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Techniche 2011



Techniche-2011 – the annual techno-management festival of the Institute – was held during 1–4 September 2011. The thirteenth edition of the Techniche had set the goal to understand the significance and celebrate innovation that has changed the course of man kind – be it the Internet or the Telephone or the Paperclip or the Wheel.

One of the main attractions of Techniche is the Lecture Series, where eminent scientists, business wizards, entrepreneurs, adventurers from around the world deliver lectures on their work, share their experiences and thus greatly inspire the students. This year too, people from diverse fields of knowledge participated in the event and shared their knowledge and experience with the student community. Among them were Mr. Stephen P. Morse, the chief architect of the Intel 8086 chip (the grand-daddy of today's



Mr. Stephen P. Morse lighting the inauguration lamp with Prof. B. K. Patel, Dean, Students' Affairs by his side (1R)



Mr. B. G. Verghese



Ms. Leila Chirayath Jenah

Pentium processor) which sparked the PC revolution 25 years ago; Ian Wright, host of the famous television travel show Globe Trekker, known for his witty banter; Dr. Rajendra Kumar Pachauri, who has served as the chair of the Intergovernmental Panel on Climate Change (IPCC) since 2002, and has been awarded the Nobel Peace Prize in 2007; Mr. M. K. Venu, Editor of *The Financial Express*; Dr. Lyn Evans, the project leader of the Large Hadron Collider

(LHC), at CERN – the European Organization for Nuclear Research; Ms. Leila Chirayath Jenah, founder of Samasource, an award-winning social initiative; Mr. B. G. Verghese, veteran journalist and recipient of the Magsaysay Award; Mr. Jonar Nader, reknown leadership guru and author of *How to Lose Friends and Infuriate People*; Mr. Tim Samaras, storm chaser.

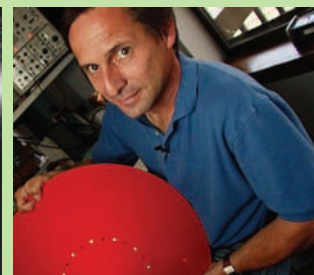
Techniche also presented a great opportunity to showcase students' talent on different technical issues. Robotics competition was one such module which witnessed large participation from all over the nation.

Some of the other events of Techniche-2011 were workshops on mobile making, robotics, aircraft making, exhibitions, paper

presentations, quizzes, online events, Guwahati half marathon, and Technothlon – the international school olympiad.



Mr. Jonar Nader



Mr. Tim Samaras

Regional Meeting on Formulation of 12th Five Year Plan of Department of Higher Education, MHRD

A regional consultation meeting on formulation of 12th Five Year Plan of Department of Higher Education, Ministry of Human Resource Development, Govt. of India, was held at IIT Guwahati on 25 July 2011. Ms. Vibha Puri Das, Secretary, Higher Education, MHRD; Prof. Ved Prakash, Chairman, UGC; Prof. S.S. Mantha, Chairman, AICTE; Prof. V.N.R. Pillai, Chairman, DEC and VC, IGNOU; and Prof. Gautam Barua, Director, IIT Guwahati,



Ms. Vibha Puri Das (1L); Prof. V.N.R. Pillai (2L); and Prof. Gautam Barua (3L)

along with other MHRD officials and Vice-Chancellors or their representatives of the universities of the NE states; officials from the Govts of the NE states; and noted academicians of the region were present in the meeting.

The main aim of the meeting was to receive views and suggestions of all the states of the north eastern states on each of the three broad areas of the Working Group on Higher Education, Technical Education and Private participation in Higher Education including Public Private Partnership.

In the meeting, major physical achievements of the first four years of the 11th Five Year Plan were highlighted.



Prof. Ved Prakash and Ms. Vibha Puri Das

During the 11th Five Year Plan, 15 new Central Universities have been established in each State which did not have a Central University, except Goa. Eight new Indian Institutes of Technology, seven new Indian Institutes of Management, five new Indian Institutes of Science Education and Research, two new Schools of Planning and Architecture, ten new National Institutes of Technology have been established in various places across the country under this Plan. Elaborate discussions were held and numerous suggestions were made on the formulation of the 12th Five Year Plan (2012-2017) in Higher Education sector.



Academicians and administrators present in the meeting.

Seminar/Conference/Workshop/Invited Talk Organised

Civil Engineering

Prof. Taiichi Hayashi, Disaster Prevention Research Institute, Kyoto University, Japan, presented a lecture on 'Recent Trends of Rainfall Research in North Eastern Region of Indian Subcontinent' on 24 August 2011.

Mr. M. S. Chawla, General Manager (EMG, Ash Utilisation and Afforestation) NTPC Limited, delivered a talk on the topic 'Fly Ash-A Resource Material' on 10 September 2011.

Mathematics

Prof. Krishnendu Mukhopadhyaya, Indian Statistical Institute, Kolkata, gave a talk on 'Distributed Algorithms for Gathering Asynchronous Swarm Robots' on 28 July 2011.

Prof. K. B. Athreya, Iowa State University, delivered a lecture on 'Ancestor Problem for Branching Trees' on 14 July 2011.

Dr. Avijit Joarder, Department of Statistics and Information Management, Reserve Bank of India, gave a talk on 'Analysis of Type-II Progressively Hybrid Censored Competing Risks Data' on 1 August 2011.

Prof. Anant R. Shastri, Department of Mathematics, IIT Bombay, delivered a speech on 'Polynomial Representation of knots' on 15 September 2011.

Quality Improvement Programme – Short Term Courses Organised

IIT Guwahati regularly organises QIP-Short Term Courses with an aim of upgrading the expertise, qualification and capabilities of the teachers of degree level technical institutions. The courses are sponsored by AICTE, MHRD. The following are the courses organised during July-September 2011:



Participants of STC on Computational Techniques in Physics

1. Data Structures and Algorithms, 4-8 July 2011, Computer Science and Engineering, Dr. Pinaki Mitra
2. Tools for Bioresources Conservation, 11-15 July 2011, Biotechnology, Dr. Latha Ranjan and Dr. Utpal Bora
3. Society and the Web, 19-23 September 2011, Computer Science and Engineering, Dr. Sanasam Ranbir Singh and Dr. Amit Awekar
4. VLSI Architectures for Image and Video Processing Systems, 19-24 September 2011, Electronics and Electrical Engineering, Dr. S. R. Ahamed
5. Computational Techniques in Physics, 1-6 August 2011, Physics, Dr. B. R. Boruah and Dr. S. Das
6. Recent Trends in fuels and Combustion, 29 August – 2 September 2011, Mechanical Engineering, Dr. P. Muthukumar and Dr. N. Sahoo
7. Digital Communication Techniques, 12-16 September 2011, Electronics and Electrical Engineering, Dr. P. R. Sahu



Prof. Gautam Barua, Director, IIT Guwahati, inaugurating the summer school



Participants of the summer school

A Summer School on Efficient Fossil Energy Technologies was organised during 4-10 July 2011 jointly by Centre for Energy, IIT Guwahati and the University of Nottingham, UK. A group of thirty research students and teachers from University of Loughborough, the University of Nottingham and the University of Birmingham participated in the summer school and shared their views in the areas of fossil fuel technologies. Twenty seven research scholars from various Indian institutes, universities also participated in the school. Two professors from Pusan University, Korea and technical expert from Alhtom, Jadavpur University attended the summer school and delivered lectures. Faculty members associated with the Centre for Energy and from other departments of the Institute took part and delivered lectures in the summer school.

Workshop on Cancer Biology



Participants of the workshop on Cancer Biology

A workshop entitled 'Cancer Biology 2011: Basic Theoretical Aspect' was organised by IITG DBT-Biotech Hub during 26-27 August 2011. Experts in this area like Dr. T. Madhan Mohan, Adviser, DBT, Govt. of India; Dr. B.B. Borthakur, BBCL, Guwahati; Dr. P. Nahar, IGIB, Delhi and Dr. D. Kumar, NBAGR, Karnal took part in the workshop and shared their knowledge with over 85 participating engineers, scientists, teachers, doctors and research scholars from all over the country. An electronic souvenir was published to mark the occasion. Dr. U. Bora, Associate Professor and Dr. R. Tamuli, Assistant Professor, Biotechnology were the coordinators of the workshop.

Biotech Hub Coordinators Meet



A meeting of the Biotech Hub Coordinators was jointly organised by the IITG DBT-Biotech Hub, Centre for the Environment and Department of Biotechnology, Govt. of India on 26 August 2011. The purpose of the meeting was to find ways to enhance the functioning of the Biotech Hubs. The meeting was chaired by Dr. T. Madhan Mohan, Adviser, DBT and the coordinators were addressed by Prof. C. Mahanta, IITG Biotech Hub Steering Committee, Prof. A. Goyal, Biotechnology, IITG and DBT Member, and Prof. P. Bora, DBT Member CVSc, Guwahati. A total of 13 coordinators representing 10 Biotech Hubs participated in the meeting.

New Projects Started

Biotechnology

Title: Development of aptamer based molecular diagnostics for breast cancer; **Sponsor:** DBT, Gol; **Principle Investigator:** Utpal Bora

Development and application of recombinant and other cellulases for large scale recycling of cellulosic biomass; DBT, Gol; Arun Goyal

Chemical Engineering

Process intensification in drag reduction in high viscous multi phase flow through pipeline; CSIR; S. K. Majumder

Development of Plant Prototype for Purification of Industrial Wastewater by Microbubbles; DST, Gol; P. Ghosh

Civil Engineering

Seismic Vulnerability Assessment of Building Types in India; National Disaster Management Authority; K. Dasgupta, H. B. Kaushik and S. K. Deb

Humanities and Social Sciences

Water and Livelihood – Assessing climate change vulnerability and potential adaptive strategies for Eastern Himalaya, India; SIDA (In collaboration with Lund University, Sweden); Anamika Barua

Mathematics

Distance problems for structured matrix polynomials; DST, Gol and DAAD, Germany; Dr. Shreemayee Bora and Dr. Christian Mehl (TU Berlin)

Physics

Design and implementation of a high speed wavefront sensor of light beams; DIT, Gol; Bosanta R Boruah

CORRAL–Chalk the Talk

CORRAL, a forum of the Centre for Nanotechnology, regularly organises seminar programmes–Chalk the Talk–on topics related to nanoscience and technology with an aim to create conducive environment for the exchange of ideas related to nanoscience, engineering and technology. Following are the talks organised in the last three months:

- Easy formation of nanowire thin films from solution deposition of organic semiconducting polymers,
- Large Area, Few-Layer Graphene Films on Arbitrary Substrates by Chemical Vapor Deposition,
- Surface Acoustic Wave Hydrogen Gas sensor using graphene-like nanosheet on LiTaO₃.

Foreign Student Internship

Two students from foreign universities (EIVP, France and Energy Technology Institute, Zimbabwe) have successfully completed their internship at IIT Guwahati in September.

Publications (Research Journal/Book/Book Chapter)

Biotechnology

P. J. Babu, R. K. Das, A. Kumar and U. Bora, "Microwave mediated synthesis of gold nanoparticles using coconut water", *International Journal of Green Nanotechnology: Biomedicine*, 3, pp 13-21, 2011

R. Shukla, S. Shukla, V. Bivolarski, I. Iliev, I. Ivanova and A. Goyal, "Production and structural characterisation of insoluble dextran produced in the presence of maltose from *Leuconostoc mesenteroides* NRRL B-1149", *Food Technology and Biotechnology*, 49 (3), pp 291-296, 2011

R. Mutreja, D. Das, D. Goyal and A. Goyal, "Bioconversion of agricultural waste to ethanol by SSF using recombinant cellulase from *Clostridium thermocellum*", *Enzyme Research*, 2011 (DOI: 10.4061/2011/340279)

S. Patel, D. Kothari and A. Goyal, "Purification and characterisation of an extracellular dextransucrase from *Pediococcus pentosaceus* isolated from soil of North East India", *Food Technology and Biotechnology*, 49 (3), pp 297-303, 2011

D. Deka, P. Bhargavi, A. Sharma, D. Goyal, M. Jawed and A. Goyal, "Enhancement of cellulase activity from a new strain of *Bacillus subtilis* by medium development and analysis with various cellulosic substrates", *Enzyme Research*, 2011, (DOI:10.4061/2011/151656)

S. Patel and A. Goyal, "Functional oligosaccharides: Production, properties and applications", *World Journal of Microbiology and Biotechnology*, 27, pp 119-128, 2011

A. Daverey, K. Pakshirajan and S. Sumalatha, "Sphorolipids production by *Candida bombicola* using dairy industry wastewater", *Clean Technologies and Environmental Policy*, 13 (3), pp 481-488, July 2011

P. Saravanan, K. Pakshirajan and P. Saha "Studies on growth kinetics of predominantly *Pseudomonas* sp. in internal loop airlift bioreactor using phenol and m-cresol", *Korean Journal of Chemical Engineering*, 28 (7), pp 1550-1555, July 2011

Chemical Engineering

S. K. Patel and S. K. Majumder, "Interfacial stress in non-Newtonian flow through packed bed", *Powder Technology*, 211, pp 127-134, 2011

M. K. Singh and S. K. Majumder, "Co- and counter-current mass transfer in bubble column", *International Journal of Heat and Mass Transfer*, 54, pp 2283-2293, 2011

S. K. Patel and S. K. Majumder, "Non-Newtonian flow behavior on frictional pressure in packed bed", *International Journal of Chemical Reactor Engineering*, 9 (A28), pp 1-13, 2011

K. Kumar and S. K. Majumder, "Interfacial area density in flotation cell", *Journal of Applied Sciences Research*, 7 (6), pp 865-872, 2011

Chemistry

S. S. Bag and R. Kundu, "Installation/modulation of the emission response via click reaction", *Journal of Organic Chemistry*, 76 (9), pp 3348-3356, 2011

S. S. Bag, R. Kundu and M. Das, "Click-reagent version of

sonogashira coupling protocol to conjugated fluorescent alkynes with no or reduced homocoupling", *Journal of Organic Chemistry*, 76 (7), pp 2332-2337, 2011

M. Maji, D. Mallick, S. Mondal, A. Anoop, S. S. Bag, A. Basak and E. D. Jemmis, "Selectivity in Garratt-Braverman cyclisation: An experimental and computational study", *Organic Letters*, 13 (5), pp 888-891, 2011

Civil Engineering

A. Dey, P. K. Basudhar and S. Chandra, "Distribution of subgrade modulus beneath beams on reinforced elastic foundations", *Indian Geotechnical Journal*, 41 (2), pp 54-63, 2011

H. B. Kaushik, "Importance of effective stiffness properties of RC members in seismic analysis and design of structures", *Annals of the Indian National Academy of Engineering*, 8, pp 191-196, 2011

Humanities and Social Sciences

A. Nigam, S. Nongmaithem, S. Sharma and N. Tripathi, "The impact of strategic human resource management on the performance of firms in India: A study of service sector firms", *Journal of Indian Business Research*, 3 (3), pp 148-167, 2011

D. Das, S. Borbora and M. K. Dutta, "Satisfaction from quality of life in urban living environment", *South Asian Journal of Socio-Political Studies*, 11 (2), pp 62-65, January-June 2011

I. Das, M. K. Dutta and S. Borbora, "Status, growth and scope of labour absorption in unorganised manufacturing sector in North Eastern region", *Indian Journal of Regional Science*, 43 (1), pp 27-39, 2011

Mathematics

R. Alam, S. Bora, M. Karow, V. Mehrmann and J. Moro, "Perturbation theory for Hamiltonian matrices and the distance to bounded realness", *SIAM Journal of Matrix Analysis and Applications*, 32 (2), pp 484-514, July 2011

K. Mukherjee and S. Natesan, "Richardson extrapolation technique for singularly perturbed parabolic convection-diffusion problems", *Computing*, 92, pp 1-32, July 2011

K. Mukherjee and S. Natesan, "Epsilon - uniform error estimate of hybrid numerical scheme for singularly perturbed parabolic problems with interior layers", *Numerical Algorithms*, 58 (1), pp 103-141, September 2011

K. Mukherjee and S. Natesan, "Optimal error estimate of upwind scheme on Shishkin-type meshes for singularly perturbed parabolic problems with discontinuous convection coefficients", *BIT Numerical Mathematics*, 51 (2), pp 289-315, September 2011

J. C. Kalita and A. K. Das, "Higher order compact simulation of double-diffusive natural convection in a vertical porous annulus", *Engineering Applications of Computational Fluid Mechanics*, 5 (3), pp 351-371, September 2011

S. Delaet, P. S. Mandal, M. A. Rokicki and S. Tixeuil, "Deterministic secure positioning in wireless sensor networks", *Theoretical Computer Science*, 412 (35), pp 4471-4481, August 2011

Mechanical Engineering

R. Tiwari and K. Singh, "Virtualisation of engineering discipline experiments for an Internet-based remote laboratory", *Australasian Journal of Educational Technology*, 27 (4), pp 671-692, 2011

Physics

B. R. Boruah and A. Das, "Zonal wavefront sensor with reduced number of rows in the detector array", *Applied Optics*, 50, pp 3598-3603, 2011

A. Nath and A. Khare, "Size induced structural modifications in copper oxide nanoparticles synthesized via laser ablation in liquids", *Journal of Applied Physics*, 110, 043111, 2011

S. Kumari and A. Khare, "Epitaxial ruby thin film based photonic sensor for temperature measurement", *Review of Scientific Instruments*, 82, 066106, 2011

R. Sarma, H. Deka, S. Kumari, A. Khare and J. B. Baruah, "Different geometrical arrangements in carboxylate coordination polymers of flexible dicarboxylic acid", *Journal of Solid State Chemistry*, 184 (7), pp 1727-1734, 2011

A. Nath and A. Khare, "Effect of focusing conditions on laser induced shockwaves at titanium-water interface", *Applied Optics*, 50 (19), pp 3275-3281, 2011

S. Kumari and A. Khare, "Effect of pump intensity on slowing down of light in Ce:BaTiO₃ crystal via degenerate two-wave mixing using chopped pulses", *IEEE Journal of Quantum Electronics*, 47 (7), pp 972-976, 2011

P. Gogoi, H. S. Jha, P. Agarwal, "Variation of microstructure and transport properties with filament temperature of HWCVD prepared silicon thin films", *Thin Solid Films*, 519, pp 4506-4510, 2011

Centre for Energy

R. Patidar, S. Khanna, V. S. Moholkar, "Physical features of ultrasound assisted enzymatic degradation of recalcitrant organic pollutants", *Ultrasonics-Sonochemistry*, 19 (1), pp 104-118, 2011

S. S. Mohapatra and P. Mahanta, "Experimental investigation of an indirect type of natural convection dryer for thin layer paddy drying", *International Journal of Mechanical Engineering Research and Development*, 1, pp 47-54, 2011

Book Chapter

Biotechnology

R. Swaminathan, V. K. Ravi, S. Kumar, M. Venkata and N. Chandra, 'Lysozyme: A Model Protein for Amyloid Research', *Advances in Protein Chemistry and Structural Biology*, Ed. Rossen Donev, Vol. 84, pp. 63-111, Academic Press, 2011 (ISBN: 9780123864833)

Humanities and Social Sciences

S. Borbora, 'Commercial Banking and SHG-Bank Linkage Programme: A Review with Special Reference to Northeastern Region', *Understanding India's North East*, Eds. Prof. A. K. Agarwal and Dr. B. Singh, pp 121 -127, DVS Publishers, 2011

R. M. Punekar, 'Chokhamela', *The Oxford Anthology of Bhakti Literature*, Ed. Andrew Schelling, Oxford University Press, New Delhi, 2011 (ISBN: 9780198069126)

B. Som and R. K. Mishra, 'Teaching a second language or foreign language in the North East: Psycholinguistic and cognitive issues', *Issues in Teaching-Learning Second and Foreign Languages (with special reference to North East India)*, Eds. Awadesh K. Mishra and Kandarpa Das, pp 52-71, Lakshi Publishers, Delhi, 2011

New Joinings



Vibin Ramakrishnan
Assistant Professor
Biotechnology



Debapratom Das
Assistant Professor
Chemistry



Chandan K. Jana
Assistant Professor
Chemistry



Subhas C. Pan
Assistant Professor
Chemistry



Kalyanasis Sahu
Assistant Professor
Chemistry



A. A. Sudhakar
Assistant Professor
Chemistry



Sandip Das
Assistant Professor
Civil Engineering



Iko A. Avital
Visiting Professor
Design



Noni R. Avital
Visiting Assoc. Prof.
Design



Amit Acharyya
Assistant Professor
EEE



Sisir K. Nayak
Assistant Professor
EEE



Ramesh K. Sonkar
Assistant Professor
EEE



Dilwar Hussain
Assistant Professor
HSS



Pahi Saikia
Assistant Professor
HSS



Priyankoo Sarmah
Assistant Professor
HSS



Shyamashree Upadhyay
Assistant Professor
Mathematics



Amardip Mishra
Deputy Registrar
Finance and Accounts

Awards and Honours

Prof. Arun Goyal, Biotechnology, was elected as fellow, National Academy of Agricultural Sciences, India 2011.

Dr. Kannan Pakshirajan, Associate Professor, Biotechnology, has been awarded (1) the BOYSCAST Fellowship for the year 2010-2011 by DST, Gol, to conduct advanced research at Department of Environmental Resources, UNESCO-IHE, Delft, the Netherlands, for a period of twelve months starting August 2011; (2) the Hiyoshi Young Leaf Award-2010 by Hiyoshi Corporation, Japan.

Dr. Jashmini Deka, Research Associate, Chemistry, received Materials Research Society of India (MRSI) Young Scientist Award 2011 in the Young Scientists' Colloquium-2011 held on 4 August 2011 at the Indian Association for the Cultivation of Science (IACS), Kolkata.

Independence Day Celebrated

The 65th Independence Day of India was celebrated with enthusiasm on 15 August 2011 in the Institute campus. The Director of the Institute, Prof. Gautam Barua, hoisted the tricolour and addressed the gathering. This was followed by colourful cultural programmes presented by the students of the Institute, the IIT Guwahati Kendriya Vidyalaya and Akshara School and children of the campus.



Campus children performing patriotic songs



Prof. Gautam Barua (Centre), Prof. S. Nandi, Dean, Academic Affairs (1L) and Dr. A. Perumal, Chairman, JEE-2011 (1R), at the orientation programme for the new entrants

Total Number of Students on Campus as on September 2011

Programme	No. of Students
Preparatory	10
BTech/BDes	2046
MTech/MDes	678
MSc	229
MA	85
PhD	816
Dual (MTech + PhD)	3
Total	3867

PhDs Completed During July-September 2011

Computer Science and Engineering	1
Electronics and Electrical Engineering	3
Biotechnology	2
Chemical Engineering	2
Chemistry	2
Center for Energy	1
Center for the Environment	1
Center for Nanotechnology	1
Total	13

The new academic session (2011-2012) commenced from July 2011. A total number of **1322** students (including 3 students in Computer Science and Engineering MTech + PhD Dual Degree programme) were admitted in various programmes across all the Departments/Centres as given in the table below –

Department/Centre	BTech/ BDes	MSc/ MA	MTech/ MDes	PhD
Biotechnology	45	—	29	26
Chemical Engineering	64	—	52	19
Chemistry	38	31	—	39
Civil Engineering	73	—	82	18
Computer Science and Engineering	73	—	54	7
Design	39	—	20	7
Electronics and Electrical Engineering	111	—	45	23
Humanities and Social Sciences	—	46	—	12
Mathematics	41	38	—	5
Mechanical Engineering	72	—	84	21
Physics	37	39	—	20
Centre for Energy	—	—	—	4
Centre for the Environment	—	—	—	2
Centre for Nanotechnology	—	—	—	3
Total	593	154	366	206



Trainees with the trainers and other officials of the Institute (photo above); Dr. Brajendra Nath Raychoudhury, Registrar, IIT Guwahati (1L) and Prof. Samarendra Dandapat, Dean, Administration, IIT Guwahati (2L) along with the trainers from SERT and Dr. Saurabh Basu, Faculty In-Charge, Training and Placement, IIT Guwahati (1R) at the inauguration function of the programme (photo left).



A training programme for the group B and C employees of IIT Guwahati was organised during 26-29 August 2011. The programme was conducted by Society for Economic Research and Training (SERT), New Delhi. In this four day training programme the employees had lively sessions on various aspects of office procedure and Right to Information Act 2005.



A four day workshop on handmade paper making was organised at the Department of Design during 7-10 September 2011. The workshop was conducted by Mr. Anupam Chakraborty, an expert in printmaking and handmade papers. Students of BDes and MDes programmes took part in the workshop. An exhibition of students' works was also held on the concluding day.

