheaper and obvious copies that are bought in good faith represent a serious threat to the company that wants its brands associated with quality and exclusivity. Beside direct losses of sales and goodwill, one should not forget the expenditure involved in protecting and enforcing intellectual property rights. The right owner becomes involved in costly investigations and litigation when combating counterfeiters and may also have to spend further sums on product protection. The budget for anti-counterfeiting is rarely well defined within an organization, but spans across several departments such as marketing, human resources, product development and legal departments.

Legal Protection

A counterfeit product can infringe any, or all, of the main intellectual property rights, namely trade marks, patents, designs and copyrights. Counterfeiting predominately deals with trade marks whereas copyright infringements are referred to as piracy. Generally patents alone are not usually referred to as counterfeits or as piracy.

The difference between these rights should be understood. Both patents and copyrights are monopolies, granted by law. A trade mark is not a monopoly. The proprietors of patents and copyrights can grant

a license to others without conveying any real interest.³ A license in these situations is defined as a purchased right to act without the threat of suit by the Right's owner. The registration of all IP rights is a complex issue and companies that try to save money by not registering their rights run a great risk, even though they may feel that their products are not worthy of this protection. No matter how small the company, or the product, if it is successful then someone will imitate it. It is not a legal requirement to register trade marks, but to gain full benefit of the various courses of action available, it is strongly recommended.

While the necessary legal protection may exist, it can be said that consumer demand drives counterfeiting, which in turn harms numerous industries. Rising global overcapacity for the manufacture of discs is also key factor behind the spread of disc piracy, affecting music, film and computer software. There can be no doubt that product counterfeiting is a serious and damaging economic crime. There are definitely no "major" or "minor" counterfeits. Counterfeiting is a serious offence on a level with trafficking in weapons or drugs. It is vital that the public understands that fake- products carry with them a real safety hazard not just the prospect of disappointing performance. Because no industry sector is immune from attack by counterfeiters and no country is exempt from this type of criminal activity. Finding ways to successfully combat it is an international challenge, and demands the participation not only of companies, but also members of the world's law enforcement agencies, and governments around the world. Each of these groups has a critical role to play if this challenge is to be met.

Indian Perspective

India continues to remain on the priority watch list of the US Trade Representative, meaning that India is perceived as not providing adequate intellectual property rights protection or enforcement of laws protecting IPR. However the admitted experience of IP crime in India is lower than in Asia-Pacific region and globally and is contrary to general perception of the relative incidence of IP crime in India. While India does not have a separate legislation to address counterfeiting as in the US, it offers statutory remedies, both civil and criminal which are embodied in the new Trademarks Act of 1999, The Copyright Act, 1957, The Patents Act 1970, The Designs Act 2000, The Geographical Indications of Goods (Registration and Protection) Act 1999, Custom & Border measures are provided in The Customs Act, 1962 which one can access through various IP statutes.

India has made important changes to its IP laws and more are in the pipeline, including changes in IP and Customs laws to implement border control measures as required by the TRIPs Agreement. India has signed Customs Mutual Assistance Agreement with most of its major trade partners including EU & USA. These treaties establish formal guidelines and allow officials to share intelligence and investigative data relating to IP violations. In addition, in the last five years the Indian courts have taken a more pragmatic approach to counterfeiting. Lobbying by various brand owners' associations, and more education programmes have resulted in increased awareness and a greater understanding of IP issues among law enforcement authorities.

...Contd on page 19

FOCUS ON A DISTINGUISHED FACULTY OF IIT DELHI

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

Prof. K.D.P. Nigam

Prof. K.D.P. Nigam, the new Managing Director of FITT is a distinguished and renowned Professor in the field of Chemical Engineering. He has done Ph.D. in Chemical Engineering from the Department of Chemical Technology, University of Bombay in the year 1976. Since then he has been a faculty member in the Department of Chemical Engineering, IIT Delhi. He is a versatile scientist in the areas of Applied Chemical Engineering Research.

He has significant contribution in R&D. His research interests are Multi-phase reactors particularly *Trickle-Bed Reactor, Bubble/Slurry bubble column reactors, Motionless mixers etc.* His other areas of research includes Process Intensification especially *Ram Mixer & Axial mixer.* Besides these he has carried out research on Transport Phenomena, Modeling & Simulation; & Interfacial Science



Prof. Nigam is very actively involved in the academia and industry interaction for the energy conservation in Fertilizer industry. He is presently serving on the Board of Directors of NFL. He is working on several promising possibilities to develop a cleaner and greener technology and energy efficient innovative devices. He has proposed an innovative design of heat exchanger based on novel concept of flow inversion caused in secondary flows. The proposed innovative device has potential for the multi-functional applications in the process industry such as inline mixer, chemical reactors, separation process, and cryogenic applications. Recently, the Pilot Plant of Innovative Heat exchanger was commissioned at IIT, Delhi.

Prof. Nigam has served as a member of Scientific Advisory Committee of Ministry of Petroleum & Natural Gas, Government of India. He is also a member of different Research Advisory Committees of PSUs & organizations such as Fertilizers Association of India, Engineers India Limited, Indian Oil Corporation Limited and RRLs of CSIR. He has also served as honourable Council Member of All India Council of Technical Education, Government of India.

Some of the distinguished research projects he has already completed are Technology Development :Hydrodynamics and Cold Flow Studies in Trickle Bed Reactor-Phase I & II ; Development of Mixer for Emulsions; Studies on Bubble Column; Studies on Motionless Mixer; Transesterification Reaction in Liquid/Liquid phase etc. A patent has been filed on Innovative Heat exchanger being developed by him. He has guided 32 M.Tech and 9 Ph.D. students. He has published more than 80 research papers in various International Journals of repute such as Chemical Engineering Science, Chem. Engg JI, Cand JI .Chem Engg, AIChEJl etc. He has published more than 10 Monographs/Books in different fields of Chemical Engineering. Prof. Nigam has published a book titled "Three phase sparged reactors", published by Gordon and Beach, 1996, in association with A. Schumpe (Germany).

The high impact and significance of Prof. Nigam's work can be judged from the extensive citations it has received in research literature, research monographs, such as Perry's Hand Book of Chemical Engineers, Encyclopedia of Fluid Mechanics, Proceeding of Royal Society and textbooks.

His students (graduate and undergraduate) have won various national awards such as CSIR young scientists award, best paper award of IChE and INAE Innovative students Projects award (B.Tech).

Prof. Nigam has been a visiting faculty at various Institutes all over the world such as INP-ENSIAC ET, Toulouse, France, ENSCCF France, University of New South Wales, Sydney, Australia, Pohang University of Science and Technology, South Korea etc.

He is a Member of Many Prestigious Committees/Boards such as PCRA, Editorial Board for International Journal of Engineering Fluid Mechanics, USA, Project Evaluation Committee of Technology Development Board, Deptt. Of Science & Technology, G.O.I., International Scientific committee for the Sixth International Conference on Gas-Liquid and Gas-Liquid-Solid Engineering (GLS-7) to be held at Nancy, France (August 2005) etc.

Professor Nigam's International reputation has brought him the various Fellowship from prestigious International organizations such as Alexander von Humbolt Foundation, Deutscher Akademischer Austauschdienst, British council, French Government, Cambridge University (U.K.), University of Saskatchewan, Canada and Rensselaer Polytechnic Institute, Troy. He has large number of research cooperation with different international groups. He may be contacted on the following address:

Prof. K.D.P.Nigam, Managing Director
Foundation for Innovation and Technology Transfer,
IIT Delhi, Hauz Khas, New Delhi-110 016,
E-mail: nigamkdp@gmail.com

...IPR Crime (Contd. from page 18)

While crimes such as drug dealing and trafficking are viewed with great concern, the general perception in India of IP crime is that it is a "victimless crime". Consumers in India still appear to be relatively unconcerned because of a divergence of public perception and the lack of understanding about the effects of IP crime. Recently there have been stronger signals with lengthier sentencing and higher penalties for those convicted of counterfeiting and piracy. However, mixed messages are still conveyed and lower penalties are more common than those imposed for more high profile criminal activities.

CONCLUSION

The curbing of widespread IP crime including the reduction of influence of organized IP crime, requires a multi pronged and collaborative approach on the part of the various stake holders in bringing about increased awareness amongst the public, legislature and enforcement authorities of the perilous nature and devastative impact of IP crime.

(Authors are IP Consultants, Global Business Solutions
4, Fourth Floor, Crown Court, 128, Cathedral Road, Chennai - 86.
Email: admin@gbsindia.net)

AWARDS / HONOURS

Awards

Dr. (Mrs) K Gadgil, Principal Scientific Office of the centre for Energy Studies has been awarded Best Employee with disability by the Ministry of Social Justice and Empowerment. The Award was given in a special function in Vigyan Bhawan on December 3, 2004 by President of India, Dr. A P J Abdul Kalam. *The award included a Medal, Citation and Cash Award.*



Dr. Dheeraj Bhardwaj: A Recent Special Issue on Youth Power of India Today has published an article on "Youth Guns: The 50 on the Fast Track" has featured Dr. Dheeraj Bhardwaj, Assistant Professor, Department of Computer Science and Engineering as one of the Young Leaders of Tomorrow. According to the article, these 50 people upto age 35, are the leaders of a generation marked by drive and dynamism. Their influence is undeniable today and it is everywhere – in politics, business, the arts, science and sport. Identifying the best and the brightest who represent the changing face of India, Dr. Bhardwaj has been identified as "Scientist Entrepreneur" and "Grid Guru" for his contributions to PARAM Supercomputer, a project of C-DAC and Pioneering Grid Computing in India. They have also mentioned one of his achievements as INSA Young Scientist Award-2000.

Prof. M.N.Gupta, Professor of Chemistry Department and Dean, PGS&R has been appointed as a Member, Editorial Board of the Journal "Artificial Cells, Blood Substitutes and Biotechnology". The Journal is published by Marcel Dekker, NY. He has also been awarded "Prof. Shadhakshara Swamy Endowment Lecture Award for the year 2004" by Society of Biological Chemists (India)

Dr. Charusita Chakravarty, Associate Professor, Department of Chemistry has been awarded Swarnajayanti fellowship in Chemical Science for 2003-2004. The Department of Science and Technology, Govt. of India instituted the Swarnajayanti Fellowship to commemorate India's fiftieth year of Independence in 1997.

Dr.(Ms.) Monika Aggarwal, Assistant Professor in the CARE has been selected for "INAE young Engineer Award 2004". The Award (Certificate, a gold plated Medallion and Rs. 20,000/- in Cash) will be conferred in the ceremony at the Annual convention of the Academy on December 11, 2004 at India Habitat Centre.

Dr. Sudhir K.Jain, Associate Professor, Department of Management Studies has been elected as the Vice Chairman of Indian Society for Training & Development (Delhi chapter) for the year 2004-05.

C. V. Raman Centenary Award



The Indian Science Congress Association (ISCA) Kolkata has awarded the highly prestigious award *C. V. Raman Centenary Award* for the year 2004-2005 to **Professor R S Sirohi**, the then Director, IIT Delhi. The award which carries a Gold Medal, was presented by the **Hon'ble Prime Minister of India, Dr. Man Mohan Singh** on January 3, 2005 during the inauguration of 92nd Science Congress at Ahmedabad.

Attention !

For any information regarding latest courses, seminars, conferences, symposia or workshops at IIT Delhi and FITT, please keep in touch with the websites: <http://www.fitt-iitd.org> and <http://www.iitd.ernet.in>

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Shri Mahender K. Rajoriya

Project Staff

Mr. Pawan Kumar Jha

Foundation For Innovation and Technology Transfer (A Regd. Society)

Indian Institute of Technology, Delhi, Hauz Khas, New Delhi-110016,
Ph: 26857762, 26581013, 26597164, 26597167, 26597153, Fax: 91-11-26851169,

Website : <http://www.fitt-iitd.org>,

Editor : Shri Partha Bhattacharya, email : parthab@fitt.iitd.ernet.in, Printed By : Presdezyns for FITT