



DIRECTOR'S REPORT

**Seventh Convocation
Monday, May 30 2005**

INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI

The Honourable Union Minister of Human Resource Development Shri Arjun Singh, the Honourable Chief Minister of Assam Shri Tarun Gogoi, Chairman, Board of Governors, IIT Guwahati Shri Achyut Saikia, members of the Board of Governors, members of the Senate, faculty, staff, graduating students, parents and guardians, ladies and gentlemen – I present before you a report on the activities and achievements of IIT Guwahati during the past one year. Before I begin, I would like to, on behalf of IIT Guwahati, extend our gratitude to Shri Arjun Singh, the Honourable HRD Minister of India, for accepting our invitation to be the Chief Guest of this Convocation and to deliver the Convocation Address. We are also grateful to the Honourable Chief Minister of Assam Shri Tarun Gogoi for being with us as the Guest of Honour.

The Institute has already held six convocations and our graduates are in leading organizations in India and abroad and many are in reputed institutes of the world pursuing higher studies. In the seventh convocation today, BTech, BDes, MTech, MSc and PhD degrees are going to be awarded.

I take this opportunity to extend my hearty congratulations to all the degree recipients.

ACADEMIC ACTIVITIES

The Institute has 11 academic departments, 3 inter-disciplinary academic centres and 4 service centres. These are:

Departments

Biotechnology (BT),
Chemical Engineering (CL),
Chemistry (CH), Civil Engineering (CE),
Computer Science and Engineering (CSE),
Design (DD),
Electronics and Communication Engineering (ECE),
Humanities and Social Sciences (HSS),
Mathematics (MA), Mechanical Engineering (ME), and
Physics (PH).

Academic Centres

Centre for Energy,
Centre for the Environment,
Centre for Nanotechnology

Service Centres

Computer and Communication Centre,
Central Instruments Facility,
Centre for Educational Technology,
Centre for Mass Media Communication.

The total number of students on the rolls during the academic year 2004-2005 at the undergraduate, postgraduate and PhD levels were:

Undergraduate Programme :

BTech/BDes

4th Year (2001 Batch) : 127 (CS-33, EC-39, ME-24, CE-14, DD-17)

3rd Year (2002 Batch) : 206 (CS-42, EC-42, ME-46, CE-26, DD-14, BT-18, CL-18)

2nd Year (2003 Batch) : 209 (CS-43, EC-42, ME-39, CE-31, DD-16, BT-19, CL-19)

1st Year (2004 Batch) : 232 (CS-46, EC-39, ME-55, CE-28, DD-19, BT-23, CL-24)

From earlier batches: 9

Total 783

M Sc

2nd Year (2003 Batch) : 31 (PH-11, CH-8, MA-12)

1st Year (2004 Batch) : 51 (PH-20, CH-20, MA-11)

From earlier batches: 4

Total 86

Postgraduate Programme :

MTech

2nd Year (2003 Batch) : 116 (CS-23, EC-33, ME-31, CE-29)

1st Year (2004 Batch) : 158 (CS-34, EC-33, ME-42, CE-32, CL-17)

From earlier batches : 72

Total 346

PhD

(CS-14, EC-21, ME-20, CE-18, DD-5, PH-21, CH-27, MA-14, HSS-17, BT-9, CL-8)

Total 174

Total No. of Students 1389

Thus, about 37% of the students are post graduates.

The number of successful candidates who are to receive their BTech, BDes, MSc, MTech and PhD degrees today are as follows :

BTech/BDes

Computer Science and Engineering	35	
Electronics and Communication Engineering	38	
Mechanical Engineering	23	
Civil Engineering	14	
Design	17	
Total		127

MSc

Physics	10	
Chemistry	08	
Mathematics and Computing	12	
Total		30

MTech

Computer Science and Engineering	28	
Electronics and Communication Engineering	15	
Mechanical Engineering	18	
Civil Engineering	15	
Total		76

PhD

Civil Engineering	1	
Physics	2	
Chemistry	4	
HSS	1	
Total		08
Grand Total		241

RESEARCH AND DEVELOPMENT

Research and Development is an important component of the Institute's activities.

This year, we have been able to generate about Rs. 3.8 crores (as against Rs.5.31 crores last year) from sponsored projects and consultancies. A total of 88 projects were running during the year under report. The Institute took up 21 new projects worth -about Rs. 3 crores through its departments and Centres. The projects were sponsored by various government agencies, namely, MHRD, DST, CSIR, DAE, DoS, and District Rehabilitation Centre, Ministry of Social Justice & Empowerment. 67 other projects were continuing from the previous year.

In addition to the sponsored R&D projects, the Institute also offered consultancy services to the Banking & Insurance sector, State Govt. (Assam) Departments, Departments of other State Governments, Power Sector Organizations, Construction Houses, Education Institutions and Pharmaceutical Industries. New consultancies valued at approximately Rs.69.28 lakhs were obtained, and during the year Rs.54.28 lakhs was received as Consultancy income.

The achievement in sponsored projects hasn't been entirely satisfactory this year. We haven't been able to achieve the growth that we had planned for. The number of new projects obtained has remained static and in fact there has been a decline in the value of these new projects. Of course, the presence of one or two big projects can make a difference and a number of such projects are currently on the anvil. Nevertheless, there is need for faculty and research scholars to make more efforts to get sponsored research funding. We must in particular try and get projects from industry. Some of the major projects obtained during the year are:

		Department	Funding Agency	Amount Sanctioned (Rs. Lakhs)
1	Analysis of Water Balance in Rice Agriculture System Using Distributed Hydrologic Model	Civil	SAC, Ahmedabad	20.12
2	Signature Gene Mediated Specific Identification and Molecular Fingerprinting of Industrial Strains of Lactic Acid Bacteria	Biotechnology	MHRD (TAT)	18.00
3	Construction of a Hybrid Prodrug-Suicide Gene Transduction system	Biotechnology	MHRD (R&D)	15.00
3	Generation of Conducting Polymer Films, Fibers and Composites	Biotechnology	DST	15.00
4	Growth and Studies of Embedded Ge and Gex and GexSi1-x Nanocrystals for the Development of Si-based Light Sources	Physics	BRNS	13.56

Technology Transfer

As reported last year, an agreement was signed between IIT Guwahati, SMS Pharmaceutical Pvt. Ltd., Hyderabad, IICT Hyderabad, NRDC and DSIR on Transfer of Technology for the Preparation of Metal Acetylacetonates. The bench scale production was demonstrated on 23 June 2004 to M/s SMS Pharmaceutical Pvt. Ltd., Hyderabad. The first installment of ToT fees was paid by the pharma industry. Now the product is ready for pilot plant production.

Incubation Centre

IIT Guwahati has started an incubation centre for graduates of the Institutes to set up their own firms and become entrepreneurs. We have not been able to attract any students this year, but the firm, Yellow Fourier, which started operations last year, is continuing, despite their inability to get a loan from Nedfi. We wish them all success and hope they can emerge as a role model for our students.

Courses and Workshops

The Institute organised 17 short-term courses during the year. These are:

- Advanced separation processes (ISTE).
- Recent Trends in the Analysis and Design of Highway Bridges (QIP).
- Training course (Three weeks) on "Earthquake Engineering" under National Programme for Capacity Building of Engineers in Earthquake Risk Management (MHA-GOI).
- Geotechnical Earthquake Engineering (NPEEE).
- Earthquake resistant design of reinforced concrete buildings (NPEEE).
- Application of Environmental Science and Technology for Sustainable Water Resource Management (QIP).
- Advanced Algorithms (QIP).
- Foundations of Computer Science.
- Recent Trends In Communication Engineering.
- Pedagogy as a Field of Study/Communication Skills for Teachers, Pedagogy and Teaching Skill Course (QIP).
- Design and Manufacturing of Composite Materials (QIP).
- Finite Element Analysis and Identification in Rotor-Bearing Systems (ISTE).
- Energy Conservation Practices (QIP).
- Awareness program for technology upgradation for Brass metal industry for workers of Hajo.
- Optoelectronics (QIP-STC).
- Virtual instrumentation and PC based measurements (QIP-STC).

The following workshops and conferences were organised on the campus during the year:

- 1) Symposium on Interphase of Inorganic and Organic Chemistry
- 2) International Conference on Environmental Fluid Dynamics

FACULTY AND STAFF

The faculty strength at the end of March was 154. This is an increase of 30 from the figure of 124 last year. Last year we managed to add 13 faculty and I had mentioned that our goal was to add 40-50 every year. Well, we didn't quite manage that, but, as the Chairman has mentioned, we have achieved a major improvement. We must reach 200 by the time of the next convocation. 23 scientific officers were also recruited during the year.

The non faculty staff strength reduced from 254 to 250 during the year. As there was a major increase last year, this was a year of consolidation. Further, some of the Technical Assistants joined as scientific officers.

Honours and Awards

- **Prof. Arun Chattopadhyay** was selected for the prestigious Swarnajayanti Fellowship Award 2003-2004.
- **Dr. A. Perumal**, Dept. of Physics, received the Young Scientist Award of INSA.
- The Chemical Abstract Services, USA inducted **Dr. Gopal Das** of the Chemistry Department, in its Hall of Fame for the most requested article entitled Towards Catalytic Rigid-rod β -barrels: a Hexamer with Multiple Histidines, published in *Chirality*, (2002).
- The paper, "Characterization of Ru-Al alloys by the solidification and powder metallurgy routes", authored by **Mr. A. Bora, Drs. P. S. Robi, A. Mujumdar** of the Mechanical Engineering Department, and **A. Srinivasan** of Physics Department, was given the best paper award at the International conference on Powder Metallurgy (PM-05) at IIT Bombay, February 3rd – 6th, 2005
- **Dr. S. K. Dash** of the Civil Engineering Department along with Sireesh, S., Sitharam, T.G., Vinod, J.S was awarded the 'Indian Geotechnical society – Z-Tech. Biennial award' for the paper "Behaviour of circular footing on geocell reinforced sand underlain by soft clay".
- **Dr. B. Bhushan** of the HSS Department received 'In Search of Excellence' Award - 2004 for the paper "Current trend in cognition & consciousness research: Integrating science & spirituality in neuro-psychological perspective" in the National Conference on Indian Psychology, Yoga, and Consciousness

Publications

The faculty of the Institute have been publishing various research papers in international and national journals as well as in conference proceedings. The publications during the past one year include :

Journal Papers : 141.

Conference Papers : 201

Compared to the previous year there has been an increase in the number of papers in journals (from 123), but an appreciable drop in the number of Conference Papers (296 to 201). This may seem to be a negative trend, but the average number of publications per faculty is still more than two, so there is nothing to worry about.

The faculty have also published 11 book chapters and written 12 book reviews.

CONSTRUCTION AND CAMPUS DEVELOPMENT
This past year, the campus has seen a major spurt in construction activities. The following works were completed this year:

- a) The Library and Computer Centre Building has been completed and it was inaugurated by the Honourable Minister HRD, Shri Arjun Singh, a short while ago.
- b) Campus Wall; construction of a wall around the campus was finally completed this year. A part of the area allotted to the Institute has been occupied by some people ever since the Institute was started. While attempts were made earlier to evict them, we soon realised that these were poor people, and from backward and tribal communities. They had not received any compensation for the land they were occupying. We needed to consider their welfare and we also needed to live in peace and harmony with our neighbours. Therefore, the campus wall was constructed leaving the portion of land occupied by these people, outside. We now intend to take up the matter with the Ministry and the State Govt. to settle it in a proper manner.

The following are the ongoing works at the Institute:

- a) 500 seated Boys' hostel; 240 rooms are to be ready for occupation by July, and the rest by March 2006.
- b) Institute Hospital; this will be ready by October.
- c) A commercial complex; this too will be ready by October.

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- d) Sewage disposal system including a campus-wide network; this work got delayed due to unseasonal rains, but it will now be complete by the end of 2005.
- e) Indoor Sports Stadium; this should have been completed by March, but we now estimate completion by December 2005.
- f) Playing fields; football, hockey, athletics, tennis, volleyball, basketball. Early rains from March has set back the completion time of these activities. Unfortunately they can be completed only after the dry season starts and so we are targeting a December 2005 finish.
- g) Swimming pool; this is likely to be completed by January 2006.
- h) Approach road including a railway over-bridge; last year I had mentioned that this would be ready by December 2004. Unfortunately, we are not likely to be able to use the approach before October. The delay has been due to issues beyond our control, as multiple agencies are involved and railway safety requirements are fairly stringent.
- i) Academic Complex; this is the major complex in the Institute, made up of twenty-two buildings housing all the Departments and classrooms. There have been a number of delays, but we hope to see it completed this year.

Besides these nine works, a number of works have been taken up recently. These are:

- a) Water Supply System; this will bring water from the Brahmaputra and treat it before supplying to the residents. This will take about 18 months to complete.
- b) Lecture hall complex; 4 lecture halls each with a capacity of 250 are being constructed. At least two are expected to be ready by July next year.
- c) Married student quarters; 108 flats are being constructed. We are hoping for partial occupation by March next year. The progress here is very good.
- d) Residential Quarters; 6 type F, 36 type E, and 48 type D quarters are under construction. About 24 quarters are expected to be ready for occupation by December.
- e) Auditorium; work has just been started on a 1500 seater auditorium.

The Institute is going to take up the following works from October when the dry season starts:

- a) Two more hostels of capacity 500 each; this will take the student capacity to 2800+ as per the goals already mentioned.
- b) Community halls; two community halls will be constructed to hold campus functions and other activities.
- c) Kendriya Vidyalaya Phase I; the Ministry has indicated that IITG should construct the buildings rather than it being taken up by the Kendriya Vidyalaya Sangathan. They will however, manage and run the school.

STUDENTS' ACTIVITIES

Till last year, students were put in hostels year-wise. From this year, every hostel has students from all years and branches. Although we may have separate hostels for post graduates later, right now even they are distributed in different hostels. This has apparently improved the intra-hostel sports and cultural competitive activities. We hope this will increase participation in extra-curricular activities, so important for all-round development of a person. Unfortunately, there were a few cases of ragging and the Institute had to punish some students. We are committed to eradicating all forms of ragging from the campus, and we realise that creating the right environment is half the battle won. We are doing all we can for developing a congenial and harmonious environment.

The regular events were organised by the students namely,

Alcheringa	–	the annual cultural festival
Techniche	–	the annual technical festival
Manthan	--	intra hostel cultural competition
Spirit	–	inter-college invitation sports competition and
Technotsav	–	the invited technical lecture series

Alcheringa 2005

The dates of this annual cultural event were changed to the beginning of the semester (7th-9th January, 2005) to avoid disruption in academics. The function was a great success, with a record number of people (12000 by some estimates) visiting the campus and with 48 colleges participating. Diversion was provided with AASU warning about decency in the fashion shows and with rain playing spoil sport. The final event, a Hindi pop show, was washed out. Half of Guwahati was here, and everyone got thoroughly wet.

Techniche 2004

The annual national level technical festival was held during September 3-5, 2004. 75 colleges from all over India participated, and children from over 30 schools of Guwahati visited the campus. The total participation is estimated at about 5000 students. Some of the well known persons who delivered lectures at the festival were, Prof. Yashpal, Prof. M.M.Sharma, Prof. P.K Sikdar, Director, Central Road Research Institute, New Delhi, Prof. Leena Chatterjee, IIM Calcutta, Prof. Lilavati Krishnan, IIT Kanpur and Dr. Ramachandran, G.N.Ramachandran Knowledge Centre for Genome Informatics, New Delhi

Sports Activities

The sports activities of included following events.

- The IIT Guwahati Inter-collegiate Invitation Sports Competition "SPIRIT"
- The Inter IIT sports meet
- The Inter-Hostel sports meet
- Participation in the various local tournaments
- Arranging matches with other colleges and clubs

Guest Speakers

This year, a number of eminent personalities came to the campus - primarily based on the initiatives taken by the students - and gave talks to the students on developmental work. Some of the guests were: T. R. Dongaji, MD Tata Services; Prof. Anil Gupta, IIM Ahmedabad; Mr. Subir Raha, MD ONGC; Dr. Sangeeta Saikia, MD Aarohan, Mr. Anupam Mishra, Director, Gandhi PeaceFoundation; Chetan Bhagat, Alumnus and author.

Training and Placement

The year 2004-2005 witnessed the best campus placement so far. A record number of 53 companies considered all the 267 students who had registered with the Placement Cell. The highest package offered was Rs. 7.75 lakhs per annum with an average package of Rs. 4.45 lakhs per annum.

Department	UG		PG		% UG	%PG
	No. of Students	No. of jobs offered	No. of Students	No. of jobs offered	Students offered jobs	Students offered jobs
CSE	36	41	19	22	92%	95%
ECE	38	50	31	23	100%	74%
ME	24	33	31	18	96%	58%
CE	14	23	24	06	100%	25%
DE	18	27			100%	---
PH (MSc)	12	0			0%	---
CH (MSc)	7	4			57%	---
MA (MSc)	13	8			62%	---

Overall Undergraduate (BTech + BDes) = $126/130 = 97\%$

Overall MTech = $64/105 = 61\%$

Overall MSc = $7/32 = 22\%$

Although the numbers for MTechs and MScs don't look so good, it must be remembered that first of all, this is the figure for campus placement before graduation, and not actual employment after graduation. One can confidently say that no IITG graduate remains unemployed. Secondly, the figures are slightly skewed because a large percentage of companies coming for campus recruitment are IT companies and their preference is for undergraduate students.

Student Achievements

A team of IIT Guwahati students have entered the finals of the Microsoft global competition on embedded systems. They are going to Redmond USA to join 14 other teams from around the world to compete in the finals in June. Our best wishes to them.

Besides success in placement, some of our students are tasting success in pursuing higher studies. Two students have been admitted to MIT and one to Stanford in the US. Further, 5 students have gained admission to the IIMs. Our wish is to see BTech students joining PhD programs at this Institute and in other IITs.

INSTITUTE PROGRAMMES

Memoranda of Understanding

- a) Indo Swiss Academic Alliance -ISAA (Swiss Federal Institute of Technology, Lausanne (EPFL) and Swiss Federal Institute of Technology, Zurich (ETHZ))
To enhance and support cross cultural awareness in higher education in Science and Technology in India and Switzerland.
- b) National University of Singapore (NUS), Singapore
Academic collaboration in engineering research and education and faculty and student exchange programme
- c) Technical University Munich (TUM), Germany
Academic and research collaboration and faculty and student exchange
- d) Red Hat India Private Limited
To set up a centre of excellence in IIT Guwahati and to provide support in terms of maintenance, implementation and configuration of Linux systems.
- e) National Innovation Foundation (NIF)
To help GIAN-NE in providing support to grass root innovators in the North Eastern Region. The informal arrangement has been formalised this year.

Purchase of Major Equipment

This is growing, and a number of equipment and sophisticated instruments were purchased to be used for teaching and for research. Equipment worth approximately Rs. 14 crores were procured during the year. Some of the major equipment purchased are:

Description of items	Name of Department	Value (Rs.Lakhs)
Single Crystal X-Ray Diffractometer	Chemistry	125.00
Gas Chromatograph	Chemistry	31.59
Laser Particle Size Analyzer	Chemical Engineering	22.51
Imaging Spectrometer	Physics	18.54
Pulsating Flow Equipment and Pipe Flow Test Rig	Mechanical Engineering	17.65
Atomic Absorption Spectrophotometer	Chemical Engineering	16.98
Salt-In Crude Analyzer, Twin-Column Adsorption Apparatus, Tar Viscometer	Chemical Engineering	16.93
Thermal Cycler	BioTechnology	15.11

Besides the above, two major instruments have been ordered and delivery is expected shortly. They are, a Confocal Laser Scan Microscope (Rs. 1 crore), and a Electron Spin Resonance Spectrometer (Rs. 60 lakhs).

Staff Training

Staff training has been recognised as an important aspect of development. A number of officers were deputed to attend training courses in different parts of the country. In order to involve a larger number of employees, a five day training program was organised, with an external agency. Ma Foi Management Consultants conducting the program. Topics covered included stress management, motivation, self-development, communication and presentation, team work etc. It was a big success.

Other Activities

The floods in Assam were very severe last year. It affected a number of neighbouring localities of the Institute. The students and faculty collected money from the residents and directly provided relief and rehabilitation to an affected village in the neighbourhood of the campus.

Contributions were also made by the campus residents to the Prime Minister's Relief fund and by the students to CRY, both for the welfare of the tsunami victims.

CONCLUSION

The construction activities in the Institute are at the highest levels since this Institute started. With the basic infrastructure of roads, water and electricity in place, it has become possible to increase the pace. The support from the central Govt. by way of funds is very crucial at this stage. I have already given details of the activities and of future plans. We need fairly generous levels of funding in the coming two years. I appeal to the Honourable Minister to help us and provide the necessary funds. The staff of the Engineering Cell deserve special mention for the work that they have put in. Each one of them have had to handle a large number of jobs simultaneously and they have done a commendable job. We expect no less from them in the coming year.

The Institute and its surroundings are appreciated by all visitors. We are blessed by nature with a wonderful setting and we are doing our best to create an environment conducive to learning and research. Many of us are perturbed by the construction activity going on nearby where two coking coal plants are being set up. These plants, if they come up will pollute the entire area and spoil the ambience we have here. We have written to the district administration about the issue and they have responded very sympathetically. I appeal to the Honourable Chief Minister to please help us out in this matter.

As I have reported, we need to improve our R&D performance. Of course numbers alone do not tell the full story and we have also heard of the many contributions made. One of the causes of concern is the decline in the number of students wishing to join the PhD programme. We are not able to attract many of our own students to join the research programmes and this is a major weakness. Last year too I had appealed to the students to consider research as a career, and this year I appeal to you to consider IITG as a place to do research. We are trying our best to provide a proper research environment, but people are the main component of research, and your presence will itself create the environment. The high salaries I mentioned about are surely luring many of you away, but there is much more than merely a high starting salary. An IIM may beckon you to Dalal Street, but what about taming the Brahmaputra? Which will be more satisfactory and challenging? We also need to consider more innovative programmes such as integrated PhD programmes, being tried elsewhere.

My best wishes go to all the graduating students. May you do yourself and the Institute proud in the days to come.

Jai Hind.

Gautam Barua
Director,

Indian Institute of Technology Guwahati.