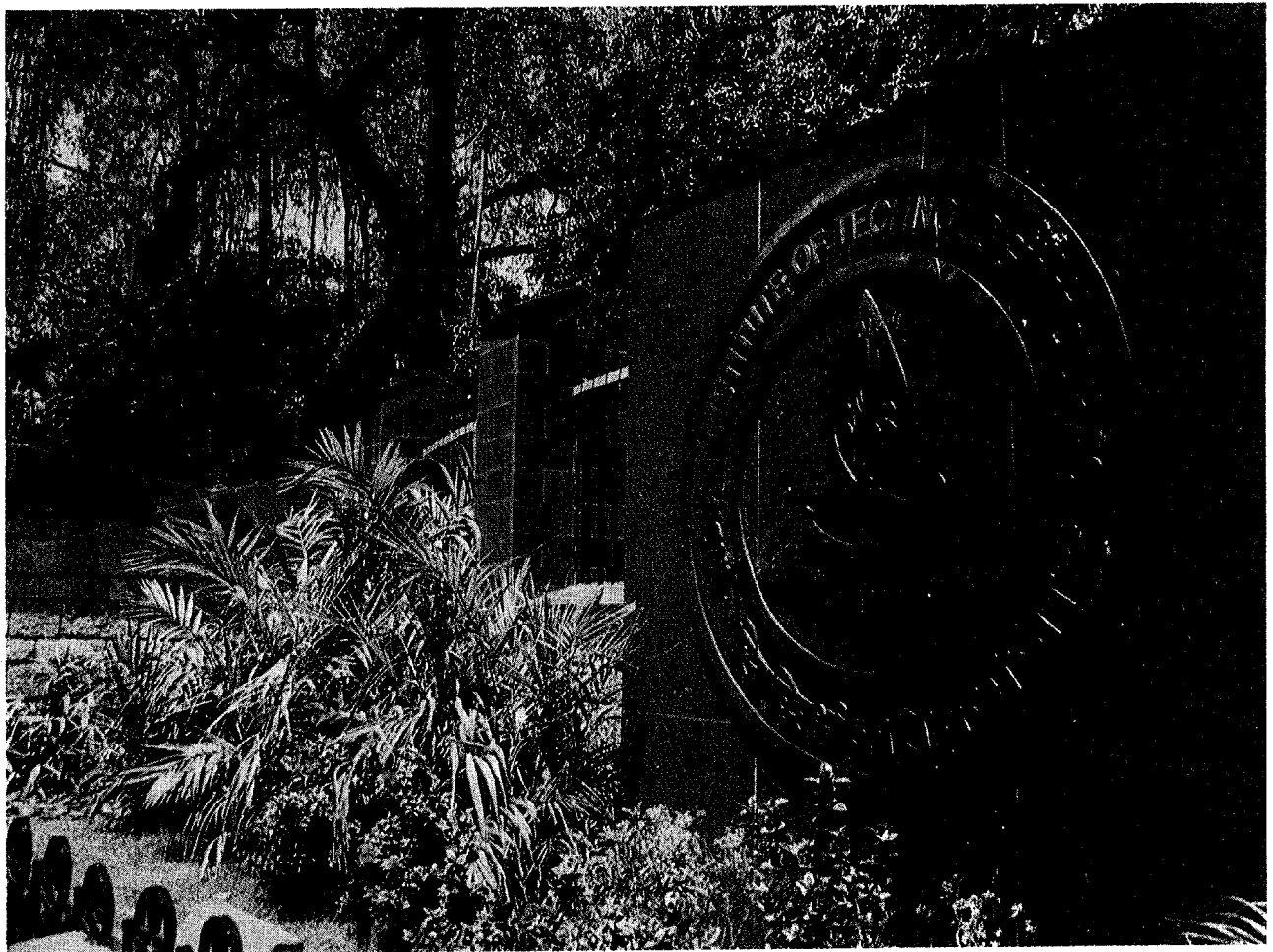


ANNUAL REPORT

1997 - 98



INDIAN INSTITUTE OF TECHNOLOGY-MADRAS
CHENNAI

THIRTY NINTH ANNUAL REPORT

1997 - 98



INDIAN INSTITUTE OF TECHNOLOGY-MADRAS
CHENNAI

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THE VISITOR

Shri K R Narayanan
President of India

THE BOARD OF GOVERNORS

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Director of the Institute

Prof. R. Natarajan

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Andhra Pradesh

Dr. K. Balaveera Reddy
Director of Technical Education
Government of Karnataka

(Mrs.) V. K. Sulochana
Chief Engineer, DRIQ Board
Public Works Department
Thiruvananthapuram

Dr. P. Balakrishnan
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Government of Tamil Nadu

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Defence Minister
New Delhi

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Chairman
Ashok Leyland Limited, New Delhi

Dr. A. C. Muthiah
Vice-Chairman & President
SPIC Limited, Madras

Mr. Raghupati Singhania
Director
J.K. Organisation, New Delhi

Nominees of the Senate

Prof. C S Venkatachalam
Dept. of Chemistry

Prof. C R Muthukrishnan
Dept. of Computer Sc & Engg

Secretary

Prof. R.C. Janakarajan

1. DIRECTOR'S REPORT

Introduction

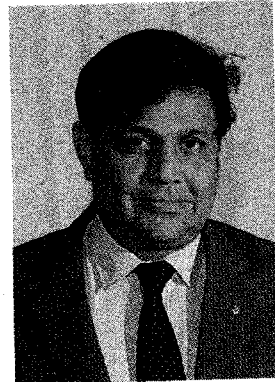
The Indian Institute of Technology Madras (IITM), was established in 1959 by the Government of India, as an Institute of national importance. Its primary objective was to promote higher technical education, research and consultancy. The activities of the Institute in various fields of Science and Technology are now being carried out by thirteen Departments and four Centres. The Institute has nearly ninety well-equipped laboratories attached to the different Departments. The Institute Campus covers an area of 256 hectares of forest land and houses a community of about ten thousand people.

The Institute offers several course-based undergraduate (UG) and post-graduate (PG) programmes as well as research-based post-graduate and doctoral programmes. It has, over the years, responded to environmental changes and user needs by redesigning curricula, offering new UG and PG programmes and undertaking initiatives in continuing education. The Institute also undertakes a large number of research and consultancy projects sponsored by a wide spectrum of funding agencies, including Government and Industry. IITM has active linkages with leading academic and research organizations in Germany, Japan, Singapore, UK and USA.

This brief Report provides a summary of our activities, achievements and accomplishments in the different spheres of our activity during the year 1997-98.

Our Contributions to Manpower Development

In July 1997 Convocation, a total of 870 degrees were awarded : 112 Ph.D., 80 M.S., 256



M.Tech., 69 M.Sc., and 347 B.Tech. These degrees cover a wide range of disciplines and specialisations offered by the nine Engineering Departments, three Science Departments, and the Department of Humanities and Social Sciences. Among the graduates are 25 QIP candidates (teachers from other colleges), and 60 sponsored candidates (sponsored by Industry and Government Agencies). The graduates include : 103 ladies, comprising 22 Ph.D, 14 M.S., 23 M.Tech., 27 M.Sc., and 17 B.Tech.

We have recently introduced new M.Tech. programmes, most of them need-based and user-oriented ; a couple of them with international collaboration. These include the M.Tech. programme in Construction Technology and Management for Engineers of L & T - ECC and M.Tech. programme in Composites Technology. Beginning next year, the Mathematics Department will offer a Post-graduate programme in Industrial Mathematics and Computer Applications, in collaboration with the University of Kaiserslautern, Germany and the Mechanical Engineering Department will offer M.Tech programme in Automotive Engine Technology in collaboration with several automotive industries in India and the French Institute of Petroleum. Along with other IITs, IIT-Madras will begin to serve as a Special Manpower Development Resource Centre for the VLSI

design-related software programme of the Department of Electronics.

Our Preparatory Course Programme for Weaker Section students offers intensive coaching to prepare them for entry into the IIT on successful completion of this one-year programme.

The programme of Industrial Lectures, as a one-credit course for creating an awareness among our students about Indian Industry and career opportunities, is now in its seventh year of implementation.

Our Contributions in Academic Research

During the year under review, apart from the Ph.D and M.S. theses, our faculty and research scholars published 387 research papers in refereed international and national journals, and presented 452 research papers at international and national conferences. Many of our research papers secured high citation rating, and our faculty and research were the recipients of several Best Paper Awards. Many of our faculty members are Editors / Members of Editorial Boards of several prestigious international and national journals. Many of us have also served as Reviewers of papers for publication in journals and presentation in conferences.

Academic Distinctions Secured by Our Faculty Members

In recognition and acknowledgment of the excellence and expertise of our faculty members, several academic distinctions were bestowed on them. These include the following:

Prof. D. R. G. Achar, Metallurgical Engineering Department, was awarded the Sir L. P. Misra Memorial Award by the Indian Institute of Welding for outstanding contributions in Welding Technology.

Dr. S. S. Bhattacharya, Metallurgical Engineering Department, Dr. M. S.

Ramachandra Rao, Materials Science Research Centre, and Dr. S. Sankararaman, Chemistry Department, were awarded the Alexander von Humboldt Fellowship this year.

Prof. T. S. Chandra, Chemistry Department, was awarded the Best Teacher Award by the Lions Club on Teachers' Day.

Prof. V. Ganesan, Mechanical Engineering Department, was selected for the Anna University National Award by the Indian Society for Technical Education for the year 1997. He also won the ISTE-GSFC National Award for guiding the best M. Tech. Thesis in Mechanical Engineering for the year 1997.

Prof. Ashok Jhunjunwala, Electrical Engineering Department, was awarded Sri Hari Om Perit Vikram Sarabhai Research Award, 1998.

Shri B. Manoj Kumar, B.Tech. Student, Aerospace Engineering Department, was awarded the Merit Certificate for presentation of his research work in Mathematics at the Indian Science Congress Association's Young Scientists' Programme.

Shri G. N. Mohan Babu, QIP-Ph.D Research Scholar, Humanities and Social Sciences Department, was selected for the International Ph.D Internship Award instituted by the United Nations University -- Institute for New Technologies (UNU / INTECH), Maastricht, The Netherlands. He also won the P. D. Agarwal-TCI Award for Doctoral Research in Management for the year 1997.

Prof. K. A. Padmanabhan, Metallurgical Engineering Department (Now Director, IIT-Kanpur), was awarded the Sc.D. Degree by the Cambridge University.

Prof. V. Radhakrishnan, and Shri Jagannathan, Ph.D Research Scholar, Mechanical Engineering Department, won the National Research and Development Corporation Award for the Project titled "Fluidised Bed Machining". Prof. Radhakrishnan was also awarded the Institution of Engineers (India) Gold Medal for the best paper presentation.

Prof. S. Sundaresan, Metallurgical Engineering Department, received the Mirchandani Memorial Award for the Best Research Paper, and the D & H Secheron Award for the best paper presentation from the Indian Institute of Welding.

Prof. B. Viswanathan, Chemistry Department, received the MRSI Medal of the Materials Research Society of India for research on Materials.

The following faculty members of our Institute were elected as Fellows of prestigious national and international academies, and as Presidents/Fellows of Professional Societies, during this year :

Prof. S. S. Gokhale, Aerospace Engineering Department, Prof. B. H. L. Gowda, Applied Mechanics Department, and Dr. R. M. S. Gowda, Associate Professor, Aerospace Engineering Department, were elected as Fellows of the Aeronautical Society of India.

Prof. Megha Singh, Applied Mechanics Department, was elected a Fellow of the National Academy of Medical Sciences.

Prof. V. Radhakrishnan, Mechanical Engineering Department, was elected a Fellow of the Society of Manufacturing Engineers.

Prof. C. R. Muthukrishnan, Deputy Director, was elected as the Chairman of the Computer Society of India, Chennai Chapter.

Industrial Consultancy and Sponsored Research

IIT-Madras was one of the first higher technological institutions to recognize the importance of Industry-Institute Interaction ; and our Centre for Industrial Consultancy and Sponsored Research was established way back in 1973. We have maintained a steady and sustained growth, both in terms of the number and value of consultancy and sponsored projects.

During the year under report, 58 projects were obtained to the value of Rs.675 lakhs and 732 consultancy were received to the total value of Rs.499 lakhs.

The ISRO-IITMadras Cell and the IGCAR-IIT Madras Cell have been functioning effectively through periodic monitoring and review.

An MoU has been signed with DRDL for undertaking joint research projects. Currently, the faculty of the Departments of Aerospace Engineering, Applied Mechanics, and Electrical Engineering, and Ocean Engineering Centre have undertaken projects under this MoU for a total value of Rs.5.8 millions.

IIT-Madras is the Lead Institute for two Technology Development Mission (TDM) Projects, viz., Advanced Materials and Energy-Efficient Technologies. These TDMs are national projects, identified by the Planning Commission for implementation by the 5 IITs and the IISc. Each of the 7 TDMs requires industrial participation to the extent of a minimum contribution of 25% of the project cost, including 10% cash contribution. We have signed 9 MoUs under the two TDMs with Industry. Both the TDMs will be nearing successful completion shortly.

The Industrial Associateship Scheme has now more than 285 members, and enables formal arrangements for interaction with industry. The Centre for IC & SR releases regular Newsletters and organizes Technology Appreciation Programmes for the benefit of these Industrial Associates. During this year, 4 such programmes were conducted.

In addition to projects for Industry, national agencies and central government departments, our faculty have undertaken several specific assignments for the Tamil Nadu Government over the years. Among these are : the consultancy provided for Tamil Nadu Minerals, Tamil Nadu Pollution Control Board, Tamil Nadu Electricity Board, Corporation of Madras, Madras Metropolitan Development Agency, ELCOT Power Control Systems, Tamil Nadu Explosives etc. ; and sponsored

projects undertaken for the Animal Husbandry Department, Tamil Nadu State Council for Science and Technology, Tamil Nadu Small Industries Corporation, Ennore Thermal Power Station, Tamil Nadu Housing Board and Tamil Nadu Police Department.

The Centre for IC & SR recently started publishing Quarterly Reports of the activities of the Institute in a new attractive format under the banner of *IIT-Madras News*.

As India readies itself for facing global competition in R & D, IPR issues and Patents assume tremendous significance ; this year, we filed six patent applications, of which three were registered. IIT-Madras has so far filed 135 patent applications, and 115 among them have been registered.

New Centres

The following New Centres are in the process of being established, for promoting research, development and consultancy activities :

- ❑ Centre for Sustainable Development
- ❑ Centre for Computational Fluid Dynamics
- ❑ Centre for Non-destructive Evaluation

Revamping of the Curriculum

We have undertaken a major revision of our B.Tech. curriculum, introducing the freshmen early to professional subjects ; this will enable them to appreciate the nuances of Engineering, as distinct from Science and Humanities, which they have been learning in their school curriculum.

The new programme is restructured to include (i) a well-defined knowledge component, consisting of course work in a major professional area, a minor interdisciplinary area, Basic Engineering Sciences, Physics, Chemistry and Mathematics, Humanities, Social Sciences and Management, and topics of

current socio-economic relevance ; (ii) a know-how imparting component, consisting of laboratory courses, project work, industrial training and opportunities for individual initiatives ; and (iii) a character-building component, that includes co-curricular and professional society activities and engineering ethics.

Our Contributions to the National S & T Education System

One of the roles which the IITs have been playing effectively over the years is in providing guidance and assistance to the other Engineering Institutions in the country. In this context, we have been implementing the Quality Improvement Programme (QIP), which provides opportunities for Teachers of Engineering Colleges to upgrade their qualifications to Ph.D and M.Tech. Currently we have 47 QIP scholars on roll.

The All India Council for Technical Education and the National Board of Accreditation have utilised the expertise of our faculty members in several of their Committees and activities. Many of our faculty members are also on the Governing Councils of several S & T institutions in the country.

The Regional Sophisticated Instrumentation Centre celebrated the Fiftieth Anniversary of our Nation's Independence by organizing an Open House of the Centre for senior students of Schools and Colleges of Chennai City during February 24-25, 1998.

International Collaboration

We have signed MoUs (Memoranda of Understanding) with the following Universities abroad during the year :

- ❑ Iowa State University, USA.
- ❑ Kathmandu University, Nepal.
- ❑ Shinshu University, Japan.

- Swiss Federal Institute of Technology at Lausanne, (EPFL) Switzerland.
- Technical University, Braunschweig.

IIT-Madras has also signed MoUs with international companies for collaborative R&D; to date, a total of 11 such MoUs have been signed.

In the second phase of our collaborative agreement with the German Ministry of Research, Technology, Education and Science (BMBF), 11 projects are in progress ; these were reviewed recently and found to be proceeding very satisfactorily. It is expected that more projects will be funded through this mechanism in a third phase.

IIT-M's joint R & D with Midas Communication Technologies, Chennai, and Analog Devices of USA, to develop a state-of-the-art Wireless Local Loop (WLL) system has now reached the deployment stage. After successful trials of the corDECT WLL system by the Indian and Brazilian telecom authorities, in Chennai and in Sao Paulo, respectively, the system is now licensed for manufacture to companies in India, China, Brazil and France. It is expected that the system will help achieve rapid expansion of the telecom infrastructure in India and abroad.

The Speech and Vision Laboratory in the Computer Science and Engineering Department is developing a system for an American Company for accessing e-mail by telephone using speaker's voice for authentication. It will also be possible to access information stored in a machine in any Indian language using a text-to-speech system (TTS) for that language. The Laboratory has already developed a TTS system for Hindi ; efforts are under way to develop TTS systems for other Indian languages.

Under the MoU with Siemens Solar Industries, USA, the Central Electronics Centre of our Institute has trained a total of 748 Designers and Service Technicians in 34 batches. Under this Project, a PV-powered water pumping system

of 900W capacity, and a PV-powered Street Lighting System have also been installed.

DuPont, USA, sanctioned two Research Projects in the areas of Chemistry and Material Sciences, which are currently in progress.

Educational consultancy for M.Tech. curriculum development in the areas of Dredging, Port Engineering, Coastal Engineering and Coastal Zone Management has been undertaken with the Technical University, Delft, The Netherlands. Another educational consultancy proposal on Ocean Space Utilization is under active consideration of the funding agency.

The Ford Motor Company of the US instituted *The Henry Ford Industrial Chair* for Education and Research in Technology and Science related to Automotive Engineering, with special reference to Environment and Safety.

We are in the process of finalising an MoU with Microsoft. The MoU envisages availability of Microsoft technology and products for use by IIT faculty and students, and sharing of Research and Development work carried out with these resources.

Continuing Education and Educational Technology Activities

The Centre for Continuing Education coordinates all professional development activities organized for the benefit of serving teachers in other technical institutions and for working professionals in industries. During the year, our faculty members organized 5 Short-Term Courses under QIP and 27 Short-Term Courses under CEP. The Educational Technology Cell produced a number of video films, which include 11 Thematic Programmes, 14 Semester Courses, 5 Short Courses, and 3 Programmes each for Industries and for IIT.

The Humanities and Social Sciences Department, in collaboration with the Small Industries Development of India (SIDBI),

organized an innovative Small Industries Management Assistant's Programme (SIMAP), to develop prospective managers for small industries.

Organization of International and National Conferences

Our excellent conference complex comprising Auditoria, Conference Rooms and an Exhibition Hall, was the venue for 3 national conferences and 2 international conferences and 28 Seminars / Workshops during the year. In addition, several Workshops, Professional Society Meetings, Technical Seminars and Training Programmes were conducted during the year, utilizing these facilities.

International Student Exchange Programmes

While the focus during the early years of the Institute was on exchange of faculty and staff between India and other countries, increasingly opportunities are now being created for exchange of research scholars and students.

The Avesta Sheffield Research Foundation, Sweden, offered 1 Ph.D and 1 M.S. Fellowship for our research scholars in the Metallurgical Engineering Department.

Career Development and Welfare Schemes for the Employees

A Professor-in-charge for HRD was nominated last year, in order to plan and implement programmes for providing opportunities to our technical and administrative staff to update and upgrade their knowledge and skills, in order that they may perform their work more effectively. Under this scheme, ten training programmes were conducted during the year. In order to create a conducive work ambience and to promote inter-personal relations, a number of Stress Management Programmes

were organized during the year, in which 75 employees participated.

Continuous improvement being the hallmark of a learning organization, several 5-S programmes were conducted. Financial counselling was provided to the employees for wise investment of the arrears arising out of the 5th Pay Commission scales.

Our Strategic Planning Initiatives

The Strategic Planning Project, which was initiated a couple of years ago, in order to provide a long-term Vision and the Strategy for implementing it, is just nearing completion. A large number of faculty and staff members were involved in formulating the plans and plan of action, as also a large number of distinguished experts from leading organizations in the Government and Corporate sectors.

Our initiative to acquire ISO-9001 for the relevant activities of the Institute is also nearing completion. The documentation is complete and one preliminary audit has also been conducted.

I have also set up five Task Forces this year for looking at issues relating to (1) Tele-Teaching and Distance Learning, (2) Creation of Electronic or Virtual Class Rooms, (3) Revamping of the UG and PG Laboratory Programmes, (4) Planning and Implementation of renovation and maintenance of academic facilities including class rooms, labs., etc., and (5) Upgradation of Guest House facilities.

Student Co-curricular and Extra-curricular Activities

Our Institute provides excellent facilities for co-curricular and extra-curricular activities for the students, which are pursued throughout the year. A large number of students actively participated in organizing these activities, with guidance and support from our faculty and staff. There are several Student Chapters of

Professional Societies and Engineering Associations in the Institute. As part of the co-curricular activities, a Student-level Technical Seminar, PRAGMA-97, was organized for the first time, at which about 40 students from 20 colleges participated. We hope to make this an annual event.

The Extra-Mural series of lectures this year was specially designed to commemorate the 50th anniversary of our Independence. All the lectures delivered by prominent personalities are being compiled, to be brought out as a special volume.

On the cultural front, the *Bharat Utsav* and the annual cultural event *Sarang* were organized in October 1997 and January 1998, respectively. On the sports front, our Institute narrowly missed winning the General Championship at the Inter-IIT Sports Meet held during December 1997. Our beautiful cricket ground now boasts of a very attractive Club House, which was inaugurated by the legendary Australian Cricketer Neil Harvey in March 1998. Both the cricket ground and the Club House were sponsored by Chemplast Sanmar.

Our students started two new Clubs last year -- EXNORA Innovators Club, for a clean and green environment ; and ROTARACT Club in association with the Rotary Club of Aarch City, Madras.

Alumni Matters

Our Institute is now 39 years old and has so far awarded 20,204 degrees, ranging from Ph.D. to B.Tech. The education they have received at the Institute has enabled our *alumni* to launch themselves into attractive and satisfying professional careers. Our *alumni* occupy top positions in several spheres of Engineering, Technology, Industry and the Academe, and have fully justified the establishment of the IITs for providing Technology Leadership, Technology Innovation and National Development.

In addition to the parent *Alumni* Association on Campus, there are several Chapters spread worldwide. In particular, there are two Chapters in the US -- one at Houston and the other at Boston -- which are quite active. The 1973 batch is celebrating its Silver Reunion this year. Since the past two years, we are honouring our *alumni* for their accomplishments through the Distinguished Alumnus Awards. This year we have bestowed this honour on 4 *alumni* --

- (1) Mr. V. Shyam Sundar,
Chairman and Managing Director,
Madras Refineries,
- (2) Mr. S. Gopalakrishnan,
Vice-President,
INFOSYS,
- (3) Prof. K. R. Rajagopal, Forsyth Chair
Professor, A & M Texas University,

and
- (4) Dr. Desh Deshpande,
Chairman,
Netdialogues Inc., USA.

Infrastructure Development

In response to the increasing demand for IT facilities, we have undertaken the task of establishing a Campus Backbone Network. A state-of-the-art High Speed Fibre Optic Backbone, with ATM / GIGA Bit Ethernet Technology, is in the process of being established. This network will provide high-speed connectivity for the laboratories and faculty offices in the various Departments and Centres. The backbone is being established with an investment of about one crore rupees, and will provide the base for services, including Digital Library Access, Multi-media and Internet access through external connectivity. This Campus Network will replace the present network which has been operational for more than ten years, and which was established primarily for terminal access to central and mainframe resources, but is inadequate in terms of speed for current requirements and reach.

As student numbers increase, additional infrastructure would be required in the form of class rooms, lab equipment, computing power, hostel accommodation, etc. In order to maintain a favourable staff- student ratio, we would also require additional infrastructure for faculty in terms of office space, residential accommodation, communication facilities, etc. With the active support of the MHRD, we are hoping to create this infrastructure in the next couple of years.

Our Computer Centre has augmented its computing power with a number of RISC-based Workstations, Pentium II PCs, Scanners and state-of-the-art softwares, such as SABER, NISA, MATLAB and SIMULINK simulation packages.

Our Institute has been identified as one of the Level-3 Centres under the Integrated Computing for Scientific and Education Research (ICOSER) Project funded by the Department of Science and Technology, as a result of which the interaction between the faculty of our Institute with their counterparts in other institutions is expected to undergo a significant improvement. At present, our Internet access is through a radio modem at 64 Kbps ; as part of the ICOSER activity, this will be upgraded to 128 Kbps. A 2 Mb link has also been commissioned through ERNET for external communication ; this activity is supported by ERNET AND DoE.

The Central Library installed two terminals to provide internet access facilities to our faculty, students and industrial associates. A Hewlett Packard Scanjet 4C flatbed Scanner was procured to create professional documents with

600 dpi quality. The Central Library also started to provide patent information to the faculty, students and industrial associates through CD-ROM data base, internet, journals, and special collections on patents, trade mark, industrial design and copyright.

Our New Library Building will be ready in a few months, and we will be using the extra space not only for expansion of existing facilities, but also for providing new services characteristic of a Digital Library. We are planning to establish a Heritage Centre in the New Library Building in order to collect and showcase archival materials relating to the several phases of growth of our Institute.

Looking into the Future

It is just a matter of months before we step into the next millennium. Many things have changed in the recent past, and it is predicted that the future will not be a simple extrapolation of the present. An institution like the IIT needs to anticipate both the short-term and long-term requirements of the engineering profession, and suitably prepare the students. Combating technological obsolescence will be a major challenge, but newer and more effective tools and techniques are becoming available. Exciting times are ahead for the Institute to exploit its several strengths and the emerging opportunities.

After the Strategic Plan is in position soon, efforts will be mounted to implement it in order to achieve the institutional Mission with vigour and success.

2 ADMINISTRATION

2.1 General:

I.I.T. Madras is an autonomous statutory organisation functioning within the "Institutes of Technology Act, 1961", as amended by "The Institute of Technology (Amendment Act, 1963)". The six Institutes of Technology (Others being at Bombay, Kanpur, Kharagpur, Delhi and Guwahati) are administered centrally by the Council of IITs, an apex body established by the Government of India to coordinate the activities of these Institutes. The Minister for Human Resource Development of the Government of India is the Chair person of the Council. Each Institute of Technology has a Board of Governors responsible for its overall administration and control. The composition of the Board of Governors of this Institute is given in page i.

The Senate decides the academic policies of the Institute. It approves and controls curricula, courses, examinations and declaration of results. It appoints committees to look into specific academic matters arising from time to time. The teaching, training and research activities of various departments at the Institute are constantly under review to improve both facilities and standards. The Director of the Institute is the Chairman of the Senate. Members of the Senate are listed in Appendix. Financial advice to the Institute is given by the Finance Committee, whose constitution is given in Appendix. The Buildings and Works Committee advises the Institute on matters relating to buildings and works activity. The constitution of the committee is also given in Appendix.

In addition, the Board of Academic Research, Board of Academic Courses, Board of Students and Board of Industrial Consultancy and Sponsored Research, are appointed by the Senate to help in the efficient administration of academic and research activities of the Institute. The composition of this Boards together with a list of other officers are also given in Appendix.

2.2 Planning and Development Activities:

Strategic Management Project to bring about changes in the Institute's directions, structures, processes, interfaces and performance was initiated in the year 1996.

Seven task-forces were set-up to review, critically examine and propose new initiatives concerning:

- Teaching-Learning Processes (TLP)
- Information Technology (IT)
- Programme Appraisals and Professional Development for Faculty
- Professional and Career Development for Staff
- Total Quality Management
- Improving Interaction with the Outside environment
- Technology Upgradation of Institute Infrastructure

Each of these Task Forces submitted a report. They were compiled and made available to all the faculty/staff. Each of the reports has also been followed with an action plan.

A new and comprehensive Faculty Academic Profile (FAP) form was designed to capture information on the various aspects of a faculty member's performance. Each activity was assigned a priori weightages in order to quantitatively assess the overall contribution of a faculty member. Feedback comments were also obtained from all faculty. The purpose of the exercise is primarily help the faculty discover his strengths and optimally distribute his time between teaching, continuing education, book writing, basic research, sponsored research, industrial consultancy and administration so as to make an optimal contribution.

Leave rules and norms were compiled and copies were given to all the faculty members.

Recruitment of faculty was taken up systematically. A total of 1 Professor, 3 Associate Professors, 9 Assistant Professors and 4 Visiting Faculty were selected for appointment in (1997)-98.

10 Class I officers were selected for appointment.

5 faculty members participated in the DAAD invitation programme and 6 in the DAAD reinvitation programme.

37 faculty/officers have been enabled to go on long leave for various purposes.

Outsourcing of maintenance responsibilities in the Hospital and the Institute Buildings were taken up successfully.

The report of the Task forces on Professional and Career development for staff suggested training workshops for staff in order to improve their motivation, upgrade their skills and help them feel a sense of job satisfaction.

Four (4) inservice training was conducted for the staff at different levels during the period under report.

2.3 Staff position:

As on 31.3.98, 341 Faculty, 49 Scientific Staff, 552 Technical staff and 952 Administrative staff were in position. 70 Faculty, Officers and staff retired from their positions, 7 staff members took voluntary retirement and 9 expired. The details of all the above are given below:

2.3.1 Faculty/Officers who are on Long Leave:

S.No	Name & Designation	Duration	Nature of Leave
1.	Prof.M.Ravindran, OEC	9.11.93-8.11.98	EOL
2.	Prof.V.S.Raju, OEC	9.1.95-8.1.2000	EOL
3.	Prof.J.Raamachandran, Appl.Mech.	2.1.97-28.2.98	Sbb. Leave
4.	Prof.Nainan P.Kurian, Civil Engg.	9.9.96-8.9.98	EOL
5.	Prof.C.Venkataseshaish, Ele.Engg.	1.4.96-9.3.98	EOL
6.	Prof.R.N.Anantharaman, HSS	18.7.96-17.7.98	EOL
7.	Prof.P.Bhattacharya, Maths	22.1.96-21.1.98	EOL
8.	Prof.V.Radhakrishnan, Mech.Engg.	5.9.96-26.5.97	HPL
		27.5.97-15.2.98	EOL
9.	Prof.V.Sriramulu, Mech.Engg.	1.4.96-31.3.98	EOL

S.No	Name & Designation	Duration	Nature of Leave
10.	Prof.K.N.Seetharamu, Mech.Engg.	3.5.96-2.5.98	EOL
11.	Prof.R.S.Sirohi, Physics	1.2.97-4.8.97	HPL
		5.8.97-4.8.98	EOL
12.	Prof.C.Eswaran, Elec.Engg.	31.7.97-30.7.99	EOL
13.	Prof.Vijay R.Raghavan, Mech.Engg.	1.9.97-30.9.98	Sab.Leave
14.	Prof.R.Rajagopalan, HSS	3.2.97-2.2.98	EOL
15.	Prof.C.S.Krishnamurthy, Civil Engg.	15.9.97-14.9.98	EOL
16.	Dr.D.K.Sharma, CPS	8.1.98-12.4.98	EL/HPL
17.	Dr.T.K.Bose, Aerospace	8.7.97-7.2.98	EOL
18.	Dr.K.A.Padmanabhan, Metl.	29.9.97-28.9.2002	EOL
19.	Dr.P.R.Vaya	18.8.97-12.12.97	EOL
20.	Dr.C.Pandurangan, CSE	16.7.97-19.12.97	EL
21.	Dr.K.Prasad Rao, Metl.	9.10.97-8.10.98	Sab.Leave
		9.10.98-5.12.99	EL
22.	Dr.S.Raman, ASP, CSE	21.8.97-20.8.98	Sab.leave
23.	R.Vengan, Dy.Librarian	16.7.97-15.10.98	EOL
24.	A.Ganesan, CMO	1.9.95-31.8.97	EOL
25.	J.T.Sanjeevamurthy, SO.I, CSE.	2.3.98-1.9.99	EOI
26.	V.N.Shukla, SDE, EED	10.5.96-18.7.97	EOL
		17.2.98-21.8.98	EL
27.	Ranjana Shukla, SDE, EED	10.5.96-18.7.97	EOL
		2.2.98-1.5.98	EL
28.	Elizabeth N.Kurian, HSS	24.9.96-23.9.98	EOL
29.	N.Devasahayam, SO.II, RSIC	30.7.96-29.7.98	EOL
30.	Dr.M.Mylrajan, SO.II, RSIC	30.8.98-10.3.99	EOL
		10.3.97-29.8.98	Leave at credit
31.	Dr.(Ms) Vijayalakshmi Sirohi, Sys.Off. Gr.II	5.8.96-12.3.97	Leave at credit
		13.3.97-4.8.98	EOL
32.	M.Kuppan, Supdt., Admn.II	12.6.96-11.6.98	EOL
33.	C.Subramanian, UDC, Physics	25.1.96-24.1.98	EOL
34.	S.Ramalingam, Jr.Sys.Officer	31.12.97-31.3.97	EOL
35.	Dr.N.Krishna Mohan, TO (SG), Physics	14.7.97-31.12.97	EOL
36.	D.Balasubramanian, Mall Gr.I, Engg.Unit	1.10.96 to till date (31.3.98)	EOL
37.	P.Sambandam, Asst.Professor, OEC	25.3.96-24.3.2001	EOL

2.3.2 Faculty/Staff appointed during the year 01.04.97 to 31.03.98:

S.No	Name	Designation	Department	Date of Joining
1.	Dr.V.B.Athreya	Professor (Contr)	Hum & Soc Sci	02.07.97
2.	Dr.Subramanyam Pushpavanam	Asso. Professor	Chem.Engg.	12.05.97
3.	Dr.R.Sivanandan	Assoc. Professor	Civil Engg.	16.07.97
4.	Dr.V.Jayaprakash	Assoc. Professor	Mech.Engg.	21.01.98
5.	Dr.Prem B. Bisht	Asst. Professor (Contr)	Physics	15.04.97
6.	Dr.R Gnanamoorthy	Asst. Professor (Contr)	Mech. Engg.	12.05.97
7.	Dr.Devamitta Chattopadhyaya	Asst. Professor (Contr)	Chem.Engg.	11.07.97
8.	Dr.P.Murugaraj	Asst. Professor (Contr)	Physics	20.08.97
9.	Dr.N.Narasimha Murthy	Asst. Professor (Contr)	Chemistry	08.08.97
10.	Dr.C.Chandrasekhar	Asst. Professor (Contr)	Comp.Sci.& Engg.	11.08.97
11.	Dr.P.Bhyrappa	Asst. Professor (Contr)	Chemistry	25.09.97

S.No	Name	Designation	Department	Date of Joining
12.	Dr.Sohini Paldey	Asst. Professor (Contr)	Metallurgy	16.01.98
13.	Dr.Chandramouli Padmanabhan	Asst. Professor (Contr)	Appl. Mech	17.02.98
14.	Dr.Srinivasan Krishnamurthy	Visiting Faculty	Physics	02.06.97
15.	Dr.Sathyanarayana Chakravarthy	Visiting Faculty	Aero Engg	21.07.97
16.	Dr.Shan Somayaji	Visiting Faculty	Civil Engg.	24.06.97
17.	Dr.Ravindran	Visiting Faculty	Metl.Engg.	01.07.97
18.	P.Natarajan	Asst.Librarian	Library	25.07.97
19.	U.J.Suresh	Asst. Registrar	Library	02.01.98
20.	P.Bharathamani	Asst. Registrar	IC & SR	25.07.97
21.	P.Ramachandran	Asst. Registrar	Admn.I	25.07.97
22.	S.Mahalingam	Asst. Registrar	Admn.II	25.07.97
23.	C.Narayanan Kutty	Asst. Registrar	Academic	25.07.97
24.	B.Ramaswamy	Asst. Registrar	IC & SR	12.09.97
25.	R.Esakki Muthu	IAO (Contract)	Audit	06.08.97
26.	G.Selvamani	Security Officer (SS)	Security Section	06.08.97
27.	V.Suresh	Sr Tech. Eco. Officer	IC & SR	12.09.97
28.	V.Manickavasagam	Jr.Engr.Gr.II	EWC office	27.08.97
29.	Mrs.S.Sarala	Helper Gr.I	Accounts	18.06.97
30.	A.Kirubainathan	Helper Gr.II		03.10.97
31.	M.Saravanan	Helper Gr.II		06.10.97
32.	K.Stevan Satyaraj	Helper Gr.II		03.10.97
33.	K.N.Ramanujam	Helper Gr.II		03.10.97
34.	T.Chandranath	Helper Gr.II		08.10.97
35.	M.Subramani	Helper Gr.II		09.10.97
36.	D.Muthurajan	Helper Gr.II		15.10.97
37.	K.S.Murasoli	Helper Gr.I		03.11.97
38.	Mrs.Narayanamma	Sweeper		06.11.97

2.3.3 Faculty/Staff who have Retired:

S.No	Name	Designation and Department	Date
1.	Sri S.V.Krishnamoorthy	Supervisor, Mech.Engg.	30.4.97
2.	Sri V.Raman	Tech.Officer, Chem.Engg.	
3.	Sri S.Jambunathan	Sr.Workshop Supdt, CWS	
4.	Dr.C.Ganapathy Chettiar	Professor, OEC	
5.	Sri S.Jagan Mohanakrishnan	Supervisor (SG), Met.Engg.	
6.	Dr.C.V.Raghava Rao	Professor, Maths	31.05.97
7.	Dr.K.R.Govinda Mallan	Asso.Professor, Mech.Engg.	
8.	Sri R.Suryanarayanan	Supdt, Accounts	
9.	Sri K.Balaji Singh	Sr.Lab.Asst., Chemistry	
10.	Smt.P.Sundaramma	Sr.Lib.Asst (SG), Library	
11.	Dr.R.Mahadevan	Professor, OEC	30.06.97
12.	Dr.H.Suresh Rao	Professor, Civil Engg.	
13.	Dr.H.Raman	Professor, Civil Engg.	
14.	Dr.V.Subbarao	Professor, Maths	
15.	Sri M.Bangaru	Jr.Mech. (Painter), Engg.Unit	
16.	Sri K.Chinniah	Maistry (Hort.), Engg.Unit	
17.	Sri T.Thangarajan	Supervisor (SG), Mech.Engg.	
18.	Sri B.Narasimhalu	Supr. (SG), CWS	
19.	Sri E.Arumugam	O.A (SG), Security Sec.	
20.	Sri Ramjas Singh	HSG (SG), Security Sec.	
21.	Sri N.R.Jayaraman	Sr.Lib.Attdt, Physics	
22.	Sri S.Dorai	Sr.Lab.Asst., Met.Engg.	
23.	Sri K.Buchi Babu	Sr.Lab.Asst., Chemistry	
24.	Sri G.Sreenivasan	Foreman (SG), CWS	
25.	Sri Y.G.Narasimha	STEO, IC&SR	30.06.97
26.	Sri M.K.Govindan	HSG (SG), Security Sec.	
27.	Sri T.Shanmugham	Sr Mech (SG) (Painter) Engg Unit	31.07.97
28.	Sri N.Varada Rajulu	Asst. (SG), Cash Section	
29.	Sri V.S.Umapathy	O.A (SG), Chem.Engg.	
30.	Sri G.Balasubramaniam	Chief D'man, CWS	31.08.97
31.	Sri C.V.Thyagarajan	Asst. (SG), IC & SR	
32.	Sri T.J.Madhavan	Asst.Engr., Engg Unit	
33.	Sri K.Gopalan	Asst.Registrar, Admn.II	
34.	Dr.S.N.Venkatarangan	Asst.Professor, Maths	30.09.97
35.	Dr.R.Subramanian	Professor, Maths	
36.	Dr.R.Ramaswamy	Professor, Chemistry	
37.	Dr.J.P.Raina	Professor, Elec.Engg.	
38.	Sri K.Kondiah	Sr.Sweeper, Engg.Unit	
39.	Sri.A.Viswanathan	Sr.Storekeeper, RSIC	
40.	Sri K.Boopalan	Driver Gr.I, Autoshop	
41.	Sri P.Thomas Joseph	Foreman, Mech.Engg.	
42.	Dr.Ch.Durga Prasad Rao	Professor, Chem.Engg.	31.10.97
43.	Sri P.Chinniah(Pitchai)	Sr.Sweeper, Engg.Unit	
44.	Smt Stella Davaraj	Tele.Opr.Gr.I (SG), Engg Unit	
45.	Sri V.Janakiraman	Supdt., Admn.II	
46.	Dr.M.Kothandaramanujam	SSP (SG), Comp Centre	
47.	Dr.B.S.V.Gopalam	Professor, Physics	30.11.97
48.	Sri S.Sivaraja Pillai	UDC(SG), Admn.II	
49.	Sri .M.Parasuraman	Sr.Mech (SG) (Carp), Engg Unit	
50.	Sri Aboobacker	Supr.(SG), CWS	
51.	Sri G.Balakrishnan	Foreman (SG), Physics	
52.	Sri V.Avanasiappan	W/s.Supr. (SG), Aerospace	
53.	Sri G.Balasubramanian	Assistant (SG), Engg.Unit	31.12.97
54.	Sri R.Guruvalah	Sweeper, Engg.Unit	31.01.98

S.No	Name	Designation and Department	Date
55.	Sri S.Krishnaswamy	T.O.(SG), A.C.Unit	
56.	Sri R.Jayapalan	Foreman, CWS	
57.	Sri M.T.Varghese	Secretary, Appl.Mech.	
58.	Sri N.Somasundaram	Head Electcn (SG), Engg.Unit	28.02.98
59.	Sri V.Babu	HSG(SG), Security Sec.	
60.	Sri Sarojah Raghavan	Sr.Prof.Asst., Library	
61.	Sri N.Natesan	Supr.(SG), CWS	
62.	Dr.V.M.Krishna Sastri	Professor, Mech.Engg.	
63.	Sri S.Venkataramani	Supdt., Mech.Engg.	
64.	Dr.Vedam Subrahmanyam	Professor, Elec.Engg.	
65.	Dr.(Mrs.) Lalithakumari	Medical Officer, IIT Hospital	
66.	Sri A.Ponnumuthu	O.A.(SG), Admn.III	
67.	Srii S.L.Seshadri	Sr.Mech (SG), Engg.Unit	
68.	Sri K.Munuswamy	Sr.Mech.(SG), Engg.Unit	31.03.98
69.	Sri R.Ellalah	Sr.Sweeper, Engg.Unit	
70.	Sri M.Ishtalingam	Supr, Mech.Engg.	

2.3.4 Voluntarily Retired:

S.No	Name	Designation and Department	Date
1.	Sri A.G.Venugopal	STA (SG), CGBS	07.06.97
2.	Sri M.S.Ramakrishnan	Chief D'man, Met.Engg.	01.12.97
3.	Sri R.Purushothaman	Supdt., Admn.I	04.09.97
4.	Dr.S.Subramanian	Professor, RSIC	08.09.97
5.	Dr.C.R.Ramaswamy	Tech.Officer, Elec.Engg.	22.08.97
6.	Sri T.R.Swaminathan	Secretary, Chem.Engg.	03.01.98
7.	Smt.Chandra Karunakaran	Nursing Sister (SG), IIT Hospital	02.02.98

2.3.5 Expired:

S.No	Name	Designation and Department	Date
1.	Dr.K.Lakshminarayana	Professor, Mech. Engg.	13.04.97
2.	Sri A.Vasudevan	Supr., Elec. Engg	17.07.97
3.	Sri M.Sathiappan	Mali Gr.I, Engg.Unit	15.08.97
4.	Sri J.Murthy	Sr.Helper, Engg.Unit	02.09.97
5.	Dr.Surjit Singh,	Chemistry	06.09.97
6.	Sri M.Dharmalingam	Sr.Mech.(SG) (Plumber), Engg Unit	10.10.97
7.	Sri A.Mohanraj	Sr.Helper, Engg.Unit	10.11.97
8.	Sri S.Sivanandam (Swaminathan)	Sr.Mech.(SG) (Painter), Engg.Unit	02.02.98
9.	Smt.R.Valli	Sweeper Gr.I, Engg.Unit	02.02.98

Director

R.Natarajan

Deputy Director

C.R.Muthukrishnan

Deans

Academic Courses	M.S.Ananth
Academic Research	K.A.Padmanabhan (upto 28.9.97) M.S.Ananth (Addl.Charge from 29.9.97 to 22.1.98) V.Ganesan (from 23.1.98)
Administration	N.Rajagopalan
Industrial Consultancy & Sponsored Research	K.V.S.Rama Rao (Upto 1.3.98) S.Srinivasamurthy (from 2.3.98)
Students	P.Srinivasa Rao (Upto 28.2.98) B.Viswanathan (from 1.3.98)

Heads of Departments

Aerospace Engineering	E.G.Tulapurkara (upto 24.2.98) S.S.Gokhale (from 24.2.98)
Applied Mechanics	B.S.Prabhu (upto 14.12.97) Megha Singh (from 15.12.97)
Chemical Engineering	Ch.Durgaprasada Rao (Upto 29.10.97) K.Krishnaiah (from 29.10.97)
Chemistry	M.R.Udupa (upto 25.3.98) M.S.Gopinathan (from 25.3.98)
Civil Engineering	K.Elango
Computer Science and Engineering	S.V.Raghavan
Electrical Engineering	G.Sridhara Rao
Humanities & Social Sciences	L.V.L.N.Sarma
Mathematics	P.R.Parthasarathy
Mechanical Engineering	K.A.Bhaskaran
Metallurgical Engineering	D.R.G.Achar
Ocean Engineering Centre	M.R.Pranesh (Upto 12.10.97) C.P.Vendhan (from 13.10.97)
Physics	G.Rangarajan (upto 2.12.97) B.M.Sivaram (from 3.12.97)

Heads of Centres

Computer Centre	V.V.Sastry
Composites Technology Centre	N.G.Nair
Material Science Research Centre	B.Viswanathan (upto 1.3.98) K.Gopinath (from 2.3.98)
Regional Sophisticated Research Centre	S.Subramanian (upto 31.8.97) S.P.Venkateshan (from 1.9.97)

Central Administration

Director	R.Natarajan
Deputy Director	C.R.Muthukrishnan
Registrar	R.C.Janakarajan

Deputy Registrars

Academic	K.Panchalan
Administration	T.Suryakumar
Finance & Accounts	B.V.N.Rao
Stores & Purchase	A.Thirunavukkarasu
Training & Placement	A.K.Pattabiraman

Internal Audit Officer

R.Esakkimuthu (from 6.8.97)

Assistant Registrars

P.Bharathamani
K.Chidambaram
R.Esakkimuthu (upto 5.8.97)
V.Ganesan
K.Gopalan (upto 31.8.97)
M.Manickam
S.Mahalingam
C.Narayanankutty
P.Paramanandam
M.Rajasekaran
P.Ramachandran
B.Ramasamy
K.Sekar
U.J.Suresh
E.Henry, (i/c), (upto 5.8.97)

Chief Security Officer

Lt. Col. K.Rajendran

Security Officer

G.Selvamani (SO (SS) from 6.8.97))

Secretary (SG) to Director

V.V.Natarajan

G.Natarajan

Engineering Unit

Chairman, Estate & Works Committee	P.Sankaran
Institute Engineer	N.Malayalam
Executive Engineer	C.Ganesan
Asst. Executive Engineers	S.K.Pati S.Swaminathan R.M.Parameswaran F.John De Britto V.Seenivasan K.Dharmaraj

Central Library

Librarian	Harish Chandra
Dy. Librarian	R.Vengan (on EOL from 16.7.97) M.Koteswara Rao
Asst. Librarian	M.Murugan C.C.Tom C.R.Sekar P.Natarajan (from 25.7.97)

Central Electronics Centre

Senior Instrumentation Engineer	M.Kumaravel
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Industrial Consultancy & Sponsored Research

Chief Techno Economic Officer	D.Balakrishnan
Senior Techno Economic Officer	Y.G.Narasimha (upto 30.6.97) (Consultant w.e.f. 1.7.97) R.Sundaram V.Suresh (from 12.9.97)

Central Workshop

Asst. Workshop Supdt (SG)	N.L.N.N.Kumar
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Centre for Continuing Education

Chairman	V.Ganesan (upto 29.1.98) P.A.Asathanarayana (from 29.1.98)
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Central Glass Blowing Section

Head	M.Chidambaram
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Central Photographic Section

Convenor	D.K.Sharma (On leave from 7.1.98 to 12.4.98) M.P.Kothiyal (l/c from 8.1.98 to 12.4.98)
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Central Gas Supplies Unit

Head K.K.Balasubramanian

Airconditioning Unit

Head R.Raman

Sports Activities

Adviser B.S.Thndaveswara (from 1.1.97)

Cultural Activities

Adviser V.G.Idi Chandy (upto 31.7.97)
L.S.Ganesh (from 1.8.97)

Training & Placement

Adviser A.R.Balakrishnan

Foreign & Weaker Section Students

Adviser R.M.S.Gowda

Vigilance

Chief Vigilance Officer K.Krishnaiah

Guidance & Counselling

Head N.Sivaprasad

N S S

Co-ordinator T.T.Narendran

3. ACADEMIC PROGRAMMES AND AWARD OF DEGREES

The Institute offered the Ph.D. programme in 13 departments, M.S. programme in 10 departments, M.Tech programme in 25 streams/specialisations, M.Sc. programme in 3 disciplines and B.Tech programme in 8 disciplines besides a preparatory course for SC/ST students during the year under report.

3.1 Admissions (1997-98):

Candidates for the B.Tech. and the M.Tech. programmes were selected through JEE and GATE respectively. Quite a few candidates were also selected under M.Tech. Sponsored and User Oriented Programmes through interview and/or written test. Selection for the Ph.D. and the M.S. programmes was done through interview/test. For M.Sc., programmes selection was done through a written test.

The number of students and scholars admitted to various programmes during 1997-98 are given in Table 1.

Table - 1

S.No	Department	B.Tech.	M.Tech.	M.Sc.	M.S.	Ph.D	Total
1.	Aerospace Eng.	28	7	-	8	-	43
2.	Applied Mechanics	-	20	-	12	4	36
3.	Chemical Eng.	53	38	-	3	2	96
4.	Chemistry	-	-	24	-	17	41
5.	Civil Eng.	46	32	-	10	5	93
6.	Computer Sci. Eng.	29	51	-	7	3	90
7.	Electrical Eng.	89	53	-	27	2	171
8.	Hum. & Social Sciences	-	15	-	3	4	22
9.	Mathematics	-	-	27	-	4	31
10.	Mechanical Eng.	90	95	-	23	11	219
11.	Metallurgical Eng.	32	18	-	3	4	57
12.	Ocean Eng. Centre	22	13	-	9	4	48
13.	Physics	-	6	33	-	6	45
	Total	389	348	84	105	66	992

The total 992 includes the following:

Foreign Nationals	37	QIP Scholars (Ph.D. & M.Tech.)	15
Scheduled Castes	92	Sponsored Candidates (M.Tech. & M.S.)	26
Scheduled Tribes	23	Project Staff (M.S. & Ph.D.)	35
Women	88	External Registration (M.S. & Ph.D)	7(In residence)

In addition to the above 29 SC and ST students joined for Preparatory Course.

3.2 Students/Scholars Enrolment :

The total number of students on roll in the various programmes of the Institute in the academic year 1997-98 are given in Table-2.

Table - 2

S.No	Department	B.Tech.	M.Tech.	M.Sc.	M.S.	Ph.D.	Total
1.	Aerospace Eng.	98	19	-	17	13	147
2.	Applied Mechanics	-	34	-	31	27	92
3.	Chemical Eng.	198	58	-	17	36	309
4.	Chemistry	-	-	46	-	106	152
5.	Civil Eng.	177	73	-	33	42	325
6.	Computer Sci. Eng.	123	88	-	46	15	272
7.	Electrical Eng.	315	85	-	77	18	495
8.	Hum.& Soc.Sciences	-	33	-	10	22	65
9.	Mathematics	-	-	49	-	19	68
10.	Mechanical Eng.	348	180	-	71	56	655
11.	Metallurgical Eng.	117	29	-	7	27	180
12.	Ocean Eng. Centre	80	23	-	18	16	137
13.	Physics	-	8	51	-	33	92
Total		1456	630	146	327	430	2989

The total 2989 includes the following:

✓ Foreign Nationals	76	Project Staff (M.S & Ph.D)	✓	139
✓ Scheduled Caste	217	Defence (M.Tech)		58
✓ Scheduled Tribes	56	CSIR (Ph.D)		31
✓ Women	267	Handicapped	✓	3
✓ QIP Scholars (Ph.D & M.Tech)	59	Institute Staff (M.S & Ph.D)	✓	6
✓ Sponsored Candidates (M.Tech & M.S)	63	External Registration (M.S & Ph.D)		18
		(in residence)		

Besides the above 2989 students, 18 CSIR Research Associates and 29 Preparatory Course students were on the roll.

3.3 New disciplines/stream introduced:

In January 1998 an User Oriented M.Tech Construction Technology and Management was introduced with an intake of 30 in the Civil Engineering Department in collaboration with L & T, Chennai.

3.4 Courses Offered:

The various departments of this Institute including Composites Technology Centre, (COMPTECH) are having core and Elective Courses as of March 1998. These departments offered 370 courses in July-nov. 97 and 464 courses in Jan.- May 98. The department-wise details of these courses are given in Table 3.

Table - 3

S.No	Department	No. of listed/ approved courses			No. of courses offered in July-Nov. (1997)			No of courses offered in Jan-May 1998		
		Core	Elect.	Total	Core	Elect.	Total	Core	Elect.	Total
1.	Aerospace	38	52	90	19	6	25	14	12	26
2.	App. Mechs.	51	57	108	20	5	25	18	12	30
3.	Chemical	30	63	93	17	9	26	16	18	34
4.	Chemistry	32	27	59	18	3	21	11	7	18
5.	Civil Engg.	85	111	196	31	17	48	35	21	56
6.	Comp. Sci.	37	57	94	19	6	25	19	12	31
7.	Elect. Engg.	54	95	149	28	13	41	26	25	51
8.	Humanities	13	73	86	7	13	20	7	22	29
9.	Mathematics	20	66	86	11	7	18	9	10	19
10.	Mech. Engg.	101	88	189	25	9	34	65	13	78
11.	Metallurgy	36	59	95	15	18	33	22	11	33
12.	Ocean Engg.	35	27	62	23	3	26	12	13	25
13.	Physics	42	55	97	20	4	24	15	13	28
14.	COMPTEC	-	4	4	-	4	4	3	3	6
	Total	574	834	1408	253	117	370	272	192	464

3.5 Convocation:

The 34th Convocation was held on 26.7.1997. Sri S.R. Bommai, Minister for Human Resources Development, Government of India, delivered the Convocation Address. 870 candidates were awarded various degrees. 630 candidates received degrees in person. The break-up is given department-wise in Table-4.

Table - 4

S.No.	Department	B.Tech.	M.Tech.	M.Sc.	M.S.	Ph.D.	Total
1.	Aerospace Eng.	19	13	-	4	3	39
2.	Applied Mechanics	-	9	-	8	6	23
3.	Chemical Eng.	54	16	-	7	12	89
4.	Chemistry	-	-	29	-	17	46
5.	Civil Eng.	41	34	-	8	6	89
6.	Computer Sci. Eng.	30	45	-	15	3	93
7.	Electrical Eng.	73	27	-	16	5	121
8.	Hum.Soc.Sciences	-	23	-	4	6	33
9.	Mathematics	-	-	21	-	7	28
10.	Mechanical Eng.	82	61	-	18	22	183
11.	Metallurgical Eng.	29	12	-	4	5	50
12.	Ocean Eng.Centre	19	8	-	2	10	39
13.	Physics	-	8	19	-	10	37
	Total	347	256	69	86	112	870

With this Convocation the number of degrees awarded so far by the Institute is 20,204 the details of which are as follows:

Ph.D	1959	M.Tech	6625	B.Tech	8766
M.S	1147	M.Sc	1462	DIIT	245

3.6 Award of Prizes at the 34th Convocation:

The following are the details of Prizes awarded to the students at the 33rd Convocation for their best academic records:

President of India Prize :	Hariraran Shankar Rahul	B.Tech. Comp. Science & Eng.
Governor's Prize :	Amand Manikutty	B.Tech. Comp. Science & Eng.

Other Prizes

S.No	Donor	Department	Name of Student
Doctor of Philosophy			
1.	Prof.C.N.Pillai Prize	Chemistry	B. Gita
2.	Prof Langmuir Prize	Chemistry	V. Jayalakshmi
4.	Prof. Werner Prize	Chemistry	V. Maheswari
5.	Sudharsan Bhat Memorial Prize	Met. Eng.	K. Keshavamurthy Senthilkumar, S.B. Yerramsetty V.S. Raman
Master of Technology - M.Tech.			
1.	Air India Prize	Aerospace	Arnab Roy
2.	Institute Merit Prize	Biomedical Engineering	Mallikarjun S Holi
3.	Indira Sivasailam Merit Prize	Engineering Mechanics	Gnana Ramdev Kotamraju
4.	Prof BVA Rao Endowment Prize	Mechanical Engineering (Machine Design)	Nadula Radhakrishna
5.	Dr.K.Subba Raju Memorial Prize	Chemical Engineering	Bala Murugan, K.
6.	Mico-Bosch Prize	Chemical Engineering	Vaditya Swamy
7.	Valli Anantharama-krishnan Merit Prize	Civil Engineering	Bellana Sirish
8.	K Devarajan Memorial Prize	Civil Eng. (Transportation Eng.)	Divvala Mallikharjuna Rao
9.	CMC Prize	Computer Sci. & Eng.	N. Jagannatha Reddy
10.	Prof.H N Mahabala Endowment Prize	Computer Sci. & Eng.	Venkatesan, T.C.
11.	Siemens Prize	Electrical Eng.	Rangarajan, S.R.
12.	K.V.Arunkumar Memorial Prize	Industrial Management	Jayalakshmi, T.N.
13.	Coka Parthasarathy Memorial Prize	Industrial Management	Jayalakshmi, T.N.
14.	Prof B Sengupto Prize	Mechanical Eng.	Ramachandran, V.
15.	Dr S Vaidyanathan Memorial Prize	Mechanical Eng.(Computer Integrated Mfg./Manuf.Eng.)	Ramachandran, V.
16.	Giri Brothers Prize	Mechanical Eng. (Project in Metrology)	Ramachandran, V.
17.	S.Anantharamakrishnan Merit Prize	Mechanical Engineering	Vadaga Trinatha Muralikrishna
18.	Prof.Ramamohana Rao Memorial Prize	Mechanical Eng. (Machine Design Steam)	B. Kondal Reddy
19.	Sudarshan Bhat Memorial Prize	Metallurgical Engineering	Lalam Sree Harsha
20.	American Bureau of Shipping Prize	Ocean Engineering	Mallavarapu Venkata Ramana Murthy

S.No	Donor	Department	Name of Student
21.	Institute Merit Prize	Transducer Physics and Instrumentation	Yerramilli Sreeramachandra Vara Prasada Rao
22.	Prof Achim Bopp Endowment Prize	Elect. Engg. (Best Hardware Project)	Bindu Puri Mallikarjunaiah H.M.
Master of Science - M.Sc.			
1.	Dr S R Ramadas 60th Birthday Commemoration Award	Chemistry	T.A. Janaki
2.	Ratna Rao Memorial Prize	Chemistry	T.A. Janaki
3.	Mrs.Mira Paul Memorial Prize	Mathematics	G. Venkiteswaran
4.	Prof.Chilukury Rama- Sastry Memorial Prize	Physics	M. Pattabiraman
Bachelor of Technology - B.Tech.			
1.	Dr.Shanker Dayal Sharma President of India Prize	Electronics & Communication Eng.	Anitha Balasubramaniam
2.	HAL Prize	Aerospace Eng.	Minosha Elizabeth Cherian
3.	B.Ravichandran Memorial Prize	Chemical Eng.	Vibha Srinivasan
4.	Reliance Heat Transfer (P) Ltd. Prize	Chemical Eng.	Vibha Srinivasan
5.	Prof C A Sastry Endowment Prize	Chemical Eng.	Vijay, N.
6.	Larsen & Toubro ECC Endowment Medal	Civil Engineering	Mathew Kurian
7.	Alumni Association Prize	Computer Sci. & Eng.	Hariharan Shankar Rahul
8.	B Ravichandran Memorial Prize	Computer Sci. & Eng.	Hariharan Shankar Rahul
9.	Motorola Prize	Computer Sci. & Eng.	Anand Manikutty
10.	Sir Viswesvaralah Memorial Prize	Comp. Sci. and Eng.	Hariharan Shankar Rahul
11.	Phillips (India) Prize	Electrical Engineering	Kiran
12.	Siemens Prize	Electrical Engineering	Kiran
13.	Prof.Achim Bopp Endowment Prize	Elect. Eng. (Best Hardware Project)	M.A. Aziz Ahmed Soma Francis Josephreddy
14.	Dr.Ing.Dieter Kind Prize	Elect.Eng. (Best project in high voltage measurement Power Systems)	T.M. Rangarajan
15.	Banco FoundationPrize	Mechanical Eng.	B. Mahadevan
16.	Prof. GVN Rayudu Memorial Prize	Mechanical Eng.	B. Mahadevan
17.	Sivasallam Merit Prize	Mechanical Eng.	S. Sunil
18.	Valdy Krishna Memorial Prize	Mechanical Eng.	Ganesh Chandran, B.
19.	Dr.Dhandapani Prize	Metallurgical Engineering	R. Arvind
20.	American Bureau of Shipping Prize	Naval Architecture	B. Diwakar

3.6 Institute Day Prizes:

On the basis of performance during the Academic Session 1996-97, the following students were awarded Institute Merit and other Prizes.

Institute Merit Prizes

I. B..Tech. (I and II Semesters 1996-97)

II.

1.	First Prize (Book value of Rs.500/-)	CS 96138	Srinivasa Aditya Akella
2.	Second Prize (Book value of Rs.250/-)	EE 96141	Amal Ekbaire

II. B.Tech (III and IV Semesters 1996-97)

3.	Aerospace Engineering	AE 95006	J Giridhar
		AE 95020	Ramamoorthy Sripriya
4.	Chemical Engineering	CH 95033	R Arvind Uppili
5.	Civil Engineering	CE 95103	Saravanan U
6.	Comp. Sci. and Engineering	CS 95167	S Lakshminarayanan
7.	Electrical Engineering	EE 95153	Chandrasekhar M
8.	Mechanical Engineering	ME 95239	Krishnan Sriram
9.	Metallurgical Engineering	MT 95297	Kamity Kiran
10.	Naval Architecture	NA 95332	G Ramesh

III B.Tech (V and VI Semesters 1996-97) (Books value of Rs.500/- for each Branch)

11.	Aerospace Engineering	AE 94088	Manoj Kumar Bobba
12.	Chemical Engineering	CH 94033	B Jayanth
13.	Civil Engineering	CE 94077	Isaac Vikram Chenchiah
14.	Comp. Science & Engg.	CS 94133	Sriram R
15.	Mechanical Engineering	ME 94247	Niranjan Nanda Kishore K
16.	Metallurgical Engineering	MT 94321	Aruna Seshadri
17.	Naval Architecture	NA 94337	Shelly Lawrence H
18.	Ramasarma V Kolluri Memorial Prize	EE 94206	S Upender
19.	Raghavendra Memorial Prize	ME 95239	Krishnan Sriram
20.	Rajalakshmi Krishnamurthy English Prize	CH 96053	Pundalik Shenoy
21.	Chilikuri Ramasastry Memorial Prize	PH 96566	Anil Shaji
22.	R. Padmanabhan Memorial Prize	CY 96522	Usha Kalyani
23.	Dr. S. Chandrasekharan Memorial Prize	ME 94247	Niranjan Nanda Kishore K
24.	Prof. N Venkatarayulu Memorial Prize	ME 96850	Genikala Kishore
25.	48th Indian Pharmaceutical Congress Prize	CH 94027	R Ashwin Kumar

4.1 DEPARTMENT OF AEROSPACE ENGINEERING

1. Introduction:

The Department of Aerospace Engineering was established in 1969 and has been offering Ph.D. M.S., M.Tech., and B.Tech. programmes. The areas of teaching and research of the Department are Aerodynamics, Propulsion and Structure.

2. Academic Programmes:

The Department offers B.Tech., M.Tech., M.S. and Ph.D. programmes.

2.1. Students on Roll (as on 31-08-1997):

Programme	I year	II year	III year	IV year	V year	Others	Total
B.Tech.	28	24	22	24	-	-	98
M.Tech.	7	12	-	-	-	-	19
M.Sc.	-	-	-	-	-	-	-
M.S.	8	4	5	-	-	-	17
Ph.D.	-	3	3	2	5	-	18
Total	41	37	25	24	5	-	147

2.2. Number of Scholarship/Fellowship holders:

Programme	Institute Scholarship
M.Tech.	6
M.S.	14
Ph.D.	3
Total	23

2.3. Names of student/scholar attended Conference/Seminar and Symposia abroad/India :

Sl.No.	Name of the Student/Scholar	Programme
1.	B.Manoj Kumar	B.Tech.
2.	R.A.Srinivasan	M.S.
3.	Phillmon George	Ph.D
4.	K.Kanaka Durga	Ph.D

2.4. Number of Degrees Awarded in the last Convocation:

Programme	No
B.Tech.	19
M.Tech.	13
M.S.	4
Ph.D.	3
Total	39

3. Faculty and their Development:

3.1. Faculty:

Name and Qualification	Major Area of Specialization
Professors	
Bose T.K., Dr.-Ing.	Propulsion, plasma physics, gas dynamics, heat transfer
Gokhale S.S., Ph.D.	Aircraft and missile propulsion, computational methods, simulation and optimization, computer aided instructions
Krishnan A., Ph.D.	Aircraft structural analysis and design, finite element method, composites
Krishnan S., Ph.D.	Aerospace propulsion
Santhakumar S., Ph.D.	Aerodynamics, flight mechanics, instrumentation
Subramanian G., Ph.D.	Structural analysis, finite element and finite difference techniques, experimental moire interferometry
Tulapurkara E.G., Ph.D. [Head]	Aerodynamics, Fluid mechanics, turbulent flows
Varadan T.K., Ph.D.	Structural mechanics, composite
Gowda R.M.S., Ph.D.	Thermal stress analysis, structural mechanics
Associate Professors	
Job Kurian, Ph.D.	Aero/Gas Dynamics, Shock tube flows and measurements
Ramakrishna M., Ph.D.	Aerodynamics, numerical methods in computer solutions
Sriram P., Ph.D.	Structural mechanics, composites, fatigue & fracture, vibrations
Assistant Professors	
Bhaskar K., Ph.D.	Structural mechanics, composite structures, elasticity
Rajan S.C., M.Tech.	Aerodynamics, numerical methods in computer
Sujith R.I., Ph.D.	Gasdynamics, optical flow diagnostics, acoustics
S.R.Chakravarthy (Visiting Faculty)	Combustion, rocket propulsion, fluid mechanics

3.2. Shortterm Courses/Workshops/Seminar/Symposia/Conferences organised:

S.No.	Co-ordinators	Title	Period
1.	Prof.E.G.Tulapurkara(*)	7 th Asian Congress of Fluid Mechanics	8-12, Dec. (1997)
2.	Prof.S.S.Gokhale(#)	International Conference on Engineering Education - An Asian Perspective (ICEEP98)	12-14 Jan. 1998

(*) Prof.E.G.Tulapurkara as Organising Secretary in collaboration with entire faculty of Aerospace Engineering Department and faculty from other Departments of IIT (M). Prof.B.H.L.Gowda of Applied Mechanics Department was also an Organising Secretary.

(#) Organising Secretary along with Prof.C.R.Muthukrishnan and Prof.M.S.Ananth.

3.3. Short-Term Courses/Workshops/Seminars / Symposia / Conferences/ Training attended by the Faculty in recognised Academic Institutions and Public Sector Units :

S.No	Name of Faculty	Title	Institution	Period/ Duration
1.	Dr.Job Kurian	21 st International Symposium on Shock waves	Great Keppel, Queensland, Australia	19-26, July, (1997)
		13 th International Symposium on Airbreathing Engines, Mixing performance of lobed nozzle	Chattanooga, Tennessee, U.S.A. Nanyang Technical University, Singapore	6-12, Sep. (1997) 28 th July (1997)
2.	R.I.Sujlth	Lecture series in Gas Dynamics (6 lectures)	Centre for Advanced Technology (CAT), DAE, Indore	5-8, May (1997)
		Vibro-Acoustics for Aerospace and Energy Industry: Lectures on (1) Combustion Instability (2) Pulse combustion	Anna University, Madras (Chennai)	15 & 16, Oct (1997)
		Workshop on Vibro-Acoustics for Indian Automobile and Transportation Industry : Lecture on Pulse Combustion	Anna University, Madras (Chennai)	18th Oct. (1997)
		Highspeed Digital Imaging for Rocket Motor Applications	V.S.S.C., Thiruvananthapuram	26th Nov. (1997)
3.	E.G.Tulapurkara	Behaviour of Droplets in Axial Acoustic Fields	L.P.S.C., Vallamala	30th March 1998
		49 th Annual General Meeting of Aero. Soc. of India	I.I.T., Mumbai	16-17, Jan. 1998

3.4. Special Lectures Delivered by the faculty in other Institutions :

S.No.	Name of Faculty	Topic of Lecture	Venue & Date
1.	Dr.E.G.Tulapurkara	Course of Lectures on "Turbulent modelling for computation of flow past aerospace vehicles" (8 hours)	DRDL, Hyderabad 26-27, June 97
		Hot-wire Anemometry (2 hours)	IIT (M) - 11-7-97
		LASER-DOPPLER anemometry (1 hour)	Anna University Chennai, 11-11-97

3.5. Visits Abroad by Faculty :

S. No.	Name of Faculty	Country Visited	Date	Purpose of visit
1.	Dr.Job Kurian	Quensland, Australia	19 th - 26 th July, (1997)	To participate in the 21 st International Symposium on Shock Waves
		Chattanooga, Tennessee, USA	6 th - 12 th Sep, (1997)	To participate in the 13 th International Symposium on Airbreathing Engines
		Singapore	27 th and 28 th July (1997)	To give a Seminar talk at Nanyang Technical University

3.6. Fellowships of Academies and Professional Societies : (Humboldt/INAE/INSA/Hon. FRA, etc.)

Name of Faculty	Name of the Academy/Professional Society	Level	Year of Admission
Prof.S.S.Gokhale	The Aeronautical Society of India	Fellow	(1997)

4. Design and Development Activities : One Pentium PC acquired.

4.1. Brief and specific details of Process/Instruments/Equipment/Software Designed and Developed :

Augmentation of the Low Density Wind Tunnel at IIT, Madras to include stagnation heating facility.

4.2. New facilities added and Major equipment procured through project funds:

CD ROM Drive 8X (IDE Interface)	- 1
14" SVGA Colour Monitor with RAM	- 1
AD 140 Mini CCD Camera	- 1
C Mount Adapter	- 1
C Mount Lence	- 1
133 Mhz Pentium System	- 1
X.Y.Z. Linear positioning system	- 1
Three axes programmable controller for Stopper Motor with power supply	- 1
Mirror, Concave 150mm dia spherical Front surface mirror, etc	- 2
Mirror mounts	- 2
Top - 288 tiangular optical bench 2 meter aluminium	- 2
MBC - 291 carrier 90mm width (aluminium)	- 10
Pentium MMX 166 Mhz Pro complete system	- 1
HCL 14" SVGA Colour Monitor	- 1
200 Mhz Inter Pentium Pro complete system	- 1
PC VGA card	- 1
14" Colour Monitor	- 1
64 MB EDO RAM	- 1
200 Mhz Inter Pentium Pro complete system	- 4
128 MB EDO RAM In lieu of 32 MB EDO RAM	- 1
64 MB EDO RAM in lieu of 32 MB EDO RAM	- 3
Symmetrically opening slit height 12mm, mounting pin 12.5mm dia & 100mm long	- 1
Translation stage	- 1
Intel Pentium 200 Mhz MMX complete system	- 1
24X Creative lot. and Blaster 16 bit card, Multimedia kit	- 1

5. Research and Consultancy :

5.1. Sponsored Research Projects on hand:

Sl. No	Title	Period	Funding Agency	Amount in Lakhs	Co-codinator(s)
1	Heat Transfer In Impinging Arc	1995-98	DAE	1.20	T.K.Bose
2	Free edge stresses in composite laminates subjected to transverse loads	1996-98	ARDB	2.71	K.Bhaskar T.K.Varadan

Sl. No	Title	Period	Funding Agency	Amount in Lakhs	Co-codinator(s)
3	Discontinuity stress in Laminated Composed Pressure Vessels	1997-99	DST	5.25	K.Bhaskar T.K.Varadan
4	Modelling or impinging plasma jets	1995-98	DAE	10.44	M.Ramakrishna T.K.Bose
5	Analysis of Distributed Computing Flow over and airbreathing Vehicle	1996-99	ISRO	10.65	M.Ramakrishna Janaki Ram (CSE)
6	Duct optimisation and automatic pitch control for Wave Power	1996-98	NIOT Chennai	7.49	S.Santhakumar
7	Development of Solid Fuel and Combustion Chamber System for Hybrid Rocket Motors	1995-98	ISRO	7.25	S.Krishnan
8	Further Erosive Burning Studies of Solid Propellants under Transonic and Supersonic Cross flow Mach Numbers	1997-99	ARDB	3.38	S.Krishnan
9	Studies on Plume flow and Plume Impingement	1995-98	ISRO	5.97	Job Kurian
10	Development of 2-D Supersonic Combustors	1996-98	ISRO	5.96	Job Kurian & R.I.Sujith
11	Development of Laser Induced Fluorescence to study the flow in Supersonic Chemical Oxygen Iodine Laser	1997-99	BRNS	8.735	R.I.Sujith
12	Interference effects on flow around 3-D bluff bodies	1990-97	DST	8.0	E.G.Tulapurkara
13	Studies on Low-speed turbulent flows in complex enclosures	1993-98	VOFN	20.0	E.G.Tulapurkara
14	Evaluation of models of turbulence using DNS data base	1995-97	DNS	2.00	E.G.Tulapurkara
15	Incineration of Solid Waste in an Acoustically Excited Dump Combustor	1998-2000	MHRD	10.00	C.R.Chakravarthy
16	Theoretical and Experimental Investigation for the Determination of Gc for Composites	1997-2000	ISRO	7.00	P.Sriram
17	Fluid Structural Mechanics problem solving using Networked processors	1996-98	IIT(M)	0.50	P.Sriram
18	Aerodynamics Study of Helicopter Rotor and Development of computer Code	1997-99	ARDB	3.187	S.C.Rajan M.Ramakrishna M.Balakrishnan (APM)

5.2. Industrial Consultancy:

S. No.	Name of the Faculty	Title	Industry	Amount (In lakhs)
1.	S.Santhakumar	Opinion on whether certain parts are integral to Wind-mill	Sasi & Sakar Gear Drives Ltd, Chennai	0.015

5.3. RBIC:

Sl. No	Name of the Investigator/ Co-investigator	Title	Number	Amount (in lakhs)
1.	E.G.Tulapurkara	Aerodynamics & Structural Performance of Airfoils with Mounting BCEL	Best & Crompton	6.00
2.	S.Santhakumar	Total Design consultancy for Transonic Test Section	RB/96-97/ASE/002/DRDL/SSAN	0.50

Sl. No	Name of the Investigator/ Co-investigator	Title	Number	Amount (In lakhs)
3.	Job Kurian & R.I.Sujith	Experimental Investigation of Heat Transfer to GSLV heat Shield and Satellite	RB/96-97/ASE/003/VSSC/JOBK	6.00
4.	S.Krishnan R.I.Sujith S.R.Chakravarthy	Vortex Shedding as a Source of Pressure Perturbations and Associated problems in Segmented Large Solid	RB/98-99/ASE/001/ISRO/SKRI	
5.	S.Krishnan R.Palaninathan (AM)	Software for Nozzleless Booster Structural Analysis	RB/97-98/APM/003/DRDL/RPAL	4.00
6.	S.Krishnan S.C.Chakravarthy	Erosive Burning characteristics of Nozzleless Booster Propellants	RB/97-98/ASE/001/DRDL/SKRI	5.00
7.	G.Subramanian	Finite Element Algorithms	RB/97-98/ASE/002/ADA/GUSB	0.55

5.4. Journal Editorial Boards : (Editors, Secretary, Treasurer, Membership etc.)

S.No	Name of the Faculty	Level	Journal
1.	Prof.G.Subramanian	Editor	Journal of Mathematical & Physical Sciences

5.5. Publications :

(a) In Refereed National Journals :

1. P.Murugesan, T.K.Varadan & K.Bhaskar., "Accurate analysis of free edge stresses by finite difference method", Jl. of Aero. Soc. of India, 49, 180-182, (1997).
2. T.K.Varadan & K.Bhaskar., "Review of different laminate theories for the analysis of composites", Jl. of Aero. Soc. of India., 49, 202-208, (1997).

(b) In Refereed International Journals :

1. H.K.Das and J.Kurlan, "Attenuation of Shock Waves in Gas-Particle mixtures AIAA Jl. Vol.35, No.3, ((1997)), pp.576-578.
2. B.Deependran, R.I.Sujith, J.Kurian., "Studies of Low density freejets and their impingement effects", AIAA Jl. Vol.35, No.9, ((1997)), pp.1536-1542.
3. R.I.Sujith, G.A.Waldherr, J.I.Jagoda and B.T.Zinn., "An Experimental Investigation of the Behaviour of Droplets in Axial Acoustic Fields, Journal of Vibration and Acoustics", Vol.119, ((1997)), pp.285-292.
4. B.Manoj Kumar and R.I.Sujith., "Exact Solution for One-Dimensional Acoustic Fields in Ducts with a Quadratic Mean Temperature Profile", Jl. of the Acoustical Society of America, 101(6), ((1997)), pp.3798-3799.
5. Manoj Kumar and R.I.Sujith., "Exact Solution Longitudinal Vibration of Non-Uniform Rods", Jl. of Second and Vibration, Vol.207, pp.721-729.

6. Gowda B.H.L, Tulapurkara E.G, and Swain S.K., "Influence of Splitter plate on the reverse flow in a channel", Fluid Dynamics Research, Vol.21, pp.319-330, (1997).
7. Selvarajan S, Tulapurkara E.G. and Vasanta Ram., "A Numerical Study of Flow through Wavy Walled Channels", Int. JI. of Numerical Methods in Fluids, Vo.26, pp.519-531, 1998.
8. Gokhale S.S., Suresh R., "Numerical Computation of Internal Flow for Axisymmetric and Two Dimensional Nozzles", Int. JI. of Numerical Methods in Fluids, Vol.24, pp.599-610, (1997).

(c) In Proceedings of National Conference :

1. R.I.Sujith, T.Johu and B.T.Zinn., "A Theoretical Investigation of the Possibility of Enhancement of Mass Transfer From a Packed Bed using Acoustic Oscillations", 3rd Technical Session of the Madras India Regional Chapter of the Acoustical Society of America, Sept. 8-9, ((1997)), NIO, Donne Paulem, Goa.
2. Gowda B.H.L, Tulapurkara E.G. and Kannababu A., "Interference Effects on the Wind Pressure Distribution on a Low-Rise Prismatic Body", 49th AGM of Aero. Soc. of India, Mumbai, Jan.16-17, 1998, pp.2.1-2.4.
3. Karthik K, Tulapurkara E.G, and Damodaran K.A., "Influence of the Separated Flow on Wing on Tail Downwash", Proc. 49th AGM of Aero. Soc. of India, Mumbai, Jan.16-17, 1998, pp.8.1-8.7.

(d) In Proceedings of International Conferences :

1. S.Paneerselvam, V.Nagarajan, P.Sounderarajan and S.Santhakumar, "Dispensed induced aerodynamic interference loads on sub-munition during dispense", AIAA, 97-2203, 15th Applied Aerodynamics Conference, Jan.23-26, (1997), Atlanta, Ga, pp.1-6.
2. S.R.Balakrishnan and S.Santhakumar, "Fault tolerance accommodation in fuzzy logic control of Aircraft gas turbines", Proc.5th European congress on Intelligent techniques and Soft computing, EUFIT'97, Aachen, Germany, Sep.8-11, (1997), pp.2069-2073.
3. T.Setoguchi, S.Santhakumar, M.Takao and K.Kaneko, "Impulse turbine with self-pitch-controlled guide vanes for wave energy conversion-a review", Proc. 7th Asian Congress of Fluid Mechanics, Dec.8-12, I.I.T., Madras, (1997), Vol.2, pp.513-516.
4. M.Takao, T.Setoguchi, S.Santhakumar and K.Kaneko, "A comparative study of turbines using pitch controlled blades for Wave energy conversion", Second International Seminar on Fluid Mechanics and Heat transfer, Dec.17-18, (1997), Dhaka, Bangladesh, Proc.pp.243-250.
5. Job Kurian and Das H.K., "Studies of Shock propagation in gas particle mixtures", Presented at the 21st International Sym. on Shock Waves, Queensland, July ((1997)).

6. Job Kurian "Mixing Performance of radially lobed supersonic nozzles". Proc. of 13th ISABE, pp.891-900, September ((1997))
7. B.V.N.Charyulu, J.Kurian, P.Venugopalan and V.Sriramulu., "Supersonic mixing and combustion using two dimensional lobed nozzles", Proc. of 4th Asian Pacific International Symposium on Combustion and Energy Utilization, pp.197-205 ((1997)).
8. M.Murall, J.Kurian., "Studies on nozzles for High Speed mixing applications", Proc. of 7th Asian Congress of Fluid Mechanics, pp.461-461, December ((1997))
9. Selvarajan S, Tulapurkara E.G, and Vasanta Ram V.I., "On the Instability of Wavy Walled Channel Flows", Proc. 7th Asian Congress of Fluid Mechanics, Dec.8-12, (1997), Chennai (Madras), pp.175-178.
10. Tulapurkara E.G, Ramjee V, and Krishna Rao, M.M., "Computation of Curved Wakes using Reynolds Stress Model", Proc. 7th Asian Congress of Fluid Mechanics, Dec. 8-12, (1997), Chennai (Madras), pp.525-528.
11. Gowda B.H.L, and Tulapurkara E.G, and Kanna Babu A., "Interference Effects on the Mean Velocities and Turbulence Intensity behind a Tall Body due to a Short Body In Tandem", Proc. 7th Asian Congress of Fluid Mechanics, Dec.8-12, (1997), Chennai (Madras), pp.581-584.
12. Ravisundar T, Tulapurkara E.G, and Balabaskaran V., "Effect of Swirl in an Elbow Type Draft Tube", Proc. 7th Asian Congress of Fluid Mechanics, Dec.8-12, (1997), Chennai (Madras), pp.673-676.

(e) Others :

1. Dr.E.G.Tulapurkara: Manohar N, and Tulapurkara E.G., "Transport Equation of Turbulence Quantities for Incompressible Flow in General Curvilinear Co-ordinates", October 1997.

6. Distinguished Visitors to the Department :

S.No	Name of the Visitor and Designation	Date of visit	Purpose of visit
1.	Mr.J.K.Mittal, Scientific Officer Centre for Advanced Technology, Indore	2-6-1997	Discussion with faculty members
2.	Dr.M.Sathyamoorthy, Professor and Chair Department of Mechanical and Aeronautical Engineering, Clarkson University, Postdam	12-8-1997	To meet the faculty members and Discussion
3.	Dr.H.G.Reimerdes, Professor and Chair Department of Aerospace Structures RWTH, Aachen, Germany	19-8-1997	To meeting the faculty members and Discussion
4.	Prof.Hirendranath Chatterjee, Co-ordinator, North-South Corporation, Aachen University of Technology, Aachen, Germany	19-8-1997	To meet the faculty members
5.	Group Captain S.C.Keshu (Retd.) Hindustan Aeronautics Limited, Bangalore	12-9-1997	To give Special Lectures
6.	Prof.Zhu, Ziugiang, Beijing University of Aeronautics and Astronautics, Beijing, China	12-9-1997	Discussion with faculty members

S.No	Name of the Visitor and Designation	Date of visit	Purpose of visit
7.	Dr.K.Kasthurirangan, Chairman, ISRO, Bangalore	29-1-1998	Visited Labs.
8.	Prof.A.Das, Institute of Design Aerodynamics DLR, Braunschweig, Germany	25-2-1998	To give a Seminar Talk

Other Activities:

- Dr.S.S.Gokhale : Management Representative ISO 9000, Secretary,
GATE 98
- Dr.S.Santhakumar : Warden, Krishna Hostel, Member, CEC User Committee
Auditor, Aero. Soc. of India (Chennai)
- Dr.Job Kurian : Warden, Jamuna Hostel
Member, BAR, IC & SR Board, Estate Committee
- Dr.R.I.Sujith : Secretary, Chennai Branch of the Aeronautical society
of India till November (1997). Organized Aerospace
Gold - 47-97 in connection with the Golden Jubilee
Celebrations of the Chennai Branch of the
Aeronautical Society of India.

4.2 DEPARTMENT OF APPLIED MECHANICS

1. Introduction:

The Department of **Applied Mechanics** was established in 1959, and it offers Ph.D., M.S. and M.Tech programmes. The major areas of teaching and research of the Department are the following:

The research in the **Biomedical Engineering Division** is concentrated in Bio-instrumentation, Biomechanics and Biomedical Image and Signal Processing. The faculty of this division are carrying out research in collaboration with hospitals and medical research institutes in the areas of Biomechanics of Leprotic hand and foot, Rehabilitation aids, finite element method, Image and Signal processing applications etc. Recent emphasis of the division is to develop medical diagnosis modalities in the areas of Macro-Micro- Hemodynamics, Laser and Artificial Neural Networks based instrumentation.

The faculty in the **Solid Mechanics Division** are doing research in Stress analysis of plates and shells by finite element and boundary element techniques, Elasto-plastic analysis, Fracture mechanics, Fatigue, Reliability, Metal matrix composites, High temperature design and application of Image processing techniques.

The **Fluid Mechanics Division** is doing research in Industrial Aerodynamics, Automobile Aerodynamics, Helicopter aero dynamics, Aerodynamics of Wind turbines, and Wind energy problems, Wind effects on buildings structures, and bridges, flow induced vibration, Computational Fluid Dynamics, and Atmospheric boundary layers, Internal flow problems and Flow through conical and curved diffusers, turbulent shear flows, Wall jets, turbulence modelling.

The **Machine Dynamics Division** is engaged in research in the area of Structural dynamics, Vibration and stress analysis using FEM techniques, Acoustics and noise control, Tribology and Maintenance engineering and Chaotic/non-linear vibrations.

2. Academic Programmes:

2.1 New Courses introduced:

S.No.	Course No.	Title	Structure	Faculty
1.	AM 630	Engineering Plasticity	3-0-3-0	M.S.Sivakumar C. Lakshmana Rao
2.	ID 701	Constitutive Modelling in Continuum Mechanics	3-0-3-0	M.S.Sivakumar C. Lakshmana Rao J. Raviprakash Raju Sethuraman
3.	AM 621	Approximate Methods in Engg. Analysis	3-0-3-0	M.S.Sivakumar C. Lakshmana Rao
4.	AM 781	Chaotic Vibrations	3-0-3-0	S. Narayanan P. Chandramouli

2.2 Students on Roll (as on 31.08.(1997)):

Programme	I Year	II Year	III Year	IV Year	V Year	Total
Ph.D	4	5	3	6	9	27
M.S.	12	8	7	4	-	31
M.Tech.	20	14	-	-	-	34
Total	36	28	9	9	9	92

2.3 Number of Scholarship/Fellowship holders:

Programme	Institute	Others	Total
Ph.D	11	4	15
M.S.	17	7	24
M.Tech	33	7	40
Total	61	18	79

2.4 Names of student/scholar attended Conference/Seminar and Symposia abroad/India :

Sl.No.	Name of the Student/Scholar	Progm.	Name of the Conf/Seminar/Symposia	Date & Venue
1.	Manjunath, M	Ph.D	National Conference on Bio-Med. Engg.	March 26-27, (1997), Madras
	- do -	Ph.D	National Conference Adv. In Bio-Medical Engg.	Sep 4-6, (1997) Cochin
2.	Susamma Chacko	Ph.D	World Cong. Med. Phy & Bio-Medical Engg.	Sep 14-19, (1997), France
3.	Mallikarjun S Holi	M.Tech	National Conf on Adv. Model Engg. in BME (BECON 97)	Model
4.	Mallikarjun S Holi	M.Tech	National Conf on BME (NCBME 97)	College of Engg Anna Univ March 28-29, 97
5.	Susma R Chacko K. Damodaran	M.S	Conf. on Engg. App. of Solid Mech 97	IGCAR Kalpakkam
6.	Habib Mohammed	M.Tech	MIRC-ASA MTG	Goa, Sep. 97

2.5 Number of Degrees Awarded In the last convocation:

Programme	Total
Ph.D	2
M.S.	4
M.Tech	2
Total	8

3. Faculty and their Development:

3.1 Faculty:

Name and Qualification	Major area of Specialisation
Professors	
Dr. K.M. Patil, D.Sc (Washington) [Head]	Biomechanics, Rehabilitation Engineering
Dr. MeghaSingh, Ph.D (Carolina)	Cardiovascular blood flow analysis Lasers and ultrasound in medical diagnostics,
Dr. S.Radhakrishnan, Ph.D. (IIT, Madras)	Biomechanics, Rehabilitation Engineering
Dr.V. Ramjee, Ph.D. (IISc, Bangalore)	Fluid Mechanics
Dr. B.H.Lakshmana Gowda, Ph.D (IIT, Madras)	Fluid Mechanics
Dr. P.A.Aswatha Narayana, Ph.D (IIT, Madras)	Fluid Mechanics
Dr. V. Ramamurti, Ph.D (IIT Madras)	Vibration, finite elements, stress analysis, rotor dynamics
Dr.B.S.Prabhu, Ph.D (IIT Madras)	Tribology, vibration, rotor dynamics, condition monitoring
Dr.N. Ganesan, Ph.D (IIT Madras)	Vibration, acoustics, finite elements, stress analysis
Dr. S. Narayanan, Ph.D (IIT Kanpur)	Nonlinear and random vibration, chaos, acoustics
Dr.R.Palaninathan, Ph.D. (IIT Madras)	Structural Mechanics, Composite Structures, Metal Matrix Composites
Dr.J. Raamachandran, Ph.D (IIT Madras)	Solid Mechanics, Experimental Stress Analysis, Composite Structures, Bio-Mechanics, Boundary Element Methods.
Associate Professors	
Dr.M. Balakrishnan, Ph.D (IIT Madras)	Fluid Mechanics/Low speed Aerodynamics
Assistant Professors	
Dr. M Rama Subba Reddy, Ph.D (IISc Bangalore)	Biomedical Instrumentation and Biosignal processing and Biosignal processing
Dr.J.Lakshminarasimhan, Ph.D (IIT Madras)	Fluid Mechanics: Incompressible, Aerodynamics and Internal Flows
Dr.S.Swarnamani, Ph.D (IIT Madras)	Condition monitoring, vibration, tribology, maintenance engineering, modal analysis, medical ultrasound.

Dr.C.Sujatha, Ph.D (IIT Madras)	Vibration, condition monitoring, acoustics, instrumentation
Dr.G.Santhanakrishnan, Ph.D (IIT Madras)	Tribology, Composite materials, and Composites technology
Dr. P. Chandramouli, Ph.D (Ohio State Univ.)	Nonlinear dynamics, Acoustics & Noise Control, Signal processing
Dr.M.S. Sivakumar Ph.D (Louisiana State Univ.)	Plasticity, Solid Mechanics
Dr.C. Lakshmana Rao, D.Sc (MIT, USA)	Fracture Mechanics Micromechanical Modelling of Materials, Biomaterials, Boundary Element Methods

Senior Scientific Officer, Gr.I

Thomas, G. , M.Sc. (Madras) Experimental Stress Analysis

Technical Officer

Ganesh. V. , M.S. (IIT, Madras) Engineering Mechanics, Stress Analysis, Design of machine elements

3.2 Short-Term Courses / Workshops / Seminars / Symposia/Conferences organized by the Department:

Sl.No.	Co-ordinator(s)	Title of Course/Workshop/Seminar/Symposia/Conference	Period
1.	M.S.Sivakumar	Mechanics of Engg System	10-10-97
2.	M.S.Sivakumar P.Chellappandi (IGCAR)	CEASM (1997)	10-12-97 & 11-12-97
3.	M.S.Sivakumar C.Lakshmana Rao	Appropriate Tech for Rural poor	April (1997)

3.3 Short - Term Courses / Workshops / Seminars / Symposia / Conferences / Training attended by the Faculty in recognized Academic Institutions and Public Sector Units:

S. No.	Name of Faculty	Title	Institution	Duration
1.	Dr. Megha Singh	10th European Conf. Clinical Hemorheology	Portgese Soc. of Hemorheology & Micro-circulation Lisbon, Portugal	29/7- 2/8, (1997)
2.	Dr. k M Patel	9th International Conf. Biomed. Eng. 19 th Annual Intl. Conf. of IEEE - EMBS	National Univ. Singapore IEEE-EMBS	Dec. 3-6, (1997) Oct 30 - Nov 2 (1997)
3.	Dr. M.R.S Reddy	19 th Annual Intl. Conf. of IEEE - EMBS	IEEE-EMBS	Oct 30 - Nov 2 (1997)
4.	Dr. M.S. Siva Kumar Dr. C. Lakshmana Rao	CEASM'97	IGCAR	Dec. 10-11 (1997)

3.4 Special Lecture(s) Delivered by the faculty in other Institutions:

S. No.	Name of Faculty	Topic of Lecture	Venue and Date
1.	Dr. K M Patil	New on- line methods and parameters for analysis of dynamic foot pressure in diabetic neuropathy	Summer School on Computers in Medicine at the School of Instrumentation & Electro. MIT, Chrompet, Chennai - 18th June (1997)
		On Prosothetics and Orthotics	Institute of Armanent Tech, Pune, April 24-25, (1997)
2.	Dr. S Radhakrishnan	Computers in Biomechanics	MIT, Chrompet. Chennai ISTE/AICTE Summer School on 18.6.97.
3.	Dr. V. Ramjee	Flow Visualisation	Gundy Eng. College, Aug. '97
4.	Dr. M.R.S. Reddy	Late Potential Analysis for Predicting ventricular Tachy Cardia. Measuring Systems and Ultra- sound scan	MIT, Chrompet, Chennai - 19.6.97. Technical Teacher Training Institute Taramani, Madras on 24.7.97
	Dr. M.R.S. Reddy	Biomedical Instrumentation and Medical Electronics	Sri Ramachandra Medical College and Research Centre 16,23,30 of Aug. '97
		Analysis of Biomedical signals	Dept. of Mathematics I.I.T, Madras on 22.1.98
5.	Dr.M.S. Sivakumar	Kinematic Harding in Eng. Plasticity	IISc. Bangalore on Nov 18, 97
		Computational Methods in incremental Plasticity	IISc. Bangalore on Nov.18, 97

3.5 Visits Abroad by faculty:

S. No.	Name Of Faculty	Country Visited	Date	Purpose of Visit
1.	Prof.Megha Singh	Nancy, France	June 17 - Dec 8, (1997)	Collaborative research
2.	Prof.K.M. Patil	Chicago, USA	Oct 30 - Nov 2, (1997)	To presenta paper in the 19th Annual International Conf. of the IEEE Engg. in Medicine & Biology Society.
3.	Dr.M.R.S.Reddy	USA	Oct 26 - Nov 15, (1997)	To attend 19th Annual Intl. Conf. of IEEE- EMES
4.	Dr.J.Raamachandran	Canada	1-1-97 -4-3-98	Visiting Professor

4. Design and Development Activities:

4.1 Brief and specific details of Process/Instruments/Equipments/ Software Designed and Developed

Prof.K.M.Patil	Developed software for new on-line diagnostic methods based on foot pressure transforms for diabetic neuropathy.
Prof.Megha Singh	Multi-layer laser reflectance imager- This instrument is based on processing of backscattered radiations and provides images of various layers beneath the skin.
Dr.M.R.S.Reddy	A communicator aid for spastic is under development. The software is developed on PC and implemented for test at the spastic Society of India, Campus, Kotturpuram, Madras.

5. Research and Consultancy:

5.1 Sponsored Projects on hand:

S. No.	Title	Period	Funding Agency	Amount (in lakhs)	Coordinators(s)
1.	Development of Communicator Aid for Spastic	(1997)-99	Ministry	4.92	M.R.S. Reddy and Ranjana Shukla of Elec. Eng.
2.	Studies on the inter-action behaviour multiple supersonic jets	1996-98	ISRO-IITM	5.0	Dr.V.Ramjee and Dr.T.Sundararajan
3.	Numerical modelling of complex flows with heat transfer	3 yrs	NSF	17.39	Dr.K.N. Seetharamu Dr.P.A.Asawatha - Narayana
4.	3-D conduction code temperature distribution using FEM for GT blades	3 yrs	ARDB	6.75	Dr.K.N. Seetharamu Dr.P.A.Asawatha - Narayana
5.	Flow studies of 'S' blade profiles a fully reversible and flow pump turbine for tidal plant	1 yr	IRDF	0.5	Dr.P.A.Asawatha - Narayana Dr.V.Balabaskaran Dr.E.G.Tulapurkara
6.	Fluid Mechanical and combustion aspects of interference effects in spray combustion	3 yrs	ISRO	5.0	Dr.B.H.L. Gowda Dr.R. Natarajan
7.	Studies on the mixing and combustion phenomena in ramjet	3 yrs	ARDB	5.17	Dr.B.H.L. Gowda Dr.R. Natarajan Mr.K.S. Padiyar
8.	Numerical prediction of two-dimensional reacting flows with application	3 yrs	ARDB	5.8	Dr.B.H.L. Gowda Dr.R. Natarajan Dr.V. Ganesan
9.	Augmentation of Vortex formation during discharge of liquids from containers due to disturbances induced in the liquid		ISRO	2.88	Dr.B.H.L.Gowda Dr.S. Swarnamani
10.	Study of the stability of liquid sheets formed by swirl spray nozzles		ISRO	5.5	Dr.M.Balakrishnan

S. No.	Title	Period	Funding Agency	Amount (In lakhs)	Coordinator(s)
11.	Aerodynamics of Helicopter rotor and development of computer code		ARDB	3.0	Dr.M.Balakrishnan Mr. S.C. Rajan Dr.M. Ramakrishna
12.	Active vibration control		ARDB	--	Dr.S.Narayanan Dr.S.Swarnamani
13.	"Sea" For Aerospace structures		ISRO	--	Dr.S.Narayanan Dr.S.Swarnamani

5.2. Industrial Consultancy :

S. No	Name of the Faculty	Title	Industry	Amount (in lakhs)
1.	Dr.V. Ramamurti	Natural frequency of the Torsional Vibration Damper	Vibromech Engineers & Services Limited, Madras-96	0.025
		Vibration Analysis of Turbine	Thiru Arooran Sugars Ltd., Madras -34	0.100
		Dynamic Response of Steam Turbine Bladed Discs	Nuclear Power Corporation, Mumbai-94	0.300
		Strain Measurement on Sugarcane	KCP Sugar and Industries Corporation Ltd., Chennai-6	0.300
		Design Procedure	Sundaram Clayton Ltd., Chennai-50	0.050
		Seismic Test for Customers	Crompton Greaves Ltd., Nasik-10	1.00
		Determination of natural frequencies of Actuators	Sundaram Clayton Ltd., Chennai-50	0.060
		Experimental Determination of Natural Frequency of ID foundation	Vibcons Services P.Ltd., Chennai-4	0.200
		Determination of Natural Frequencies of LP3 and LP5 Bladed Discs using Cyclic Symmetry	Nuclear Power Corpn., Mumbai - 94.	0.500
		Experimental Analysis of Injection Moulding Machines and Vibration Response of the Housing	LTM Limited, Chennai-89	0.400
		Seismic Test on on 420 kV CVT, 8800 (pF)	CG Switchgear and Control, Nasik-10	0.250
		Shock Bump & Vibration Testing and Analysis	Electronics Corporation of India Ltd., Hyderabad-62	0.360

S. No	Name of the Faculty	Title	Industry	Amount (in lakhs)
		Structural Analysis and Design of Space Frames for the Bottling Plant	Civil Engineering Consultancy Consortium, Chennai-90	0.150
		Structural Analysis Space Frames	Civil Engineering Consultancy Consortium, Chennai-90	0.150
		Seismic test on Crompton Make 420 kV CT	Crompton Greaves Ltd., Nasik	0.250
		Vibration test of rack	Electronics Corporation of India Ltd. Hyderabad-62	0.200
		Vibration Measurements	SPIC, Tuticorin-5	0.100
		Seismic Withstand Test on 220 kV Pantograph Isolators	Hivelm Industries, Chennai-32	0.340

5.3 RBIC:

S. No	Name of the Investigator/ Co - Investigator	Title	Number	Amount (in lakhs)
1.	Dr.MRS. Reddy	Development of Ultrasound Mechanical Sector Scanning Transducer	1	6.0
2.	C.Lakshmana Rao M.S. Sivakumar	Thermomechanical Analysis using BEM	1	4.0
3.	M.S. Sivakumar C.Lakshmana Rao	Design of 600 C Steam Turbine	1	4.0

5.4. Retainer Consultancy:

S. No	Name of the Faculty	Title	Industry	Amount (in lakhs)
1.	Dr.V. Ramamurti	-	Nuclear Power Corpn., Mumbai-94	0.120
		-	FCB-KCP Ltd., Chennai-105	0.500

5.5. Exchange programme with other Universities:

Prof.Megha Singh - University of Nancy, Nancy, France

**5.6. Journals Editorial Boards:
(Editors, Secretary, Treasurer, Membership etc)**

S.No.	Name of Faculty	Level	Journal
1.	Megha Singh	Editor	Clinical Hemorheology & Microcirculation
		Vice President	Indian Society of Biomechanics
		Member	World Committee on Biomechanics
2.	K.M. Patil	Member Editorial board	J. of Foot Surgery
		Member Executive Committee	Indian Society of Biomechanics
		Member, Board of Undergraduate & graduate studies for BME	Mangalore University Mangalore and Osmania University Hyderabad
3.	S.Radhakrishnan	Member Executive Committee	Indian Society of Biomechanics
		Subject Expert in Biomechanics	AICTE, Bangalore

5.7. Publications:

a) In Refereed National Journals:

1. Singh, M. and Chacko, S. Monte Carlo Simulation of laser light scattering in mammalian organs. Current Sci. 73, 1015-1019, (1997).
2. Singh, M., Kumaravel, M. and Namasivayam,A. Optical characterization of internal organs in situ by He-Ne laser light reflectometry. IETE Tech. Rev.14, 195-200, (1997).
3. Shanti Jacob and Patil, K.M. "Three dimensional modelling and analysis of stresses in normal and paralysed foot", J. of Foot Surgery, Vol.12, pp. Dec (1997).

b. In Refereed International Journals:

1. Shanthi, S. and Singh, M. Laser reflectance imaging of human organs and comparison with perfusion images. Med.Biol.Eng. Comput. 35, 253-258, (1997).
2. Umrani,J., Prakash,B. and Singh, M. Computerised multiparametre analysis from images of blood flow through frog mesenteric arterial bifurcation. Med. Biol. Eng.Comput.35, 373-380, (1997).

3. Singh, M. and Kumaravel, M. Sequential analysis of erythrocyte aggregation in health and diseases. Clin. Hemorheol. Microcirc.17, 319-324, (1997).
4. Ramakrishnan, S., Sukhaswami, M.B., Patil, K.M. and Eswaran, C, "Sequence data analysis reveals a relationship between LSR2, the recombinant fusion protein mimicing M.Leprac and VIF of Bovine Immunodeficiency Virus (BIV)", J. of Biomolecular Structure and Dynamics, Vol.15, No.3 Dec.(1997), pp 605 to 609.
5. Sivakumar, M.S. "A simple implicit scheme for stress response computations in plasticity models" J.J. computational Mechanics, vol.20, pp.520-529, (1997).

c. In Proceedings National Conference:

1. Manjunath, M. and Singh, M. Computerized analysis of erythrocyte shape changes in health and diseases. Proceedings National Conference on Biomedical Eng. (1997), pp.3.7-3.10.
2. Patil, K.M. , Bhatia, M.M. and Oommen, P.K., "A new index for analysis of dynamic foot pressures in normals and neuropathic feet of leprosy subjects" Proceedings of the National Conference on Advances in Biomedical Engineering, Model College of Engineering, Cochin, 4-6th Sept. (1997), Ab 1-2.
3. Patil, K.M and Shanti Jacob, "Mechanics of tarsal disintegration by stress analysis in a 3D finite element model of the neuropathic feet", Proceedings of the 6th National conference on Biomechanics, Bhopal Jan 14-16, 1998.
4. Deepak Agrawal and Patil, K.M. "New methods of analysis of dynamic foot pressure in diabetic neuropathy and footwear design for prevention of plantar ulcers", Proceedings of the 6th National Conference on Biomechanics, Bhopal, Jan 14-16, 1998.
5. M.S. Holi & S. Radhakrishnan" Stress wave propogation technique for better assessment of Bone fracture healing using External ring Fixator. Proc. of National Conf. on BME, BECON III- 1 to BECON III- 4, (1997)
6. M.S. Holi & S. Radhakrishnan "Non-invasive Assessment of BME disorders" Proc. of 5th National Conf. on BME, 1.21 - 1.23, March'97
7. M.S. Sivakumar and Susma Chacko, "Effect of creep in Foam rubber sheet in the determination of contact pressure"

d. In Proceedings International Conferences:

1. Chacko, S. and Singh, M. Analysis of inhomogeneities in human breast models by laser transillumination and computed tomography. In: Proc. World Cong. Med. Phys & Biomed. Eng.(1997), p117.
2. Singh,M. and Nagaprasad, V. Sequential analysis of aggregation and deformability of erythrocytes during blood storage. In: Proceedings 10th Europ. Conf.on Clin. Hemorheol. (1997), p.47.

3. Chacko, S. and Singh, M. Attenuation co-efficient imaging of in situ organs by laser reflectometry and Monte Carlo simulation. In Proc. Internat. on Biomed. Eng. (1997), pp.396-398.
4. Singh, M., Singh, S.S., Kumaravel, M., Umrani, J. and Namasivayam, A. Analysis of erythrocyte concentration and velocity profiles in mesenteric arterial branching during cardiac cycle. Proc. 9th Internat. Conf. Biomed. Eng. (1997), pp 156-159.
5. Singh, M. Rasia, R.J. Valverde, J.R. and Stoltz, J.F. Measurement of erythrocyte aggregation in health and diseases: Technical development. Proc. 9th Internat. Conf. Biomed. Eng. (1997), pp.351-353.
6. Patil, K.M., Bhat, V.M., Bhatia, M.M., Parivalavan, R., Narayanamurthy, V.B. and Ganesan, V.S., "New methods and parameters for dynamic foot pressure analysis in diabetic neuropathy", Proceedings of the 19th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Chicago, U.S.A. 30th October to Nov 2, (1997), pp 1826-1828.
7. A. Kishen and S. Radhakrishnan "Biomechanics of Dental Implant - A Photoelastic evaluation" - Proc. of IEEE Eng in Medicine & Biol. Conf. 1017 to 1020, (1997), USA.
8. "An Expert system to identify different classes of Diabetic Cardiac Autonomic Neuropathy (DCAN)", T. Srikanth, Stan A. Napper, J. Calloway and M.R.S. Reddy, Proce. of 16th Southern Biomedical Engineering Conference, Mississippi, April 4-6, (1997).
9. "Automatic detection of PUCs using Autoregressive Models" Joseph S. Paul, M.R.S. Reddy and V. Jagadeesh Kumar, 19th Annual International Conf. of IEEE-EMBS, Chicago, Oct 30- Nov 2, (1997)
10. "Dynamics of Cardiac System through unstable periodic orbits", K. Narayanan, R.B. Govindan, M.R.S. Reddy and M.S. Gopinathan, 19th International Conference of IEEE-EMBS, Chicago, Oct 30 to Nov 2, (1997).

6. Distinguished Visitors to the Department:

S. No.	Name of the Visitor and Designation	Date of visit	Purpose of visit (Lecture/Discussion)
1.	Prof. Dr. H. Schmid-Schonbein	23-2-97 to 3-3-97	Research Collaboration
2.	Dr. K.R. Rajagopal Professor, Mech Engg ARM Univ., Texas	23.6.98-25.6.98	Workshop on Continuum Mechanics
3.	Dr. R. Seshadri Prof. of Mech Engg & Dean of Engineering	17.10.98-21.10.98	Discussions on design of high Temp. steam Turbine - MOU between IIT Madras and MON, Canada

4.3 DEPARTMENT OF CHEMICAL ENGINEERING

1. Introduction:

The department of Chemical Engineering was established in 1959. The department is organised into seven research groups with supporting laboratory facilities: The Transfer operations laboratory, the Reaction engineering laboratory, the Process dynamics and control laboratory, the Mechanical operations laboratory, the High polymer engineering laboratory, the Biochemical engineering laboratory and the Environmental engineering laboratory.

2. Academic Programmes:

The department offers Ph.D, M.S., M.Tech and B.Tech Programmes.

2.1 Students on Roll (as on 31.08.(1997))

Programme	I Year	II Year	III Year	IV Year	V Year	Total
B.Tech	53	49	46	50	-	198
M.Tech	38	20	-	-	-	58
M.S	3	6	4	4	-	17
Ph.D	2	7	5	3	19	36
Total	96	82	55	57	19	309

2.2 Number of Scholarship/Fellowship holders:

Programme	Institute Scholarship
M.Tech	50
M.S	14
Ph.D	22
Total	86

2.3 Names of student/scholar attended Conference/Seminar and Symposia abroad/India:

S.No	Name of the Student \ Scholar	Programme	Name of the Conf./ Seminar/Symposia	Date & Venue
1	P.Arthur Felse	Ph.D	Microbes in sustainable development	Dec., 12-14, (1997), New Delhi

2.4 Number of degrees awarded in the last convocation:

Programme	Number
B.Tech	54
M.Tech	16
M.S	7
Ph.D	12
Total	89

3. Faculty and their Development:

3.1. Faculty:

Name and Qualification	Major Area of Specialization
Professors	
M.S. Ananth, Ph.D (Florida)	Thermodynamics, Mathematical Modelling
A.R. Balakrishnan, Ph.D (Waterloo)	Heat Transfer, computer Aided Design
M.Chidambaram, Ph.D (IISc)	Non-Linear Control, Periodic Operation of Reactors
Ch.Durgaprasada Rao, Ph.D (Andhra)	Mathematical Modelling, Computer Process Control
K. Krishnaiah, Ph.D. (IIT Madras) [Head]	Chemical Reactor Analysis and Design, Fluidization
D.V.S.Murthy, Ph.D (IIT Madras)	Particle Technology, Environmental Engineering
N.R. Neelakantan, Ph.D (Swansea)	Polymer Processing, Rheology
T. Panda Ph.D (IIT Delhi)	Biochemical Engineering and Bio Technology, Protoplast Fusion Technology
V.S. Ramachandra Rao, Ph.D (IIT Madras)	Internal Model Control, Adaptive Control
T.K. Ramanujam, Ph.D (IIT Madras)	Environmental Engineering, Particle Technology
S. Subba Rao, Ph.D (Connecticut)	Mass Transfer, Computer Aided Design
Y.B.G. Varma, Ph.D (IIT Madras)	Multiphase Systems, Process Development, Equipment Design
T. Venkatram, Ph.D (IISc)	Process Development, Heat Transfer, Membrane Separation, Equipment Design
Associate Professors	
S.Pushpavanam, Ph.D (Florida)	Modelling and Simulation, Non-linear Dynamics
S. Sankaranarayanan, Ph.D (Queens Land)	Optimum Control of Grinding Circuits and other Mineral Beneficiation Processes
Shankar Narasimhan, Ph.D (North Western)	Computer Aided design
P. Sesha Talpa Sai, Ph.D (IIT Madras)	Chemical Reactor Analysis and Design, Rotary Kilns
T. Swaminathan, Ph.D (IIT Kanpur)	Environmental Management, Biotechnology, Membrane Technology
Assistant Professors	
J. Ravi Prakash Ph.D (IISc)	Mechanics of Granular Materials, Rheology Process Control

Name and Qualification**Major Area of Specialization**

Sachin C Patwardhan, Ph.D (IIT Bombay)

Process Control

Srinivas Jayanti, Ph.D (Imperial)

Computational Fluid Dynamics

Susy Varughese, Ph.D (IIT Kharagpur)

Polymers and Elastomeric Materials

Visiting Faculty

Abhijit Deshpande, Ph.D (Washington)

Polymers and Polymeric Materials.

3.2 Short-term Courses/Workshops/Seminars/Symposia/Conferences Organised:

S.No	Coordinators	Title	Period
1	Dr.D.V.S.Murthy	CBSE on 'Environmental Education'	March (1997)
2	Dr.S.Pushpavanam Dr.S.C.Patwardhan	Advanced Control and Intelligent Monitoring System	Nov (1997)
3	Dr. M.Chidambaram	TAP on 'Recent Trends in FLC'	Aug (1997)
4	Dr.D.V.S.Murthy	TAP on 'Environmental Pollution Control'	Nov (1997)

3.3 Short-term Courses/ Workshops/ Seminars/ Symposia/ Conferences/ Training/ attended by the faculty in recognized academic institutions and public sector units:

S.No	Name of Faculty	Title	Institution	Period / Duration
1	Dr.D.V.S.Murthy	CHEMCON -97	IIT, Delhi	Dec. (1997)
2	Dr.T.Venkataram	CHEMCON - 97	IIT, Delhi	Dec. (1997)
3	Dr.T.Swaminathan	Solid Waste Management	IIT Madras	Nov. (1997)

3.4 Special Lectures delivered by the faculty in other institutions:

S.No.	Name of Faculty	Topic of Lecture	Venue & Date
1	Dr.S.Subba Rao	Mass Transfer	Shanmuga Engg. College, Thanjavur

3.5 Books/ Monographs authored or coauthored:

S.No.	Name(s) of Author(s)	Title of Text Book/Monograph	Publisher
1	Dr.T.Venkataram	Application of Dropwise Condensation in the Distillation Techniques of Desalination (chapter)	EOLSS

**3.6 Fellowships of Academics and Professional Societies:
(Humboldt/INAE/INSA/Hon. FRA, etc.)**

Name of Faculty	Name of the Academy/Professional Society	Level	Year of Admission
Dr.K.Krishnaiah	Indian Institute of Chemical Engineers	Life Member	1996
Dr.D.V.S.Mutrhy	Indian Institute of Chemical Engineers	Member	(1997)
"	Indian Association of Environment Management	Life Member	(1997)
Dr.P.S.T.Sai	Indian Institute of Chemical Engineers	Life Member	1994
Dr.A.R.Balakrishnan	Indian Institute of Chemical Engineers	Member	1990
"	American Institute of Chemical Engineers	Member	1978
"	Indian Society for Heat and Mass Transfer	Member	1989
"	American Society of Mechanical Engineers	Member	1992
Dr.T.Venkataram	Indian Institute of Chemical Engineers	Life Fellow	1993

4. Design and Development Activities:

4.1 Brief and specific details of Process/ Instruments/ Equipment/ Software Designed and Developed:

1. Turbulent Bed Contactor redesigned and fabricated
2. Inverse Fluidized Bed redesigned and fabricated
3. An apparatus for continuous operation of condensation of steam and organic vapours
4. Hybrid UASB
5. Electrocyclone
6. Electrolysis unit

5. Research and Consultancy:

5.1 Sponsored Research Projects on hand

Sl. No.	Title	Period	Funding Agency	Amount (in lakhs)	Coordinator(s)
1.	Studies on treatment of waste water using fluidized bed	(1997) - 2000	CSIR	2.3	Dr.K.Krishnaiah

Sl. No.	Title	Period	Funding Agency	Amount (In lakhs)	Coordinator(s)
2.	Modernisation of Env. Engg. Lab,		MHRD	5.0	Dr.T.K.Ramanujam
3	Heat Pump Assisted Agricultural Dryer	1996-98	MHRD (TDM)	70.0	Dr.A.R.Balakrishnan, Dr.S.S. Murthy and Dr. M.P. Maiya
4.	Vapour absorption heat pump chiller	(1997)-1998	MHRD (TDM)	120.0	Dr.A.R.Balakrishnan, Dr. S.S. Murthy, Dr. M.P. Maiya and Dr. J. Sreenivas
5.	Vapour Compression Heat pump chiller	(1997)-1998	MHRD (TDM)	100.0	Dr.A.R.Balakrishnan, Dr. S.S. Murthy and Dr. M.P. Maiya
6.	Effect of Tube Diameter on Gas-liquid Counter-Flow and Flooding,	1996-99	DST	11.92	Dr. A.R.Balakrishnan and Dr. J. Sreenivas
7.	Influence of Sea Waves Induced Oscillations on the Forced Convective Heat Transfer in a Barge Mounted Heat Exchanger	(1997)-2000	DAE	14.20	Dr. A.R.Balakrishnan and Dr. J. Sreenivas
8.	Identification and Robust Control Design of a waste water pH	(1997)-2000	Volkswage nstiftung, Germany	20.0	Dr. V.S. Ramachandra Rao
9.	Intelligent Processing of materials	(1997)	IGCAR	1.0	Dr. M. Chidambaram
10.	Simulation fluidised bed Jet Mill		DST	21.8	Dr.S.Sankara Narayanan
11.	Simulation of classifier		CSIR	6.9	Dr.S. Sankara Narayanan
12.	Bio Leaching of Molybonite		NHRD	15.0	Dr. S.S. Narayanan, Dr. T.S. Chandra Dr. M.S. Subramanian and Prof. K.A.Natarajan, IISc.
13.	Enzymotor lipolysis for effective utilisation of tropical oil resources	1974 - (1997)	NIBH Japan		Dr.T.Swaminathan
14.	Simulation of multi phase flow processes using CFD techniques	(1997) - 1999	AICTE	6.0	Dr.Sreenivas Jayanti
16.	Model predictive control of non - linear processes	1996 - 1998	AICTE	7.0	Dr. Sachin C. Patwardhan

5.2 Industrial Consultancy:

Sl.No	Name of the Faculty	Title	Industry	Amount (In lakhs)
1.	Dr. K. Krishnaiah	Evaluation CETP'S	TNPCB	4.95
2.	Dr. K.Krishnaiah and Dr.P.S.T. Sai	Design of mixing tank	DRAGACO	0. 2
3.	Dr. K. Krishnaiah and Dr. P.S.T. Sai	Drying of mosquito coil	Godrej Hicare	0.06
4.	Dr.T.K.Ramanujam	About 10 small projects	10 Industries	1.0
	"	Upgradation studies on battery grade	NIOH, TAFE	0.40
	"	Water characterization and assessment	BHEL	0.15
	"	8 Projects	CETP, PCB	10.0
	"	TAMIN-GRAPHITE	TAMIN	22.0
5.	Dr.D.V.S.Murthy and Dr.T.K.Ramanujam	Ambient Air Quality study	S & S and Enterprises	0.40
6.	Dr.D.V.S.Murthy	CETP		0.20
7.	Dr.Ch.D.P. Rao and Dr. A.R. Balakrishnan	Networks	IRU	0.50
8.	Dr.T.Swaminathan	Common effluent treatment plant for terries and textiles industries	PCB	
	"	Stock monitoring		
	"	Risk assessment study		
9.	Dr.Shankar Narasimhan	Development of Neural Network model based control package.	Envision systems	0.15
10.	Dr.S.S. Narayanan	Particle size Analysis	CERI, TANFAC, IFL, HSSI	1.36
	"	Feasibility studies on fluid energy mil	FCIL, ASAM, ISF, DPPL	1.60
11.	Dr.T.Swaminathan	Professional Advice	HAPP, CMWS, UE, SPA	1.1

5.3 Journal Editorial Boards:
(Editors, Secretary, Treasurer, Membership etc.)

S.No.	Name of the Faculty	Level	Journal
1	Dr.A.R.Balakrishnan	Associate Editor	IJHMT
	"	Editor	JEHMT
	"	Member, International Advisory Board	Engineering Science and Technology

5.4 Publications:

(a) In Referred National Journals:

1. R. Chandrasekaran and T. Venkatram, Thermal and Physical properties of some organic liquids: Their condensation patterns on Teflon coated mild steel substracts, Ind. J. Chem. Technol. 4(5), 211-216 , (1997).
2. P. Subbarao, V. Mohan and D.V.S. Murthy, Biodegradation of phenolic waster waters, Ind. J. Chem. Technol., 4, 45-48, (1997).
3. P. Sudhakar, B.C. Reddy and D.V.S. Murthy, Solid waste management of iron ore fines through cold bond pelletizations, J. Env. & Pollution 4(2), 109-113, (1997).
4. S. Sujatha and D.V.S. Murthy, Computer aided design of gravity sedimentation tank J. Env. & Pollution 4(2), 115-120, (1997).
5. S.S. Narayanan, Simulation of Industrial grinding circuits for design, optimisation and control, Trans. Ind. Inst. Metals, 49, 67-72, (1997).
6. G.P. Reddy and M. Chidambaram, Model reference Nonlinear control of bioreactors with input multiplicities. Indian Chem. Engr., 39, T98-102, (1997).
7. C. Climent valentine and M. Chidambaram, Robust PI & PID control of stable first order plus time delay systems Indian Chem. Engr., 39, 9-14, (1997).

(b) In Referred International Journals:

1. P.M. Satya Sai, J. Ahmed and K. Krishnaiah, Production of Activated Carbon from Coconut shell char in a Fluidized Bed Reactor, Ind. Eng. Chem. Res. 36, 3625 - 3630 ((1997)).
2. K.H. Radwan and T.K. Ramanujam, Influence of COD in NH₃-N Ratio ... RBC, Bio Process Engg. 16,77-82, (1997).

3. P. Sujana and T.K. Ramanujam, Studies on Sago ... Contactor, *Bioprocess Engg.*, 16, 163 - 168, (1997).
4. K.H. Radwan and T.K. Ramanjuam, Studies on Organic ... RBC, *Bioprocess Engg.*, 16, 219-224, (1997).
5. R. Venkataraman, T.K. Ramanujam and S. Jagannath, Identification of Micro Organisms in ... Contactors, *Bioprocess Engg.*, 17, 317-322, 1977.
6. R.J. Benjamin and A.R. Balakrishnan, Nucleation Site Density in Pool Boiling of Saturated Pure liquids: Effect of Surface Microroughness and Surface and Liquid Physical Properties, *Experimental Thermal and Fluid Science*, 15, 32-42, 1996.
7. S. Madhusudan Rao and A.R. Balakrishnan, Analysis of Pool Boiling over Porous Surfaces, *Warme and Stoffubertragung* 32, 463-469, (1997).
8. S. Madhusudana Rao and A.R. Balakrishnan, Enhancement of Subcooled Flow boiling Heat Transfer on Cylinders using Interferences Sleeves, *Journal of Energy and Heat Transfer*, 4, 203-215, (1997).
9. R. Balachandran and M. Chidambaram, Decentralized Control of more crude distillation towers, *Computers & Chemical Engg.*, 21, N8, 783-786, (1997).
10. C. Clement Valentine and M. Chidambaram, PID Control of unstable time delay systems, *Chemical Engg. Communication*, 162, 63-74, (1997).
11. R. Suresh and M. Chidambaram, Periodic operation of well mixed enzyme reactors with steady state multiplicities using relay feedback, *Bioprocess Engg.*, 16, 225-227, (1997).
12. B.C. Reddy, M. Chidambaram and D.M.K. Al-Gobast, Design of Robust SISO PI controllers for a MSF desalination plant, *Desalination*, 109, 109-119, (1997).
13. B.C. Reddy, M. Chidambaram and D.M.K. Al-Gobast, Design of centralized controller for a MSF desalination plant, *Desalination*, 109, 27-38, (1997).
14. R. Srividya and M. Chidambaram, On -line controllers tuning for integrate plus delay system, *Process control & quality*, 9, 59-66, (1997).
15. J. Govindhakannan and M. Chidambaram, Multivariable PI control of unstable systems, *Process control & Quality*, 10, 319-329, (1997).
16. M. Chidambaram, Control of unstable systems: A review, *Jl of Energy, Heat & Mass Transfer*, 19, 49-56, (1997).
17. V. Ramesh Kumar, K.S. Balaraman, V.S. Ramachandra Rao and M.S. Ananth, Modelling of Hydrotreating process in a Trickle-Bed Reactor, *Petroleum Science & Technology*, 15/3-4, 283-295, (1997)

18. Ramakrishna Sen and T. Swaminathan, Application of surface methodology to evaluate the optimum environmental conditions for the enhanced production of surfactants, *Applied Microbiology Biotechnology*, 47, 358-363, (1997).
19. S.Kar, T. Swaminathan and A. Baradarajan, Biodegradation of phenol and cresol isomer mixtures by *Arthobacter*, *World JI of Microbiology and Biotechnology* 7, 303-311, (1997)
20. K. Murali Manoj and T. Swaminathan, Ester hydrolysis in reversed micelles using lipase, *Bioprocess Engg.* 17, 185, (1997).
21. P.S.T. Sai, Liquid saturaron in con concurrent gas - liquid down flow through packed beds, *Bio process Engg.*, 16, 283-287, (1997).
22. B.J. Naidu, Bhallamudi S Murthy and S. Narasimhan, GVF Computation in Tree Type Channel Networks, *J. Hydr. Engrg.. ASCE*, 123, 700-708, (1997).
23. K.V.K.Varma, S. Narasimhan and Bhallamudi S Murthy, Optimal Design of Water Distribution Systems using an NLP Method, *J. Envir. Engrg., ASCE*, 123, 381-388, (1997).
24. S.Narasimhan, Recent advances in Computer-Aided Process Design, *J. heat and Mass transfer*, 19, 115-125, (1997).
25. J. Ravi Prakash, The treatment of hydrodynamic interaction in bead-spring models for dilute polymer solutions, *J. Energy, Heat and Mass Transfer*, 19, 57-68, (1997).
26. J. Ravi Prakash and H.C. DHinger, Universal Viscometric Functions for dilute polymer solutions, *J. non - Newtonian Fluid Mech*, 71, 245 - 272, (1997).
27. S. Jayanti and G.F. Hewitt, Hydrodynamics and heat transfer of wavy thin films, *Int. J. Heat and Mass Transfer*, 40, 179 - 190, (1997).
28. S. Jayanti and G.F. Hewitt, Hydrodynamics and heat transfer in waves annular gas, liquid flow. A computational fluid dynamics study, *Int. J. Heat and Mass transfer*, 40, 2445 - 2460, (1997).

(c) In Proceedings of National Conferences:

1. K. Srividya, T. Venkatram and T. Panda, Effect of Protease on Chitinase Synthesis by *Trichoderma Harrivanem*, (Abstract) 38th Annual meeting of the Association of Microbiologists of India - Conf. on Microbes in Sustainable Development. Organised by Delhi Unit II of AMI, Univ. of Delhi Dec. 12-14, (1997)
2. T.S. Venkateswararao, C. Srinivasa Prasad and T. Venkatram, Desalination of Brackish Sea waters by freeze separation process, *Proc. II Che. Golden Jubilee Congress, Vol.II*, 1147 - 1153 ((1997)) Dec. 14-18, IIT, New Delhi.

3. P.S.T.Sai, Enrichment of Titanium Dioxide in Red Mud, National symposium on Technology and Management of Industrial wastes and pollutants, Wallair, (1997).

(d) In Proceedings of international Conferences:

1. R. Chandrasekharan and T. Venkatram, Condensation of Organic Vapours on Tefron coated mild steel, Heat Transfer - Baltimore (USA) AICHE Symp. Ser 93#314, 221-226 ((1997)) Aug. 10-12, (1997) Baltimore, Maryland (USA)
2. S.Jayanti and G.Sreenivas Rao, On pressure gradient maximum in horizontal oil-water -ait flow: Proc. of 7th Asian Conference of Fluid Mechanics, Vol. 2, pp637-640, Chennai , Dec. 8-12, (1997).
3. R.K.C.Mehta and S.Narasimhan, Evolutionary Synthesis of Heat Exchanger Networks, Proc. of Third ISHMT-ASME Heat and Mass Transfer Conference, Kanpur, 765-769, (1997).

6 Distinguished Visitors to the Department:

S.No.	Name of the Visitor and Designation	Date of Visit	Purpose of visit
1	Dr. G.P.Rangalah Associate Professor NSU, Singapore	25-11-97	Lecture
2	Prof. J.B.Joshi UDCT, Bombay	09-12-97	Lecture
3	Dr.R.P.Gupta, Univ. Of Newcastle, Australla	05-02-1998	Lecture
4	Prof. C.K.Sananthan Univ. Of Illinois, USA	03-03-98	Lecture

4.4 DEPARTMENT OF CHEMISTRY

1. Introduction:

The Department of Chemistry started functioning as an independent Department in 1961, two years after the establishment of the Institute. In addition to offering instructions at the B.Tech and select M.Tech levels the Department offers 4 semester M.Sc. programme and Ph.D. programme. The major areas of teaching at post-graduate level are Inorganic Chemistry including Analytical Chemistry, Organic Chemistry including Biochemistry, Physical Chemistry and Theoretical Chemistry. The specialisations in Ph.D. programmes include:

Analytical Chemistry	Electrochemistry
Nuclear Chemistry	Photochemistry
Chemistry of Main Group Elements	Polymer Chemistry
Solid State Chemistry	Spectroscopy
Coordination and Bioinorganic Chemistry	Theoretical & Structural Chemistry
Biochemistry & Biotechnology	Synthetic Organic Chemistry
Homogeneous & Heterogeneous Catalysis	Bioorganic Chemistry

2. Academic Programmes:

2.2 Students on Roll (as on 30th Sept. 1997):

Programme	I Year	II Year	III Year	IV Year	V Year	Total
M.Sc	24	22	-	-	-	46
Ph.D	17	18	13	15	43	106
Total	41	40	13	15	43	152

2.3 Number of Scholarship/ Fellowship holders (as on 30th Sept. 1997):

Programme	Institute	Scholarship	Total
Ph.D	59	32	91

2.4 Number of Degree Awarded in the last convocation:

Programme	Number
M.Sc	29
Ph.D	27
Total	46

3. Faculty and their area of specialization:

Faculty Name & Qualification	Major area of Specialisation (Maximum 3)
Professors	
K.K. Balasubramanian, Ph.D. (Madras)	Synthetic & Mechanistic Organic Chemistry
N. Balasubramanian, Ph.D. (IITM)	Analytical & Environmental Chemistry
T.S. Chandra, Ph.D. (IISc, B'lore)	Biochemistry & Biotechnology
M.S. Gopinathan, Ph.D. (IITK) [Head]	Quantum & Theoretical Chemistry, Molecular Spectroscopy, Nonlinear Dynamics & Chaos
K. Lalitha, Ph.D. (Mysore)	Biochemistry & Biotechnology
R. Ramaswamy, Ph.D. (IITM)	Electrochemistry, Oscillatory Reactions
M.R. Udupa, Ph.D. (IITMadras)	Coordination Chemistry, Solid State Chemistry
S. Vancheesan, Ph.D. (IITM)	Homogeneous Catalysis, Organometallics
C. S. Venkatachalam, Ph.D. (IITM)	Electrochemistry, Mechanism of Electrode Reactions
B. Viswanathan, Ph.D. (IITM)	Surface Science, Materials Science
Associate Professors	
A.K. Misra, Ph.D. (IITK)	Photophysics, Photochemistry
S.Sankararaman, Ph.D. (Victoria, Canada)	Synthetic and Physical Organic Chemistry, Organic Photochemistry
M.N.SudheendraRao, Ph.D. (IISc, B'lore)	Inorganic Heterocycles, Chemistry of Main Group Elements
G. Sundararajan, Ph.D. (Rutgers, USA)	Organometallics, Polymer Synthesis, Asymmetric Synthesis
T.K. Varadarajan, Ph.D. (IITM)	Heterogeneous Catalysis
J.V. Varadaraju, Ph.D. (IISc, B'lore) Joint with MSRC	Solid State Chemistry, Materials Science
R.P. Viswanath, Ph.D. (IITM)	Heterogeneous Catalysis
Assistant Professors	
Archita Patnaik, Ph.D. (BHU, Varanasi)	Nuclear Spectroscopy, Ion Implantation
P. Bhyrappa, Ph.D. (IISc, B'lore)	Inorganic Chemistry
R. Dhamodharan, Ph.D. (Mass, USA)	Polymer Surface Structure and Properties, Polymer Adsorption

Faculty Name & Qualification	Major area of Specialisation (Maximum 3)
Indrapal Singh Aiden, Ph.D. (Pune)	Synthetic Organic Chemistry, Carbohydrate Chemistry
D. Loganathan, Ph.D. (IITB)	Synthetic Organic Chemistry, Carbohydrate Chemistry
K. Mangala Sunder, Ph.D. (McGill, Canada)	Theoretical Chemistry, Spectroscopy, Chemical Reaction Dynamics
N.Narasimha Murthy, Ph.D. (IISc, B'lore)	Bio-inorganic Chemistry
T. Pradeep, Ph.D. (IISc, B'lore) Joint with MSRC	Chemical Physics, Spectroscopy
G. Ranga Rao, Ph.D. (IISc, B'lore)	Heterogeneous Catalysis, Surface Science
M.V. Sangaranarayanan, Ph.D. (IISc, B'lore)	Electrochemistry, Mathematical Modelling
M.S. Subramanian, Ph.D. (IITM)	Radioanalytical Chemistry
N. Sundaram, Ph.D. (IITM)	Organic Mass Spectrometry, Organic Synthesis, Reaction Mechanism
K. Vidyasagar, Ph.D. (IISc, B'lore)	Solid State Chemistry

Emeritus Scientists (CSIR)

C. Kalidas	Electrochemistry
D.V. Ramana	Organic Chemistry
Dr. R. Ramaswamy	During the year under review the following faculty member retired after superannuation.

3.2 Short-Term Courses/Workshops/Seminars/Symposia/Conferences organised by the Department:

S.No	Co-ordinator(s)	Title of Workshop/Seminar/Symposium/Conference	Period
1.	T.S. Chandra M.R. Udupa	Instrumentation Techniques Relevant Pharmaceutical Sciences	Oct.17-18, 1997
2.	K. Mangala Sunder M.R. Udupa	Chemists' Meet '97 (In-House seminar, ChemQuiz '97)	Dec.4 - 6, 1997
3.	K. Vidyasagar M.R. Udupa	Solid State Materials Synthesis, Structure, Properties and Applications	Dec. 8-19, 1997

S.No	Co-ordinator(s)	Title of Workshop/Seminar/Symposium/Conference	Period
4.	R. Dhamodharan M. R. Udupa	National Seminar on Advances in Science and Technology of Polymeric Materials	Dec 19-20, 1997
5.	S. Vancheesan M.R. Udupa	National Seminar on Metalloorganics	Feb 20-21, 1998
6.	M.R. Udupa	Seminar on Chemistry: Past, Present Future (to commemorate the 50th year of Independence)	Mar 21, 1998

3.3 Short-term Courses/Workshop/seminar/Symposia/Conferences/ Training attended by the Faculty in recognised Academic Institutions and Public Sector Units:

S.No.	Name of Faculty	Institution	Period/Duration
1.	M.S. Gopinathan	IISc. Bangalore	Feb.5-11, 1998
2.	M.R. Udupa	Seminar on Safe Drinking Water in 2000 and beyond (Organized by Eureka Forbes)	March 3, 1998
3.	B.Viswanathan	National Seminar - Workshop on Catalysis RRL, Trivandrum	Dec.11-13, 1997
		IPCAT I - Capetown	Jan 1998
4.	K. K.Balasubramanian	Clay catalysed Ferrier rearrangement Chemists Meet 1997, IIT Madras	Dec.4-6, 1997
		An expeditious route to alkyl 2,3-unsaturated Glycopyranosides - catalysis by Lithium Tetrafluoroborate in acetonitrile Chemists Meet 1997, IIT Madras	-do-
		A novel cathodic cyclisation of Cinnamoyl anilides in DMF 8th National Conference of Electrochemists CECRI, Karaikudi	Jan28-30, 1998
		Behaviour of Ferrier systems in LPDE medium synthesis of 2 deoxy-galactocides 9th European Carbohydrate Symposium at Utrecht, Netherlands	July 6-11, 1997
		Lithium tetrafluoroborate catalysed Ferrier rearrangement of Tri-O-acetyl-D-Galactal-Facile synthesis of alkyl 2,3-unsaturated Glycopyranosides 215th ACS meeting at Dallas, Texas, USA	Mar.29 - Apl. 2 1997

S.No.	Name of Faculty	Institution	Period/Duration
	K. K. Balasubramanian	Ferrier rearrangement of Tri-O-acetyl-D-Galactal using montmorillonite (clay) as catalyst 215th ACS meeting at Dallas, USA	Mar.29-Apr.2, 1997
		Aromatic (1,3)-claisen rearrangement in Lithium perchlorate/Nitromethane medium 215th ACS meeting at Dallas, USA	-do-
5.	G. Sundararajan	National Symposium on Metallo-organic Chemistry, Univ. of Gorakhpur	Sep 26-28, 1998
		National Seminar on Advances in Science and Technology of Polymeric Materials, CLRI, Madras	Dec 19-20, 1997
6.	Archita Patnaik	Radioactive Ion-Beams, production & Applications, IUC-DAEF, Calcutta	Jan 15-17, 1997
		Lasers in Chemistry, CAT-Indore	Oct 11-13, 1997
		Low Energy Accelerators in Materials Research, IGCAR, Kalpakkam	June 19, 1997
7.	D. Loganathan	XII Carbohydrate Conference Lucknow University, Lucknow	Nov 20-21, 1997
8.	K. Mangala Sunder	National Symposium on Magnetic Resonance, IISc., Bangalore	Feb. 4-7, 1998
9.	G. Ranga Rao	Silver Jubilee Symposium of Catalysis Society of India, Indian Institute of Petroleum	April 2-4, 1997
		Redox nature of ceria and ceria-based materials in catalysis, RRL, Trivanthapuram. National Workshop on Catalysis.	Dec.11-13, 1997

3.4 Special lectures delivered by the faculty in other Institutions:

S.No.	Name of Faculty	Topic of Lecture	Venue & Date
1.	M.S. Gopinathan	Atomic & Molecular Structure	M.G. University Kottayam, Dec.1997
2.	K.K. Balasubramanian	Organic Reactions in Lithium Perchlorate/diethylether medium (LPDE)	Banaras Hindu Univ. Varanasi Apr. 17, 1997

S.No.	Name of Faculty	Topic of Lecture	Venue & Date
	K.K. Balasubramanian	Lithium perchlorate perchlorate / diethyl ether (LPDE) mediated transformations	Univ. of Bombay October 9, 1997
	-do-	Tri-n-butyltinhydride mediated radical cyclisations	NCL, Pune, Oct.7,1997
	-do-	Bio-organic and synthetic organic chemistry by Royal Chemical Society	IACS, Jadavpur Dec.4, 1997
	-do-	Catalysis of Aromatic claisen rearrangements Claisen rearrangement of aryl allenyl/methyl ether and aryl prenyl ethers	Jadavpur Univ. Decem.5, 1997
	-do-	Some aspects of the chemistry of aryl allenyl methyl ethers and aryl allenyl method anilines.	REC, Trichy Oct.25, 1997
	-do-	Importance of stereochemistry	Meenakshi College Nov.1997
	-do-	Catalysis by Lithium perchlorate in organic solvents: some selected transformations	Max Plank Instt . fur polymer Forschung Germany May 27, 1997
	-do-	Catalysis by Lithium perchlorate in organic solvents: some selected transformations	Univ. of Karsruhe Karsruhe, Germany Jun.2, 1997
	-do-	Anhydrous lithium perchlorate in diethyl ether - a versatile medium and its application to 1,3-claisen rearrangements, Ferrier rearrangement of N-aryl-3-pyrolene synthesis	Instt.fur organische Chemie, Aachen Germany June 19, 1997
	-do-	Some aspects of the chemistry of Glycols of 2-formyl glycols	Universitat Konstanz, Germany June 16, 1997
	-do-	Radical cyclisation approaches to Triquinones of Pterocarpans	Universitat. Wurzburg Germany June 25, 1997
	-do-	Lithium perchlorate in diethyl ether catalysed transformations-application to 1.3-formal sigmatropic shifts, Ferrier rearrangements and 3-Flavanones	Univ. of Nijmegen July 14, 1997
		The radical cyclisation approach to triquinones and pterocarpans	-do-

S.No.	Name of Faculty	Topic of Lecture	Venue & Date
	-do-	Radical cyclisation approach to triquinones and Tricyclic enones and pterocarpans	Lab.for Org.chy ETH, Zurich Switzerland July 18, 1997
	-do-	Novel routes to benzopyrans	BASF Ludwigschafen Germany July 28, 1997
	-do-	Radical cyclisation approaches triquinones tricyclic enones pterocarpans	Instt.fur Org.chy Braunschweig, Germany June 10, 1997
	-do-	Radical cyclisation approaches to triquinones tricyclic enones and pterocarpans	Univ. of Renne France July 5, 1997
	-do-	5th Dr.Sukdev Endowment Lecture	NCL. Pune Oct.7, 1997
	-do-	Dr. R.C.Shah memorial Lectureship	Univ. of Bombay Oct.9, 1997
3.	T.S. Chandra	Nutritive aspects of mellets	Pachalyappa College, Sept. 97
	-do-	Women in Science	Madras Christian College, Nov.97
4.	S. Vancheesan	Organometallic Chemistry	A C College, Sep. 1997
5.	M.N.Sudheendra Rao	Modern trends in Main Group Chemistry	IIT Delhi, Mar.2-4, 1997
	-do-	Exposure to Excellence	REC Trichy Oocto. 25,1997
	-do-	Modern Trends in Inorg.chemistry	IIT Kanpur Dec. 4-6, 97
	-do-	Refresher Course for Teachers	Gulbarga Univ, Dec. 20, 97
	-do-	-do-	Cochin Univ. Jan 24-25, 1997
	-do-	-do-	Bharatiyar Univ., Mar.26,1997
	-do-	-do-	Poona Univ., Sep. 9.-10, 97
	-do-	Refresher Course for Teachers	Kuvempu Univ. Nov. 27-28, 1997
	-do-	-do-	Meenakshi College, Feb.11, 1997

S.No.	Name of Faculty	Topic of Lecture	Venue & Date
6.	G. Sundararajan	Soluble Complexes for Metathesis Polymerisation	Univ. of Wuppertal June 9, 1997
	-do-	-do-	Univ. of Bayreuth, June 18, 1997
	-do-	-do-	Technical Univ. of Munich, June 19, 97
	-do-	Triblock Copolymers as additives in Composite Propellants	German Aerospace Lab, Lampoldshusen
	-do-	-do-	Elf Autochem, Paris July 4, 1997
7.	R.P. Viswanath	Photocatalysis & its application	Univ. of Pune Oct. 2, 1997
		Surface chemistry of Oxide supported catalysts	NCL, Pune Oct. 21, 1997
8.	Archita Patnaik	Recoil Ion Implantation into fullerenes, pristine and doped polymers	Institute of Physics Bhubaneswar Dec. 15, 1997
9.	Indrapal Singh Aidhen	C-Glycosides of neuraminic acid	IISc., Bangalore March 1997
	-do-	Synthetic efforts towards C-Glycoside of neurominic acid	NOST Symposium April 1998 Lonawala
	-do-	Synthetic methodology for C-Glycoside	Univ. of Madras A C College Campus Jan 1997
10.	D. Loganathan	At the Interface of Chemistry and Biology: Sugar Coated opportunities in Carbohydrate Research	Loyola College Jan 24, 1997
	-do-	Enzymes in Organic Synthesis: Applications in Glycobiology	Univ. of Madras A C College Campus
		Glycosidase catalysed oligosaccharide synthesis: Development of a Biomimetic approach.	A C College, Univ. of Madras
11.	K. Mangala Sunder	Theory of Dyck sequences using irreducible spherical Tensors	NCL Pune Dec. 26, 1997
	-do-	Molecular Spectroscopy modern Research I Introduction to the Ro-vibrational spectroscopy of van der Waals complexes	MG Univ. Jan 3-5, 1998

S.No.	Name of Faculty	Topic of Lecture	Venue & Date
12.	K. Vidyasagar	Hydrothermal synthesis of new tellurites	IIT Delhi Mar. 5, 1997
	-do-	Solid State synthesis	Univ. of Pune Aug. 1997
	-do-	Solid State structure	-do-

3.5 Visits abroad by faculty:

S.No.	Name of Faculty	Country Visited	Date	Purpose of Visit
1.	K.K. Balasubramanian	Germany, Netherland Switzerland, France	May-August 1997	Reinvitation Programme of Humboldt Foundation
2.	S. Sankararaman	Germany	May-July 1997	DAAD Fellowship
3.	G. Sundararajan	Univ. of Humburg Germany	May -June 1997	Research Project
4.	D. Loganathan	U S A	May-June 1997	Research
5.	M.V.Sangara- narayanan	Canada	May 1997	Conference

3.6 Honours and Awards

Sl. No.	Name of Faculty	Name of Award/Honour	Awarded by	Awarded for	Date
1.	B.Viswanathan	MRSI medal	Materials Research Soc. of India Lions Club	Research on materials	Feb.98
2.	T.S. Chandra	Best Teacher Award		Teachers Day	Sept 97
3.	S. Sankararaman	Alexander Von Humboldt Fellowship	Collaborative Research In Germany		June 97

3.7 Books/Monographs authored or co-authored:

Sl. No.	Name(s) of Author(s)	Title of Text Book/Monograph	Publisher
1.	R. Narayanan & B.Viswanathan	Chemical & Electrochemical Energy Systems	Orient Longman
2.	B. Viswanathan	Electrochemistry	S.Viswanathan & Co
3.	G. Sundararajan	Macromolecules-New Frontiers ed.K.S.V.Srinivasan	Allied Publisher

**3.8 Fellowships of Academic and Professional Societies:
(humboldt / NAE .INSA / Hon.FRA, etc)**

Name of Faculty	Name of the Academy/ Professional Society	Level	Year of Admission
1. R. Ramaswamy	Society for the Advancement of Electrochemical Science and Technology (SAEST)	Life Member	
2. R.P. Viswanath	INSA Visiting Fellow		
3. S. Sankararaman	AvH Foundation	Fellow	1997
4. Indrapal Singh Aidhen	AvH foundation	Fellow	1992
5. K.Mangala Sunder	Nuclear Magnetic Resonance Society (India)	Life Member	1998

4. Design and Development Activities:

- G. Sundararajan
aluminoxane
Designed facilities for Metallocene catalysed
Polymerization of α - olefin with Methyl
- Archita Patnaik
Development of a positron life Time Spectrometer
- G. Ranga Rao
A glass/quartz cell is being designed to carryout
inside surface studies using IR / Raman

**4.1 Brief and specific details of Process / Instalment / Equipment
/Software Designed and Developed**

- K.K.Balasubramanian
Developed and process for the manufacture of
DL-2-aminobutanol which is an intermediate in
the preparation of ethanobutanol which is used
in the treatment of TB/ This was undertaken
for the Medch Chemical and Pharamaceutical
Limited, Secunderabad
- Archita Patnaik
The Time-resolution of the spectrometer was fine-
tuned by calibrating and fabricating the electronic
circuits.

5. Research and Consultancy:

5.1 Sponsored Projects on hand :

S.No	Title	Period	Funding Agency	Amount (in Lakhs)	Co-ordinator(s)
1.	Dynamical analysis of chaos and its possible control in experimental time series	3 years	DST	10.00	Dr. M.S.Gopinathan
2.	Surface and catalytic Modification of supported Metal System.. A molecular level approach	3 years	DAE	6.00	Dr. B. Viswanathan
3.	Riboflavin production for animal feed supplement Tech. for enhancement of Bio-gas	3 years	DBT	33.9	Dr. M.S. Ananth & Dr. T.S. Chandra
4.	Generation at low temperature via chemical Microbial Route	3 years	MNES	11.5	Dr. T.S. Chandra
5.	Application of metal carbonyls as catalysts	3 years	DST	8.00	Dr. S. Vancheesan
6.	Novel P-Oxides..Wastes	3 years	BRNS, DAE	5.54	Dr. M.N.S. Rao & Dr. P.R.V. Rao, IGCAR
7.	Studies on the Catalytic, properties of supported systems for Alkane dehydrogenation Reactions	3 years	CSIR	9.31	Dr. R.P.Viswanath & Dr. B.Viswanathan
8.	Development of Fluorescence based Fibre Optical sensors for monitoring pollutants in individual effluents	3 years	DAE	7.66	Dr. A.K. Mishra
9.	Development of Fluorescence based Analytical Techniques with PAH.	3 years	CSIR	5.00	Dr. A.K. Mishra
10.	Stereoselective substitution of Acetals in Lithium Perchlorate Diethyl Ether Medium	3 years	CSIR	5.33	Dr.S.Sankararaman
11.	Soluble & Tunable Catalysts for synthesis of Novel Polymers	2 years	DST	24.00	Dr. G. Sundararajan

S.No	Title	Period	Funding Agency	Amount (in Lakhs)	Co-ordinator(s)
12.	Asymmetric Catalysis by chiral Lewis acids containing Cn-Symmetric ligands	3 years	CSIR	5.50	Dr. G. Sundararajan
13.	Application of Nucl. infra red tech. to Microanalysis	4 years	IUC-DAEF Indore	2.23	Dr. Archita Patnaik
14.	Chem. Mod. Fullerenes	3 years Calcutta	IUC-DAE	1.78	Dr. Archita Patnaik
15.	Positions as probe in the Determination of Micro-structure property relationship in Polymers	3 years	DST	17.12	-do-
16.	The Dynamics of Nuclear Spin systems in nuclear magnetic and quadrupole resonance	3 years	CSIR	4.25	Dr. K. Mangalasunder
17.	Extraction studies on U & Th using substituted asides	3 years	BRNS, DAE, IGCAR	5.2	Dr. M.S. Subramanian & Dr. P.R. Vasudeva Rao
18.	A simple approach towards C-aryl Glycoside	3 years	CSIR	6.5	Dr. Indrapal Singh Aiden
19.	Modelling Electro-catalysis	3.5 years	DST	4.59	Dr. M.V. Sangaranarayanan
20.	Glycosidase Catalysed digosacchride synthesis	3 years	DST	10.05	Dr. D. Loganathan
21.	Novel low temperature methods to synthesize new metastable and known complexed metal oxides	3 years	DST	4.08	Dr. K. Vidyasagar
22.	Novel low temperature synthesis and structures of new polychalcogenide compounds	3 years	CSIR	5.01	Dr. K. Vidyasagar

5.2 Industrial Consultancy :

S.No	Name of the Faculty	Title	Industry	Amount (In Lakhs)
1.	Dr. T.S. Chandra	Water barlercology	Eureka Forbes	0.10
2.	Dr. G. Sundararajan	Analysis of Rubber / Tire Sanplex	Rane Brakes Ltd	0.10
3.	-do-	Analysis of polishing material for Granites	Katti Meera Ltd	0.10

5.3 RBIC (only on-going)

S.No	Name of the Investigator/ Co-investigator	Title	Number	Amount (In Lakhs)
1.	K.K. Balasubramanian	Chief Investigator Sponsored by Medch Chemicals & Pharmaceutical Ltd, Secunderabad	RB 9596/ CHY004 MCPP-KKBA	1.91

5.4 Retainer Consultancy (only on-going)

S.No	Name of the Faculty	Title	Industry	Amount (In Lakhs)
1.	K..K. Balasubramanian	Consultant	Shasun Chemicals & Drugs Madras	0.30
	-do-	-do-	Anjan Drugs, Madras	0.18

5.5 Journal Editorial Boards: (Editors, Society, Treasurer, Membership etc)

S.No	Name of the Faculty	Level	Journal
1.	B. Viswanathan	Editorial Board member	Applied Catalysis

5.6 Publications:

(a) In Refereed National Journals

1. Gopinathan , Detective of determinism and Randomness in Time series: a Method based on phase space overlap of attractors, Pramana, Journal of Physics, 49, No.6, 581-590 ((1997))

2. N.Geetha and K.K. Balasubramanian, Trifluoroacetic acid catalysed (1,3)-rearrangement of aryl 2-halocyclohexenyl-methyl ethers, *Tetrahedron Letters*, 1417, 1998
3. Sriram, S. Srinivasan, K.C. Santhosh and K.K. Balasubramanian, 6-Methyl-3-phrythiochranon-4-one and 6-methoxy -3 - phenythio-chroman-4-one configurational preference of the phenyl thiogroup at the third position due to remote substitution, *Acta crystallographic section C*, 1073-1076, 1998
4. R.Sumathi, K.Johnson, B.Viswanathan and T.K.Varadarajan, Partial oxidation of benzyl alcohol on ABO₃ (A=Ba, B = Pb,Bi and Cu) type perovskites, *Indian J Chem.*, 36A,874-878((1997)).
5. C.Srinivasan, B.Viswanathan, S.A.R. Mulla and V.R.Choudhary, Oxidative coupling of methane on LnBa₂Cu₃O₇ (Ln=Sm,Dy and Y) perovskites, *Indian J Chemistry*, 36A,926-930 ((1997)).
6. K.Johnson, B.Viswanathan, and T.K.Varadarajan, Alkylation of aromatic substrates with methanol on heteropoly oxometallates, *Indian J.Chemistry*,36B,246-251 ((1997)).
7. Athilakshmi, O.Olaofe and B.Viswanathan, Kinetics of benzyl alcohol reaction on heteropoly molybdate and salts, *Indian J Chemistry*, 36A,332-334((1997)).
8. Pandurangappa and B. Balasubramanian, Chemical amplification method for the determination of atmospheric sulphur dioxide, *Chem.Anal*, 42, 681-689, (1997).
9. Ilavarasi, M.N.S. Rao, M.R. Udupa - Synthesis and Characterization of Copper (II) complexes of adinine and amino acids *Proc.Ind.Acad.Sci.(Chem.Sci)*, 109, 79 ((1997))
10. Srinivas, G.S. Murthy and M.N.S. Rao, X - ray structural characterization of dicyclohexyl-ammonium chloride and its conversion to bromo-iodo-and hexafluorophosphate . derivatives , J. Gopalakrishnan, *Indian J. Chem.* 36B, 47, (1997).
11. Ilavarasi, M.N.S. Rao, and M.R. Udupa, Synthesis of copper (II) adenine complexes and their reactivity towards amino acids, *Proc.Indian Acad.Sci (Chem.Sci)* 109, 79, (1997)
12. Sridevi and R. Ramaswamy, A dual phase oscillatory behaviour in Belousor Zhabotiusky system with vanalium as the substrate, *Int.J.Chem.Kinet.*, 29, xxx, ((1997))
13. Jayalakshmi and R. Ramaswamy, Influence of working electrodes in Belousor Zhabotusky oscillatory system, *Can.J.Chem.*, 75, 547-558, ((1997))
14. Jayalakshmi, R. Ramaswamy, Participation of oxygen in the catalysed and uncatalysed bromate oscillators, *Bull of Electrochem.*, 13, 362-365 ((1997))
15. Jayalakshmi, N. Balasubramanian and R. Ramaswamy, Study of self oscillatory. Belousor Zhabotusky systems under the perturbation of external EMF, *Coll Czech.chem.Commen*, 62, xxx, ((1997))
16. Nandakumar, C. Vijayan, Y.V.G.S. Murti, K. Dhanalakshmi and G. Sundararajan, Preparation and characterization of CdS nanocrystallites in nafion, *Bull, Mater,Sci.*20, 579-582 ((1997))
17. Vijaya, Y.V.G.S. Murti, T.A. Vijayaraj and G. Sundararajan, Optical limiting action in poly(para-methoxy phenylacetylene), *Current Science* 72, 507-8, ((1997))

18. Nandakumar, C. Vijayan, Y.V.G.S. Murthy, K. Dhanalakshmi and G. Sundararajan, Studies on semiconductor quantum dots of CdS in a polymer matrix, Photonics-96, proceedings, Tata-McGraw-Hill, New Delhi, pp 27-32 ((1997))
19. Sriram, H.Srinivasan, S. Srinivasan, K. Priya, M. Vishnu Thirtha and sD. Loganathan, B-1-N-Acetamido-D-glucopynanose, Acta Crystallogr Sect C: Struct Coimmun C53, 1075-1077 ((1997))
20. Ranga Rao, Surface Science approach to catalytic chemistry, Bull.Catal.Soc. India, 7 95), 8-12, ((1997))
21. Ranga Rao, Growth of surface alloy films and chemisorption behaviour of CO on Sm /Ru (001) : XPS and TPD studies, studies in Surf.. Sci. and Catal., (in print), ((1997)).

(b) In Refereed International Journals:

1. Narayanan, R.B. Govindan and M.S. Gopinathan, Unstable periodic orbits in human cardiac rhythms, Phys.Rev.E. 57, 4594-4603 (1998)
2. N.Usha, B.Viswanathan V.R.K.Murthy and J.Sobhanadri, X-ray, photoelectron spectroscopic study of some pure stages of graphite-FeCl₃ intercalation compounds, Spectro Chim Acta, (1997).
3. N.Usha, V.R.K.Murthy B.Viswanathan and J.Sobhanadri, Low field, Hall coefficient measurements of graphite-FeCl₃ intercalation compounds, J.Mat.Sci.Lett., 15,1175-1177((1997)).
4. V.Sathesh, P.Murugavel, V.R.K.Murthy and B.Viswanathan, Synthesis and role of Nd and Sm on the microwave dielectric properties of BaNd₂(1-x)Sm_{2x}Ti₅O₁₄ dielectric resonator, Mat.Sci.Engg.,
5. V.Sivasubramanian, V.R.K.Murthy and B.Viswanathan, Microwave dielectric properties of certain alkaline earth perovskite compounds as a function of tolerance factor, Jap.J.Appl.Phys.,36,194-197((1997)).
6. Chakraaborty, Alex C.Pulikottil, S.Das and B.Viswanathan, Synthesis and characterization of mesoporous SAPO, JCS Chem. Comm., 911-912 ((1997)).
7. K.T.Ranjit and B.Viswanathan, Photocatalytic reduction of nitrite and nitrate ions over doped TiO₂ catalysts, J Photo. Chem. Photobiol. Chem A., 107,215-220 ((1997)).
8. K.T.Ranjit and B.Viswanathan, Photocatalytic reduction of nitrite and nitrate ions to ammonia on M/TiO₂ catalysts, J Photo. Chem. Photobiol. Chem A., 107,73-78 ((1997)).
9. K.T.Ranjit and B.Viswanathan, Synthesis, Characterization and Photocatalytic properties of iron doped TiO₂ catalysts, J Photo. Chem. Photobiol. Chem A., 107,79-84 ((1997)).
10. Sripriya, U.Antony and T.S. Chandra, Changes in carbohydrates, free amino acids, organic acids, phytate and Hcl extractability of minerals during germination and fermentation of finger millet, Food Chemistry (UK) 58, No.4, 345-350 ((1997))
11. Murthy and T.S. Chandra, Fermentibility of hemielluloses extracted from municipal waste and commercial xylans by clostridium sp., Applied Microbial Biotechnology (Germany), 47, 2210217 ((1997))

12. Usha Antony and T.S. Chandra, Microbial population and biochemical changes in fermenting finger millet (*Eleusine coracana*) World J. Microbiol, Biotechnol, (UK), Vol 13, 533-537 ((1997)).
13. Usha Antony and T.S. Chandra, Antinutrient reduction and enhancement in protein, starch and mineral availability in fermented finger millet (*Eleusine cooracana*) J.Agric, Food Chem.Amer, Chemical.Soc. (Revised MS under consideration) (1998)
14. Kailasam Srividya and Natesan Balasubramanian, Indirect spectrophotometric determination of Thiamine in Pharmaceutical Preparations, Chemical and Pharmaceutical Bulletin, Vol.45 (12) 2100 - 2103 (1977)
15. Kailasam Srividya and Natesan Balasubramanian, Spectrophotometric determination of pyridoxine hydrochloride in pharmaceutical preparations and Foods, Journal of AOAC International Vol.80, No.6, 1368-1373 ((1997))
16. Maheswari and N. Balasubramanian, Chemical amplification method for the determination of chromum at trace levels, Analisis, 25(1), pp 2-6 ((1997))
17. Swarnalatha, M.N.S. Rao, M.R. Udupa, TG, DTA and DSC studies of Phosphinimino-cyclotrithiazeneo, $RP = NS_3N_3$ [R=(I) C_6H_5 , (II) C_5H_{10} N, (III) OC_4H_8N (IV) $H_3CNC_4H_8N^+$] Thermochim Acta, 297, 13a (1997).
18. Selvakumar, S. Vancheesan and B. Varghese, Synthesis and characterization of cyclopalladated complexes of oximes by ligand exchange method, Polyhedron 16, 2257((1997))
19. Selvakumar and S. Vancheesan, Synthesis and characterization of cyclopalladated complexes of secondary benzylamines, Polyhedron 16, 2405, ((1997))
20. Kanmani and S. Vancheesan, Catalytic oxidation of alkenes with ruthenium (II) perchlorate complexes, J.Mol.Catal (A) 125 pp 127-134. ((1997))
21. Mohan and M.N.S. Rao, Reactions of S_4N_4 with tertiary phosphines-synthesis of phosphiriminocyclotrithiazenes and their reactions, Heteroatom Chem., 8, 225, (1997).
22. Srinivas, G.S. Murthy, U.Swarnalatha & M.N.S. Rao, Crystal Structure of (Phenyl) (Piperidino) (dicyclohexylamino) Phosphiniminocyclotrithiazene, Z.Kristallographie, 212, 241, (1997).
23. Swarnalatha, M.N.S. Rao and M.R. Udupa, TG, DTA and DSC studies of phosphiniminocyclotrithiazene, $R_3PN-S_3N_3$ (R=1) C_6H_5 . II) $C_5H_{10}N^+$, III) $OC_4H_8N^+$ (iv) $H_3CNC_4H_8N^+$], Thermochimica Acta, 297, 139, (1997).
24. Gopalakrishnan, J. Srinivas, G.S. Murthy and M.N.S. Rao, Synthesis, spectral and x-ray structural characterization of Ph (DCA) $RP=N-S_3N_3$ (I) $R=I (C_2H_5)_2N^+$ (ii) $(NC_4H_9)_2N^+$], Polyhedron, 16, 1089, (1997).
25. Vijeyakumar Kingston and M.N.S. Rao, High yield synthesis of cyclic phosphites, phosphates, sulphites and sulphates of catechol and glycol mediated by hypervalent silicon centers, Tetrahedron Letters, 38, 4841, (1997)
26. Malathi, P. Madhusudhan Rao & R.P. Viswanath, Metal support interaction in mixed oxide support, Stud.Surf.Sci. Catal, Feb. 1998.
27. Sujatha and A..K. Mishra, Effect of surfactant on the properties of liposomes: Detection using fluorescent probes, J.Photochem.Photobiol, A., 104, 173-178 ((1997))

28. Sujatha & A.K. Mishra. Excited state acids as lipid membrane probes, *J.Fluorescence*, 75, 165-168 ((1997)).
29. Sujatha & A.K. Mishra, Fluorescence Quenching of Naphtalene and its substitutions by Chloroethanes and Ethylenes, *J.Luminescence*, 75, 135-141 ((1997))
30. Hariharan, V.Vijayasree & A.K. Mishra, Quenching of 2,5-diphenylozazole (PPO) fluorescence by metal ions, *J.Luminescence*, 75 (3), 205-211 ((1997)).
31. Dhanalakshmi and G. Sundararajan, Microwave-induced metathesis polymerisation of phenylacetylene, *Polymer Bulletin* 39, 333-36 ((1997))
32. Vijayaraj and G. Sundararajan, Acceptor-induced-electron-transfer-catalysis - Application to metathesis polymerisation of phenylacetylene, *Organometallics* 16, 4940-42 ((1997))
33. Manickam and G. Sundararajan, A new C₂-symmetric heterobimetallic complex as a promoter in asymmetric Mechel addition reactions, *Tetrahedron Asymmetry* 8, 2271-78 ((1997))
34. Gita and G. Sundararajan, W(CO)₆/Cb_{r4}/hν a new system for metathesis polymerisation, *J. Mol.Catal. A: Chemical* 115, 79-84 ((1997))
35. Archita Patnaik & Changlin, Evidence for metal interaction in gold metallized polycarbonate films: an X-ray photoelectron spepectroscopy investigation, *Li, J.Appl.Phys.* (1997) (in press)
36. A.Das, S. Bera, S. Dhara & A. Patnaik, Physical and chemical implications of 100 keV H⁺ implantation in laser ablated PPS thin films, *Nucl.Instr.Meth*, (1997) (in press)
37. Arindam Das, S. Dhara & Archita Patnaik, Microstructure determination of ion-implanted conducting polymer thin films, *Radiat.Phys.Chem.* (1997) (in press)
38. Das, S.Bera, N. Sivakumar, N.Joseph and A.Patnaik, Deposition and characterization of Laser ablated poly (p-Phenyiene Sulfide) thin films. *Appl.Surf.Sci.* (1997) (accepted)
39. Krishnan, T. Carrington, Uncoupled Effective Hamiltonians for Molecules with seral Vibrational modes, *Chemical Physics*, 219, pp 31-42, (1997).
40. Sandhya and M.S. Subramanian, Extractive Separation of trace amounts of mercury, cadmium & zinc, *J. Radioanal.chem.* Vol.224 No.s1-2 53-57, ((1997))
41. Ramesh and M.S. Subramanian, Extractive separation of selenium & tellurium using 2,3,5 -triphenyl tetrarolium chloride, *Bull.Chem.Soc.Jpn.*, 71, 1-6, 1998,
42. Sandhya and M.S. Subramanian, Radiometric determination of tace amounts of zinc using Liquid scintillation counting, *Talanta* (in press)
43. Ramesh and M.S. Subramanian, Trace deternination of tellurium using liquid scintillation counting & cerenker counting., *Analyst*, 122 (12) (1605-1610) ((1997))
44. Saradha and M.V. Sangaranarayanan, Limitations of Multistate Solvent models ast Electrode/electrolyte Interface: Anumerical study using Bethe approximation, *Langmuir* 13 5470, ((1997))
45. Pushpalatha and M.V. Sangaranarayanan, Two dimensional condensation of organic adsorbates at mercury-aqueous solution interface - A global analysis of critical parameters using Ising model formalism, *J.Electroanal.Chem.* 425 39, ((1997))

46. Pushpaiatha and M.V. Sangaranarayanan, Critical exponents for two-dimensional condensation of organic adsorbates, *Sur.Sci.*, 345, 218, ((1997))

(c) In Proceeding of National Conference:

The following (1-7) are in the *Studies in Surface Science & Catalysis*, Vol113 - Feb. 1998

1. Chakkraborty, Alex C.Pulikottil and B.Viswanathan, "Synthesis & characterisation of mesoporous silicoaluminophosphates"
2. Johnson, B.Viswanathan, and T.K. Varadarajan, "Alkylation of toluene with methanol on heteropoly compounds -p-xylene selectivity"
3. Athilakshmi and B.Viswanathan, Homogeneous oxidation of alkylbenzene catalysed by heteropolycompounds"
4. Rohit kumar Rana, A.C. Pulikottil and B.Viswanathan, "Synthesis Characterisation and activity of Mo-MCM 41"
5. Sumathi, B. Viswanathan and T.K. Varadarajan, "Selective oxidation of benzylalcohol on $\text{BaPb}_{1-x}\text{Bi}_x\text{O}_3$ and related oxides"
6. Achyuthlal Basbu, S. Srinivasa Murthy and B. Viswanathan, "Electrocatalytic oxidation of methanol on platinum based catalysts"
7. Viswanathan and O.Olaofe, "Hydrotalcite materials as precursors for mixed metal oxide catalysts and supports" National Workshop on Catalysis, Dec. ((1997)), RRL Trivandrum
8. Johnson, J.J.Tony, A. Meenakshisundaram and B. Viswanathan, "Hydrodewaxing studies on ZSM 5 zeolites modified with Ni and Pt," National Workshop on Catalysis, Dec.((1997)), RRL Trivandrum.
9. Srinivasan and B. Viswanathan, "Oxidation of benzylalcohol on $\text{La}_{1-x}\text{Sr}_x\text{CuO}_{4-y}$ oxide systems" National Workshop on Catalysis, Dec.((1997)), RRL Trivandrum
10. Sumathi, B. Viswanathan and T.K. Varadarajan, Decomposition of 2-propanol on AB_2O_3 type perovskites" National Workshop on Catalysis, Dec.((1997)), RRL Trivandrum
11. Johnson, B. Viswanathan and T.K. Varadarajan, 'Alkylation of phenol on Heteropoly compounds, " National Workshop on Catalysis, Dec.((1997)), RRL Trivandrum
12. Rajesh and B. Viswanathan, Evaluation of conducting polymer based metal catalysts for methanol oxidation" National Workshop on Catalysis, Dec.((1997)), RRL Trivandrum
13. Malathi, B. Viswanathan and R.P. Viswanath, "hydrogenation of carbonyl compounds supported metal catalysts Effect of SMSI effect" National Workshop on Catalysis, Dec.((1997)), RRL Trivandrum
14. Wilson, P. Madhusudan Rao, B. Viswanathan and R.P. Viswanath "Characterization of supported chromium catalysts" National Workshop on Catalysis, Dec.((1997)), RRL Trivandrum
15. Chakraborty and B. Viswanathan, "Sorption properties of mesoporous SAPO materials" National Workshop on Catalysis, Dec.((1997)), RRL Trivandrum

16. Viswanathan, Mesoporous zeolitic materials, 9th annual general Body Meeting of Material Research Society of India, IIT, Madras Feb.(1997)
17. Viswanathan , "Zeolites as materials of catalysts for organic reactions, Symposium on Social relevance of frontier research in chemistry, Bharathidasan Univ., Mar.1998
18. Raja, K.S. Dathathreyan, K.K.Balasubramanian and C.S. Venkatachalam "A Novel cathodic Cyclisation of Cinnamoy / amilides in DMF", on Electrometallurgy and Eighth National Convention of Electrochemists, held at CECRI, Karaikudi, Jan.28-30, 1998
19. Santosh, K. Lalitha and K.K. Balasubramanian, "Effect of mimosure on metalloenzymes during germination of trigonella foenum graecum "
20. Sreekala and K. Lalitha, "Selenium stus and hydroporoxide metabolism in germinating trigonella foenum graecum" - both papers presented in National Seminar on Metal Ions in Biological Sciences, March 21-23, (1997)
21. Ravi, V.S. Raphel, M. Sreekala and K. Lalitha " Partial purification, immobilization and characterization of β galaelosidase from Trigonella foenum graecum" - In Chemists Meet , Dec.4-6, (1997).
22. Mishra , "Excited State Proton Transfer and Fluorescence Quenching as Investigative Tool" , Orissa Chemical Society, Cuttack, Jan 11-12, (1997)
23. Mishra, "Effect of Ionic and Neutral Surfactants on the properties of Phospholipid Vesicles, Investigation using Fluorescent probes"
24. Sivakamasundari Bharathi and A.K. Mishra "Deconvolution of the Fluorescence spectra into its Component Guassians. A Method to Analyse the Binding of Coumarins to Bovine Serum Albumin"
25. Pappayee and A.K. Mishra " Fluorescence Behaviour of Carbazole in DPPC liposome"
26. 8th National Conference on Surfactants, Emulsions and Biocolloids, Sambalpur, Orissa, Oct 18-20, (1997).
27. Mishra " Studies on Certain Photophysical Process in Homogeneous and Heterogeneous" Workshop on National Centre for Ultrafast Process, Univ. of Madras, November 28, (1997).
28. Chitra Hariharan and A.K. Mishra " Effect of Salt on 2-Naphthol-Aliphatic Amine Exciplex System"
29. Pappayee and A.K. Mishra, "Fluorescence Probing of Liposomes in Alkaline Medium" Chemist's Meet, IIT Chennai, Dec.4-6, (1997)
30. Das, C. Mukundan, B. Sundarakannan, S. Dhara and A. Patnaik " Amorphisation of spin coated poly (2, 6-dimethyl, 1-4 Phenylene Oxide) films: A. Raman Spectroscopic investigation. Laser application in Materials Science and Industry, "Eds, R.Kesavamurthy, A.K. Arora, C.Babu Rao and P. Kalyanasundaram, Allied Publishers, India, p-118-21 ((1997))
31. Das, S. Dhara and A.Patnaik " N^+ ion induced electrical conductivity in poly (Phenylene sulfide)" , DAE Solid State Physics Symposium Porceedings, Dec. 7-31,(1997).

32. Mangala Sunder " The dynamics of Pulses in Quadrupole System" invited oral presentation in National Symposium on Nuclear Magnetic Resonance.
33. Indrapal Singh Aidhen "Synthetic effort towards C-aryl-Glycoside, NOST '98" , April '98 - Lonawala.
34. Saradha and M. V. Sangaranarayanan " Surface potential of solvent dipoles adsorbed at Hg/NaF interface using Bethe Approximation - Some new insights, IUPAC International Conference on Chemical and Biological Thermodynamics " held in Gurunanak Dev Univ. Amritsar, India from Jan 5-8, (1997)
35. Pushparatha and M.V. Sangaranarayanan " Evaluation of critical parameters for two-dimensional condensation of organic adsorbates at mercury/electrolyte solution interface" IUPAC International Conference on Chemical & Chemical and Biological Thermodynamics held in Guru Nanak Dev. Univ., Amritsar, India from Jan 5-8, (1997).
36. Aldrin Denny and M.V. Sangaranarayanan " Theory of electron hopping in polymer matrix for simple and polyvalent redox couples: A study using irreversible thermodynamics" - Third National Conference on electrochemicals held between December 18-19, (1997) in Barc, Mumbai.
37. Aldrin Denny, S.G. Sivashankar and M.V. Sangaranarayanan " Outer-sphere dissociative electron transfer of alkyl halide molecules: A fresh look into the alkyl radicals or carbanions formation, IUPAC International Conference on Chemical & Biological Thermodynamics" held in Guru Nanak Dev. Univ., Amritsar, India from Jan 5-8, (1997).
38. Aldrin Denny, S.G. Sivashankar and M.V. Sangaranarayanan "Dynamics of dissociative electron transfer to alkyl halides: Electrochemical induction studies of $S_{RN}1$ reactions." - The frontiers of organic chemistry symposium held in Pune Univ. Pune, Feb.14-15, (1997).

(d) In Proceedings of International Conferences:

1. Narayanan, R.B. Govindan, M. Ramasubba Reddy and M.S. Gopinathan, Dynamics of Cardiac system through unstable periodic orbits, Proceedings 19th International Conference-IEEE/EMBS, Oct 30-Nov.2, Chicago, IL, USA, (1997).
2. Ramaswamy and V. Jayalakshmi, Sequential oscillations in the Belousov Zhabotinsky reaction employing mixed substrates, 4th experimental chaos conference, Boca Raton Florida, USA, August (1997)
3. Ramaswamy, N.R. Ramaa and V. Jayalakshmi, Aperiodic and chaotic behaviour of the iron sulphuric acid with facial system, 4th experimental chaos conference, Boca Raton, Florida, USA, August (1997)
4. Chakkrabarty and B.Viswanathan, "Surface acidity of MCM 41 by in situ IR study of pyridine adsorption, First IPCAT Conference , Cape Town, Jan.1998
5. Prashant S. Hegde and T.S. Chandra, Antioxidant property of foxtail millet (*Setaria italica*) Abstract No. Intern.Symp Free Radicals in Medicine & Biology (IFSR-97) Sept.22-24, Udaipur, (1997)
6. Sripriya and T.S. Chandra, Chemical and biochemical characterization of the antioxidant principle in finger millet (*Eleusine coracana* - 'Ragi') Abstract No. ICB II. Adv.Tech. R & D Center Yamagata, Japan, Oct.12-16, (1997).

7. Sangaranarayanan "Diffusion at Ultramicroelectrodes: A general two-point Pade Approximation" Extended abstracts of 193rd ECS meeting held at Montreal, Canada, May (1997)
8. Saradha and M.V. Sangaranarayanan "Bethe Approximation for Solvent Structure at Electrode / Electrolyte Interface with Interface with Explicit Incorporation of Metal Surface Using Jellium Models" - International Meeting held in Paris, Between Aug.31 - Sep.5, (1997)

6. Distinguished Visitors to the Department:

S.No.	Name of the Visitor & Designation	Date of Visit	Purpose of visit
1.	Prof. Michel Fontanille, Uni. of Bordeaux, France	Feb. 14-15, 98	Discussion
2.	Dr. Yves Gnanon, Univ. of Bordeaux	Aug.28, 1997	Discussion
3.	Prof. Bryan Sanctuary, Mc.Gill Univ., Montreal, Canada	Mar.19-Apr.15, 1997	Scientific Collaboration with the faculty
4.	Prof. Zeev Luz, Weizmann, Instt. of Science, Israel	Feb.10-Feb.12 1998	Invited talk & exchange of ideas in the field of NMR spectroscopy
5.	Dr. Jurgen Fell University of Mainz	March 2-14 1998	Discussion

4.5 DEPARTMENT OF CIVIL ENGINEERING

1. Introduction:

The Department of Civil Engineering has been in existence since the inception of IIT, Madras in 1959 and has grown into a full fledged Department with specialisations in all the major areas of Civil Engineering. The departmental activities embrace Planning, Design, Construction and Management. The academic programmes of the Department in B.Tech., M.Tech., M.S. and Ph.D. are some of the best in the country and in the world. The faculty members have received advanced degrees and/or training from reputed institutions in India, Germany, U.K., U.S.A., Canada, Netherlands, former USSR etc.

The activities of the Department are carried out under different disciplines. There are fourteen well equipped laboratories attached in different specializations. Hydraulic and Water Resources Engineering and Structural Engineering Laboratories have received initially substantial funding from the Federal Republic of Germany.

2. Academic Programmes:

The Department trains students in both theoretical and practical aspects of Civil Engineering. The students are trained in the current state-of-the-art technology to enable them to adapt to ever changing technologies.

The Department has programmes leading to M.Tech., M.S. and Ph.D. degrees in various disciplines of Civil Engineering in addition to the B.Tech. programme in Civil Engineering.

2.1 New Courses Introduced:

S.No.	Course No.	Title	Structure	Faculty
1.	CE 794	Geographical Information System in Civil Engg.	3 0 0 3	Dr.Koshy Varghese

2.2 New discipline introduced:

An User-oriented M.Tech. programme on "Construction Technology and Management" sponsored by Larsen and Toubro Ltd.,- ECC Construction group has been started from January 1998. Fresh graduates of Civil, Electrical and Mechanical Engineering are admitted to this programme through a written test (equivalent standard to GATE) and followed by an Interview. Currently twenty candidates have been admitted.

2.3 Students on Roll (as on 31.08.1997):

Programme	I year	II year	III year	IV year	V year	Total
B.Tech.	46	43	39	49	-	177
M.Tech.	32	41	-	-	-	73
M.S.	10	10	7	5	1	33
Ph.D	5	5	7	7	18	42
Total	93	99	53	61	19	325

2.4 Number of Scholarship/Fellowship holders:

Programme	Institute Scholarship	Others	Total
M.Tech.	HTTA 53	-	-
M.S.	HTRA 18	Project 7	25
Ph.D	HTRA 15	Project 2	17

2.5 Names of student/scholar attended Conference/Seminar and Symposia abroad/India:

S. No.	Name of the Student/Scholar	Program me	Name of the Conference/Seminar/Symposia	Date & Venue
1.	Mr KM Dharmendra Mr DT Dinesh Mr KSN Reddy	M.Tech	Workshop on Road Safety, Action Plan of Chennai, Transport Advisory Forum, Chennai	31st Jan 98 IIT Madras
2.	Mr T Reth	M.Tech	Mathematical Methods and Applications	22nd Dec Dept of Maths IIT Madras
3.	Mr V Sathish	M.S	Nat Conf on Cost Effective Materials and Techniques for Mass housing	27-28 June 97 Anantapur
4.	Mr Monto Mani	Ph.D	Int Conf on Remote Sensing and GIS and GPS	June 97 JNTU, H'bad
5.	Mr V Jothi Prakash	Ph.D	Nat Conf on Fuzzy sets and their applications	9-10 June 97 IIT Madras
6.	Mr V Jothi Prakash	Ph.D	Nat Conf on Emerging trends in the development of sustainable groundwater sources NCGWS-97	27-28, Aug 97 JNTU, H'bad
7.	Ms Sudha Rani Mannava	Ph.D	Workshop on Impact of MRTS - II Phase	16th Aug 97 Anna Univ. Chennai

2.6 Number of Degrees awarded in the last convocation:

Programme	Total
B.Tech	41
M.Tech	34
M.S	8
Ph.D	6
Total	89

3. Faculty and their Development:

3.1 Faculty:

Name of Faculty

Major Area of specialisation

Professors

H.Achyutha, Ph.D (IIT Madras)
P.K.Aravindan, Ph.D (IIT Madras)
K.Elango, Ph.D (IIT Madras)

Structural Engineering
Structural Engineering
Hydraulic and Water
Resources Engg.
Structural Engineering

V.Kalyanaraman, Ph.D (Cornell)

Name of Faculty	Major Area of specialisation
C.S.Krishnamoorthy, Ph.D (Imperial College)	Structural Engineering
N.R.Krishnaswamy, Ph.D (IIT Kanpur)	Geotechnical Engineering
M.S.Mathews, Ph.D (IIT Madras)	Building Technology and Construction Mangmt.
Nainan P.Kurian, Ph.D (IIT Madras)	Geotechnical Engineering
N.Rajagopalan, Dr. Ing(Stuttgart,Germany)	Structural Engineering
H.Raman, Ph.D (IIT Madras)	Hydraulic and Water Resources Engg.
V.R.Rengaraju, Ph.D(IISc,Bangalore)	Transportation Engineering
P.Srinivasa Rao, Dr.Ing(Tech.Univ.Munich,Germany)	Structural Engineering
H.Suresh Rao, Ph.D (IIT Madras)	Hydraulic and Water Resources Engg.
B.S.Thandaveswara, Ph.D(IISc,Bangalore)	Hydraulic and Water Resources Engg.

Visiting Professors

R.Jayaraman,Ph.D (IIT Madras)	Hydraulic and Water Resources Engg.
Shan Somayaji, Ph.D (Univ. of Illinois)	Building Technology and Construction Management
R.Pitchai, Ph. D(Harvarad)	Environmental Engineering

Associate Professors

R.Ambalavanan, Ph.D (IIT Madras)	Building Technology and Construction Magmt.
A.Boominathan, Ph.D (Moscow univ)	Geotechnical Engineering
S.R.Gandhi, Ph.D (IIT Madras)	Geotechnical Engineering
S.Mohan, Ph.D(IISc,Bangalore)	Hydraulic and Water Resources Engg.
S.B.Pattnaik, Ph.D (IIT Kanpur)	Transportation Engineering
K.Rajagopal, Ph.D (Florida)	Geotechnical Engineering
A.Ramachandraiah, Ph.D (IIT Madras)	Building Technology and Construction Mangmt.
R.Sivandandan, Ph.D (Virginia Tech)	Transportation Engineering
K.Srinivasan, Ph.D (IIT Madras)	Hydraulic and Water Resources Engg.
V.Tamizh Arasan, Ph.D (IIT Madras)	Transportation Engineering

Assistant Professors

K.Gopalakrishna, M.Tech (IIT Kanpur)	Environmental Engineering
S.Gopalakrishnan, Ph.D (Purdue Univ)	Structural Engineering
Koshy Varghese, Ph.D (Texas, Austin)	Building Technology and Construction Mangmt.
N.Kumar Pitchumani, Ph.D (IIT Kanpur)	Geotechnical Engineering
A.Meher Prasad, Ph.D (Rice, Houston)	Structural Engineering
K.Ramamurthy, Ph.D (IIT Madras)	Building Technology and Construction Mangmt.
K.N.Satyanarayana, Ph.D (Clemson)	Building Technology and Construction Mangmt.

Lecturer

Alok Madan, Ph.D (SUNY, Buffalo)	Structural Engineering
K.Ananthanarayanan, Ph.D (IIT Madras)	Building Technology and Construction Mangmt.

Name of Faculty**Major Area of specialisation****Senior Scientific Officers**

K.D.Chandrasekaran, Ph.D (IIT Madras)
M.Subbi Reddy, M.S.(IIT Madras)

Environmental Engineering
Transportation Engineering

Technical Officers

K.Bhaskaran AMIE, Madras Univ.
P.R.Kothandaraman (SG), LME, CPT
T.Rajkumar, B.E. Anna Univ.

3.2 Short-term courses/Workshops/Seminars/Symposia/Conferences organised:

S.No.	Coordinators	Title	Period
1.	Dr.M.S.Mathews Dr.K.Ramamurthy	Research Methodology	12-16, May 1997
2.	Dr.K.N.Satyanarayana Dr.C.Rajendran	State-of-the-art methods for project planning and control	16-18, Oct. 1997
3.	Dr.A.Boominathan Dr.N.R.Krishnaswamy	Analysis and Design of machine foundations	17-19, July, 1997
4.	Dr.S.R.Gandhi	Management of Ash pond	28-29, Nov., 1997
5.	Dr.S.R.Gandhi Dr.A.Boominathan	Foundation of problematic soils	22-24, May, 1997
6.	Dr.K.Rajagopal Dr.N.R.Krishnaswamy	Geosynthetic reinforced soil structure	23-25, Jan. 1997
7.	Dr.N.Kumar Pitchumani Dr.K.Rajagopal	Modern Foundation Techniques	1-3 Dec., 1997
8.	Dr.K.Elango Dr.B.S.Thandaveswara Dr.K.Srinivasan Dr.S.Mohan	Identification of Thrust Areas in Regional Water Resources Development	20th June, 1997
9.	Dr.S.Mohan Dr.P.V.Subramanian	Fuzzy sets and their applications	8-10, June, 1997
10.	Dr.S.B.Pattnaik	Planning for pedestrians and bicycle traffic facilities	7-10, June 1997

3.3 Short-Term Courses/ Workshops/ Seminars/ Symposia/ Conferences/ Training attended by the Faculty in recognised Academic Institutions and Public Sector Units:

S.No	Name of Faculty	Title	Institution	Period/ Duration
1.	Dr.A.Ramachandraiah	Nat. Symp on Acoustics-97	NSTL, Vizag	Oct. 1997
		Acoustical Society of America (Reg. Chapter)	NIO, Goa	Sept. 1997
2.	Dr. K.N.Satyanarayana	Conf. on Geomatics in Disaster Management	Indian Instt. of Remote Sensing, Dehradun	18-20, Sept. 1997
3.	Dr.K.Ananthanarayanan	VIII User interaction Workshop on IRS Operation	Nat. Remote Sensing Agency, Hyderabad	17 & 18th Mar. 98
4.	Dr.S.R.Gandhi	13th Int. Nat. Conf. on Solid Waste	Wiedner Univ., USA	16-19, Nov. 1997
		Sustainable ground water development and management	Anna Univ. Madras	5-8, Nov., 1997
5.	Dr.A.Boominathan	Capsule course on Shock and vibration mounts (SUM 98)	NSTL, Hyderabad	3-5, March 1998
6.	Dr.B.S.Thandaveswara	Emerging trends in professional education	MGR Engg College Chennai	30.5.1997
		Ground water and rain water harvesting	Arranged by Max Muller Bhavan	6.10.97 to 8.10.97
7.	Dr.S.Mohan	Int. Workshop on Water Resources Devpt. and Management	H.R.Wallingford, UK & Inst. for Water Studies, Chennai	12-14, Mar. 1997
		Intl. Workshop on Drinking Water Resources	CLRI, Madras	3-5, Dec. 1997
		Nat. Sem. on Application of Computers in Irrigation Management	IMTI, Trichy	5-6, Mar. 1998
		User Interaction workshop on IRS operation	NRSA, Hyderabad	17-18, Mar. 1998
		Nat. Sem. on Application of Treated effluent for irrign.	REC, Trichy	23, Mar. 1998
8.	Dr. V.Kalyanaraman	Int. ERRI - Indian Railway joint Sem. "Bilateral co-operation for railway research"	Vighyan Bhawan New Delhi	23-24, Feb. 1998
		7th NASAS		13-14, Aug. 1997
9.	Dr. H. Achyutha	Nat. Sem. Recent trends in concrete & steel structures	Chennai	25-26, April 1997

S.No	Name of Faculty	Title	Institution	Period/Duration
10.	Dr. Meher Prasad	Wind effects on Structures	SERC, Ghaziabad	3-5, April 1997
11.	Dr.R.Sivanandan	Workshop on Impact of MRTS - Phase II	Chartered Instt. of Transport, Ann Univ.	16 Aug, 1997
		Workshop on Sustainable Chenna project city consultation	CMDA,UNDP, UNCHS, Chennai	Sep 4-7, 1997
		Panel discussion on Traffic medicine & Traffic enforcement (Road safety action plan for Chennai)	IAE (India) Transport Advisory Forum, SAE Inst. (SI Sec.) & AIAM, Chennai	5and 19 Jan. 1998
		Workshop on Road safety action plan for chennai	- do -	Jan. 31, 1998
		One day symposium on Mathematical methods and applications	Dept. of Mathematics IITM	Dec. 22, 1997
		3day workshop on SATURN A - Z	IIT Bombay & Univ of Leeds, UK, Mumbai	Mar. 18 - 20, 1998
12.	Dr.S.B.Pattnaik	Int. Nat. Conf. on Road Safety - ICORS - 97	Andhra Univ., Visakhapatnam	July 24 -27, 1997
		Workshop on Impact of MRTS - Phase II	Anna Univ. & CIT, Chennai	August 16, 1997
		Nat. Sem. on Appin. of GIS for solving Environ. Prob.	TTTI, Chennai	Aug. 6 - 8, 1997
		Symp. on Mathematica. Methods and Applications	Dept. of Maths, IIT Madras	Dec. 22, 1997
		Workshop on Road safety, Action, plan for Chennai	TAF, Chennai	Jan. 31, 1998
		Nat. Conf. on Emerging Trends in the Development of sustainable ground water sources	Hyderabad	Sept. 97
13.	Mr.K.Gopalakrishna	Workshop on "Lomwats"	Pondicherry	10-12, Oct. 97
		Workshop on Rural Water Supply Schemes	Rajiv Gandhi Foundations, Delhi	6-10, Nov.1997
14.	Dr.R.Pitthal	Technology Innovations in the Rural Context	IITM/Gandhigram Rural Instt.	5.4.97
		INCOH Workshop	IITM/HWRE Lab	20.6.97
		Technology Appreciation Prog. for Indi. Associates.	IC&SR, IITM	7.11.97

S.No	Name of Faculty	Title	Institution	Period/ Duration
	Dr.R.Pitchai	Tech. appreciation programme for Industrial Associates on ISO/4000 Environment Management System	ICSR, IITM	28.2.98

3.4 Special Lectures Delivered by the faculty in other Institutions:

S.No	Name of Faculty	Topic of Lecture	Venue & Date
1.	Dr. M.S. Mathews	21st Century Reinforcing materials and smart structures	Hotel Asoka, Association of Consulting Engineers, Jan. 98
		Principles of active learning in engineering education	MES College, Mallapuram, Kerala, 7th Oct. 97
2.	Dr.K.N. Satyanarayana	Current trends in construction management	IIT Alumini Assn. Ernakulam, 23rd Jan. 98
		Construction management of Habitat Projects	Nirmathi National Institute of Habitat Managment, Trivandrum, 24th Jan. 98
3.	Dr.K.Ananthanarayanan	Survey: The state-of-the-art and hands on experience	Anna Instt. of Management, Madras, 23.10.97, 4.11.97 and 10.11.97 (3 days)
4.	Dr.S.R.Gandhi	Soil test and analysis for construction	PWD, Pondicherry 15th Dec. 97
		Pile design and construction practice in India : A Review	Piling Association - Hotel Ambassador Pallava - 12th July 97
5.	Dr.K.Rajagopal	Civil foundations for large structures	Refinery Engg. School of Training, Chennai 19.11.97
6.	Dr.N.Kumar Pitchumani	Stress Analysis of large underground excavation in rock	Anna Univ. for IGS Madras Chapter , 20.9.97
7.	Dr.K.Elango	Key Note address on Water Supply System	CLRI, Madras 3-5, Dec. 1997
		Ground Water Problems	NIH, Madras
8.	Dr.B.S.Thandaveswara	Wetland Hydrology - Hydrological problems of Deltaic and coastal region	Organised by NIH, Kakinada Regional Centre, Conducted at Anna Univ. Chennai

S.No	Name of Faculty	Topic of Lecture	Venue & Date
9.	Dr.S.Mohan	Optimal design of percolation ponds	NGRI, Hyderabad 23, July 1997
10.	Dr. P.K.Aravindan	Failures and retrofitting of structures	Builders Association of India, Thanjavur
11.	Dr. V.Kalyanaraman	Detailing of steel industrial structures	REC, Trichy, 10th Dec. 97
		Fabrication and Erection of steel structures	REC, Trichy, 10th Dec. 97
12.	Dr. A.Meher Prasad	Case Study of vibrations of a coal bunker building - Building vibration and monitoring	CBRI. Roorkee, 16th Dec. 97
13.	Dr. R.Pitchai	Envrionmental impact assessment and hazardous wastes management	IDBI, Madras 20th June 97
		Nat. Sem. on Applications of GIS for solving environmental problems	TTTI, Madras 6th Aug. 97
		Hydraulic network balancing using Hardy Cross and Newton-Rapson Methods	Anna University, Madras 19th Feb. 98
		Nat. Sem. on Anaerobic Technologies	Anna University 11th Dec. 1997

3.5 Visits Abroad by Faculty:

S.No	Name of Faculty	Country visited	Date	Purpose of visit
1.	Dr.S.R.Gandhi	USA	15-21, Nov. 1997	1. 13 th Int. Conf. on Solid Waste 2. Visit to Drexel Univ. Philadelphia 3. Visit to Delaware solid waste deposit site
2.	Dr.K.Rajagopal	USA	25-29, Mar. 1998	To present a paper at the 6th Int. Conf. On Geo-synthetics, Atlanta, Georgia
3.	Dr.N.Kumar Pitchumani	Singapore	12-17 May 1997	Sponsored as a National Nominee to participate in the "Young Geotechnical Engineers' Conference" organised by Intl. Soc. of Soil Mech. and Foundation Engg.
4.	Dr.C.S.Krishnamoorthy	Singapore	15.9.97 to 14.9.98	Visiting Professor
5.	Dr.V.Tamizh Arasan	Germany	12th May to 13th Aug. 97	To work over Indo-German collaborative Research project

3.6 Honours and Awards obtained:

S.N	Name of Faculty	Names of Awards/ Honour	Awarded by	Awarded for	Date
1.	Dr. K.Ramamurthy and Mr. G.Rajasekar	Certificate of Merit	Institution of Engineers (India)	Paper titled "Flexural strength of concrete hollow block masonry" Jl. of IE(I) CE Div. Vol.77, May 1996 pp.29-33	Jan. 1998
2.	Dr.S.Mohan Mr. K.Saravanan	IWWA - Best paper award	IWWA. Mumba:	Excellent article of IWWA 1997	1997
3.	Dr. K.Srinivasan	Union Ministry of Water Resources - Dept. of Irrigation Medal for 1996-97	Institution of Engineers (India)	Paper published in the Jl. of Institution of Civil Engineers	10.1.98
4.	Mr. K.Saravanan	Certificate of Merit for 1996-97	Institution of Civil Engineers (India)	Paper published in the Jl. of Institution of Civil Engineers	10.1.98
5.	Dr. P.K.Aravindan	Most outstanding Bridge: National Awards	Institution of Bridge Engineers India	Design of road overbridge at Katpadi Railway Station	6.2.98

3.7 Books:

S.No	Name(s) of Author(s)	Title of Text book/Monograph	Publisher
1.	Dr.B.S.Thandaveswara	Three units on Irrigation Engineering	Indira Gandhi National Open University, New Delhi
2.	Dr.S.Mohan	Four Units on Irrigation Engineering	Indira Gandhi National Open University, New Delhi

3.8 Fellowships of Academies and Professional Societies: (Humboldt/INAE/INSA/Hon.FRA, etc.)

Name of Faculty	Name of the Academy/ Professional Society	Level	Year of Admn
Dr.A.Ramachandraiah	Acoustical Society of India Acoustical Society of America	Fellow Asso. Member	1992 1997
Dr.K.N.Satyanarayana	Institution of Engineers (India) Indian Society for Technical Edun.	Member Member	1996 1996

Name of Faculty	Name of the Academy/ Professional Society	Level	Year of Admn
Dr.N.R.Krishnaswamy	Indian Geotechnical Society Indian Soc. of Earthquake Tech. Indian Society of Theoretical and Applied Mechanics	Life Member	1979
		Life Member	1980
		Life Member	1981
Dr. N.Rajagopalan	Indian Road Congress Indian Inst. of Bridge Engineers Indian Concrete Institute	Fellow	1988
		Member	1992
		Member	1986
Dr. P.K.Aravindan	Indian Concrete Institute Institution of Bridge Engineers	Member	1985
		Fellow	1998
Dr. H.Achyutha	Institution of Engineers (India) Indian Society for Technical Edun. Indian Concrete Institute	Fellow	1983
		Life Member	1980
		Life Member	1985
Dr.B.S.Thandaveswara	Indian Society for Technical Education, Delhi	Life Member	1985
	Indian Water Resources Society, Roorkee	Life Member	1989
	Indian Soc. for Hydraulics, Pune	Life Member	1994
	Indian Assn. for Hydrologists, Roorkee	Fellow	1994
	Institution of Engineers, Calcutta Fluid Mechanics and Fluid Power	Fellow Life Member	1994 1995
	Indian National Academy of Engg. Madras Science Foundation Association of Waste Mangmt. and Remediation of Environment (AWARE)	Fellow Fellow Vice President	1990 1994 1996
Mr. K.Gopalakrishna	Tamil Nadu Academy of Science	Fellow	1976
	Institution of Environmental Engineers (India), New Delhi	Fellow	1998

3.8(a) Election to Academic/Professional Societies:

Name of Faculty	Name of Academic/Professional Societies	Year of admission
Dr.B.S.Thandaveswara	Executive Committee Member, Indian Society for Hydraulics	1996 - 1998

4. Design and Development Activities:

4.1 Brief and specific details of Process/Instruments/Equipment/Software Designed and Developed:

1. Dr.K.Ramamurthy developed a Test Set up for water retentivity test on Masonry Morter (IS:2250-1991) Water Retentivity Apparatus

Water Resistivity Apparatus has been developed in accordance with IS:2250. This apparatus consists of a filter pump which is used to apply a vacuum of 50 mm mercury for one minute by having a continuous flow of water. To retain the vacuum a two way stop cork was used in between vacuum pump and one end of the manometer. Open ended limb of the mercury manometer is having height of 120 mm. The other end of the manometer was connected to a conical flask of one litre capacity. This flask was connected with metallic funnel using a three way stop cork of internal bore 4.5 mm and with 4mm dia glass tubes. The funnel was made by machining a mild steel rod of diameter 160 mm and length of 350 mm. The three-way stop cock was connected between funnel and flask by means of a rubber cork. A perforated dish, in mild steel of base thickness of 1.8 mm and internal diameter of 155 mm was placed over the funnel. The diameter of the perforations are 1.5 mm (as per the specification). The contact surface between dish and funnel was made air tight using a rubber gasket. Clips were provided to have proper clamping of dish with funnel. The funnel and perforated dish were electroplated to resist the corrosion.

Dr. N.R.Krishnaswamy, (i) Cyclic triaxial testing equipment for ongoing research projects in the area of geosynthetics:

All the Cyclic tests can be performed using this simple stress controlled Cyclic Triaxial Testing apparatus specially designed for liquefaction testing. The main component of this system developed in the Geotechnical Engineering Laboratory are Triaxial cell, Compressor, Air filter, Pressure regulator, Solenoid valve, Air cylinder, Timer, Measuring unit and recording unit.

(ii) Fabrication of testing tank with loading frames for testing models of reinforced soil structures

The test tank was fabricated using M.S. sheet at the back side and perspex sheets on both the sides and front panels using steel angles and M.S. sheets. Inside the test tank, removable M.S. plates are provided at 0.4 m intervals. The front panels, 4 in number are fastened to the bottom of the tank and are removable. The tank is anchored on back side and on the two sides using inclined and horizontal angles 14 in number.

The loading frame is fabricated using ISMB sections (300 x 120). Four I-Sections of 2.75 m length are placed vertically, two on either side, fastened by M.S. plates are M20 side bolts. Two I-Sections of length 2m are placed horizontally and fastened to the vertical I-Sections. Movable M.S. Plates, four in number are provided at the bottom of the horizontal I-Sections, for the facility of applying load at any part of the tank.

Dr.S.R.Gandhi: Pizo-meter tips have been developed which can be used in the field to a depth upto 10m for measuring pore water pressure and retrieved back after measurement. Six such tips have been fabricated and measurement have been taken successfully at Mettur Thermal Power Station during trial blast test.

Dr. A.Boominathan: Developed a bore hole pick which is required to carry out Seismic Wave Propagation Tests (Cross hole, Dam hole test, etc.) for measuring P- and S- wave velocity at various depth in soil and rock stratum. This device consists of a 3 component acceleration pick up, a bore hole contact mechanism and a cable of 30 to 60 m length. It uses a pneumatic packer, pumped from the surface, to clamp the unit to the side of the drill hole. This unit has been used to carryout cross hole tests at the Prototype Fast Breeder Reactor (PFBR) site at Kalpakkam.

Mr.K.Gopalakrishna: Laboratory scale model of upflow anaerobic contact filter for industrial waste water treatment. The filter works on attached growth biofilm system. The upflow anaerobic unit fabricated has a provision for gas collection and sampling parts at three hydraulic loading ranges. The contact filter has so far been used for studies on treatability of dairy wastes and sago wastes.

5. Research and Consultancy:

5.1 Sponsored Research Projects on hand :

S. No.	Title	Period	Funding Agency	Amount (Rs.in lakhs)	Co-ordinator(s)
1.	Effects of various types and amount of flyash on durability and performance on concrete in hydraulic structures	Jan 1997- Jan 2000	Central Soil & Materials Research Station	19.00	Dr. M.S. Mathews Dr. B.Viswanathan Dr. Shan Somayaji (Calpoly, USA)
2.	Techniques to improve cyclone resistance characteristic of roofing of industrial sheds	May 97 May 99	AICTE	07.0	Dr. M.S. Mathews
3.	Development of design criteria for structural masonry with concrete hollow blocks	1995-98	DST	04.5	Dr.K.Ramamurthy Dr.R.Ambalavanan
4.	Cost-effective construction techniques	1995-98	AICTE	05.0	Dr.R.Ambalavanan Dr.K.Ramamurthy Dr.M.S.Mathews
5.	GIS Laboratory for Engg. Applications	1995-98	AICTE	10.00	Dr.Koshy Varghese Dr.K.N.Satyanarana Dr.S.K.Ramesh
6.	Development of techniques for classification of urban features from remote sensed data for use in GIS applications	1997- 2000	ISRO	04.5	Dr.Koshy Varghese Dr.B.Yegnanarayana Dr. Sukunu Das (CS)
7.	Off line Planning and simulation of multiple cranes	1997-99	DST	09.57	Dr.Koshy Varghese Dr.K.N.Satyanarayana Dr. Ramesh Babu Dr. S.Boopathy (ME)

S. No.	Title	Period	Funding Agency	Amount (Rs. in lakhs)	Co-ordinator(s)
8.	Geosynthetics in reinforced earth embankments	1996 - 98	DST	09.77	Dr. N.R. Krishnaswamy Dr. K. Rajagopal Dr. S.R. Gandhi Dr. A. Boominathan
9.	Modernisation of geotechnical Engg. Lab	1995 - 97	AICTE	05.00	Dr. A. Boominathan Dr. N.R. Krishnaswamy Dr. K. Rajagopal
10.	Investigation of the strength and stiffness of geocell reinforced soft foundation soils	1997 - 98	Netlon India, Vadodara	03.67	Dr. K. Rajagopal Dr. N.R. Krishnaswamy
11.	Field densification of deposited ash slurry by blasting at Kothagudem	One year	DST	12.00	Dr. S.R. Gandhi
12.	Field densification of deposited ash slurry by deep blasting at Mettur	One year	DST	11.43	Dr. S.R. Gandhi
13.	Field densification of deposited ash slurry by vibroflotation at Vijayawada Thermal Power Station	One year	DST	14.00	Dr. S.R. Gandhi Dr. A. Boominathan
14.	Standardisation of Damage frequency relationships for flood damage assessment	1994 - 98	DST	05.04	Dr. K. Srinivasan Dr. B.S. Thandaveswara
15.	Reservoir performance analysis using stochastic stream flow models	1994 - 98	INCOH	06.30	Dr. K. Srinivasan Dr. B.S. Thandaveswara
16.	Numerical modelling of the pollutant load in a river system	Under dispute	INCH	18.75	Dr. B.S. Thandaveswara (Dr. H. Suresh Rao was associated till June 97)
17.	Experimental and analytical investigation of structural behaviour of Nuclear containment domes	Feb. 1998	AERB	15.28	Dr. N. Rajagopalan
18.	Cyclic load testing on prestressed concrete hollow piles	8.4.97 to 8.1.99	NIOT	05.00	Dr. A. Meher Prasad Dr. P.K. Aravindan
19.	Instability and non-linear behaviour of CFC elements and panels	Dec. 93 to June 98	ARDB	05.21	Dr. V. Kalyanaraman
20.	Ultimate load capacity of prestressed concrete containment buildings	upto Mar.. 1999	AERB	23.00	Dr. H. Achyutha
21.	Enhanced traffic management using simulation and GIS tools	1.10.97 to 30.9.99	IITM (ICSR)	00.50	Dr. R. Sivanandan

S. No.	Title	Period	Funding Agency	Amount (Rs. in lakhs)	Co-ordinator(s)
22.	Development of appropriate transport system planning techniques for Indian conditions	Feb. 95 to Jan. 1998	Volkswagen Foundation, Germany	20.0	Dr.V.Tamizh Arasan Prof.M.Wermuth Technical Universitat Germany
23.	Software Development for watershed analysis and management	1996 - 98	DST	03.96	Dr.S.Mohan Dr.H.Raman (till 30.6.97)
24.	Development of prioritisation needs in irrigation and drainage wastes using fuzzy set approach	Dec. 1997 - Mar,2000	European Commission	60.00	Dr.K.Elango Dr.S.Mohan
25.	Intermittant water supply system	June 1997 - Jan 2000	South Bank Univ. & DFID UK	16.00	Dr.K. Elango

5.2 Industrial Consultancy:

Sl. No	Name of the Faculty	Title	Industry	Amount (in lakhs)
1.	Dr. M.S. Mathews	Determination of thermal conductivity of insulating materials	Woyd Insulation India Ltd.	0.025
2.	Dr. S.Kumaraswamy Dr. S.R.Gandhi Dr. K.Ramamurthy Dr. S.Mohan Dr. T.K.Ramanujam Dr.T.Swaminathan Dr. Sridhar Rao Dr.Gopinath	TNPCB Projects on Common Effluent Treatment Plants	CETP Ranipet	23.56
3.	Dr.N.Rajagopalan Dr.A.Ramachandraiah Dr.K.Ramamurthy	NDT tests on fire damaged roof truss	BHEL	0.30
4.	Dr.M.S.Mathews Dr.K.Ramamurthy	NDT tests on Godrej Hicase building	Span Construction Ltd.	0.10
5.	Dr.A.Ramachandraiah	Study of noise and vibration for TNPCB	TNPCB	0.25
6.	Dr.K.Ramamurthy Dr.R.Ambalavanan	NDT tests on Turbo Generation foundations	APSEB	0.22
7.	Dr.K.N.Satyanarayana	Feasibility study on increasing stack height	Madras Refineries Ltd., Madras	1.15
8.	Dr.K.N.Satyanarayana Dr.Koshy Varghese	Project management advice	RDS Ltd., Cochin	0.10
9.	Dr. K.N.Satyanaranana Dr. R.Ambalavanan	Cost models for evaluation of gypboard panels	Business Consulting Group Madras	0.15

Sl. No	Name of the Faculty	Title	Industry	Amount (In lakhs)
10.	Dr.R.Sundravadivelu (OEC) Dr.K.Ananthanarayanan	Estimating quantity of dredging of chilka lake channel	Chilka Development Authority	11.06
11.	Dr.K.Ananthanarayanan Mr. M.Subbi Reddy	To check the alignment of levels of the roads in Tunnelkiln II	WS Industries, Madras - 116	0.12
12.	Dr.K.Rajagopal Dr.N.R.Krishnaswamy Dr.A.Boominathan	Soil investigation and foundation recommendation for TNHB residential complex in Anna Nagar	TNHB, Madras	0.96
13	Dr.K.Rajagopal Dr.N.R.Krishnaswamy Dr.A.Boominathan	Foundation recommendation of shopping complex at Koyembedu by CMDA	Chennai Metropolitan Development Authority, Chennai	1.36
14	Dr.A.Boominathan Dr.K.Rajagopal Dr.N.R.Krishnaswamy	Conducting pile load test at the site of proposed residential complex for ONGC at ANWX & interpretation of test results	TNHB, Madras	0.45
15	Dr.A.Boominathan Dr.N.R.Krishnaswamy	In-situ dynamic tests at 158 MW diesel power plant near Bangalore	Geoengineers Chennai	0.85
16	Dr.K.Rajagopal Dr.N.R.Krishnaswamy	Design of retaining wall around Otteri dumping yard	Chennai Corporation, Chennai	0.10
17	Dr.A.Boominathan Dr.K.Rajagopal Dr.N.R.Krishnaswamy	Soil investigation for liquefaction analysis for PEER site at Kalpakkam	IGCAR, Kalpakkam	6.90
18	Dr. S.R.Gandhi Dr. K.Srinivasan Dr. K.Elango	Summer storage reservoir and pipeline design	IFFCO	1.8
19	Dr.S.R.Gandhi	Subsoil investigation for Madras Corporation	Corporation of Madras	2.00
		Investigation of slip failure in Hydro Power Dam near Madurai	TNEB, Pudur	0.15
		Design of Stone column foundation for HPCL storage at Basin Bridge	Geo-Tech Construction, Cochin	0.10
		Foundation design for Silver Hammer Project	Silver Hammer Projects, Chennai	0.05
		Report on Failure of ash slurry pipe line at North Chennai	Vigilance Cell, TNEB	0.25
		Soil Investigation for transmission line towers	Power Grid Corporation	0.07
		Technical Study Report	Indian Farmers Fertiliser Corporation Ltd	1.60
		Investigation on deepening the berth at Goa Port	Goa Port	3.00

Sl. No	Name of the Faculty	Title	Industry	Amount (In lakhs)
	Dr. S.R. Gandhi	Design of container depth	Jawaharlal Nehru Port	2.00
		Preparation of feasibility report for port at Positra (near Jamnagar)	Frederie R.Harris (India) P.Ltd.	2.00
20	Dr.A.Boominathan Dr.V.R.Rengaraju Mr.M.Subbi Reddy	Sub-grade soil evaluation & check on pavement design	Mahindr Ford(I) Ltd., Madras-32	0.95
21	Dr.A.Boominathan	Evaluation of in-situ dynamic soil properties at TG Area of Maico	L & T, ECC Group, Madras.	0.25
22	Dr.A.Boominathan Dr.N.Kumar Pitchumani	Soil investigations for provision of deficient married accommodation for 28 officers at Airforce Station, Tambaram	Garrison Engineer Airforce Station Tambaram, Madras	0.84
23	Dr.K.Rajagopal	Recommendations for the repair of sea water tanks at Bira Periclase Plant, Visakhapatnam	Gannon Dunkerely & Co., Chennai	0.15
		Finite Element analysis of pile jetting and its influence on axial....	Florida Atlantic Univ., Boca Raton, FL USA	1.045
24	Dr.N.Kumar Pitchumani	Geotechnical investigation and recommendations for foundation	Airforce Station, Tambaram	0.84
25	K.D.Chandrasekaran	Chloride & sulphate ub cibcrete alkali-silica reaction in coarse and fine aggregate & advice	Trafakgas Hose Construction India Limited, Madras	0.1
26	Dr.B.S.Thandaveswara Dr.P.K.Aravindan Dr.K.Elango	Storm drainage system	Cochin Refineries Ltd., Cochin	6.00
27	Dr.B.S.Thandaveswara Dr.P.K.Aravindan Dr.H.Suresh Rao Dr.K.Elango	Bulb turbine analysis	TNEB, Madras	4.075
28	Dr.B.S.Thandaveswara (Group Leader) Dean IC & SR and eight faculty members from other departments	CETP	SIPCOT-SIDCO Ranipet	1% of the total cost
29	Dr. N.Rajagopalan	Design and construction of 12.5 lakhs liter capacity service reservoir at Palani	TWAD Board	50.00
		Investigation of fire affected portion of APH shop	BHEL	30.00
		Design of a composite foundations for the crusher house	AP State Electricity Board	40.00

Sl. No	Name of the Faculty	Title	Industry	Amount (in lakhs)
30	Dr. P.K.Aravindan	Study of the damage caused to concrete surge in cement silo due to fire accident	India Cements	0.10
		Inspection of Neyveli Sangeetha Saba building	Office of the CGM, Neyveli	0.50
		Design foundations for new 150 bullets at Cochin	Indian Oil Corporation, Chennai	0.75
		Testing of RAMCO physical properties	Madras Cements, Mylapore	0.40
		Widening of existing Basin Bridge	Corporation of Chennai	6.50
		Structural drawing approval	Alfa Enviro Systems	0.15
		Widening of the existing Napier Bridge	RK & Sons, Salem	0.23
		Design of LPG Bottling Plant at Hyderbadd, Bangalore and Kakinada	IOCL, Chennai	7.50
		Failure of Ammonia storage tank at FACT Udyogamandal	FACT, Udyogamandal	0.60
		Design of berthing structure at Andaman	Mr. Suryarao Andaman	2.50
31	Dr.P.K. Aravindan Dr. H.Achyutha	Checking the design of port structures	Adani Port, Mundra	3.50
		Assessment of structural soundness of various structures affected by fire accident	HPCL, Visakhapatnam	4.00
32	Dr. P.K. Aravindan Dr. A. Meher Prasad	Rehabilitation of cargo birth	Kandala Port Trust	3.50
		Preparation of design and drawings of bridges	Corporation of Chennai	9.50
		Checking structural soundness of the existing LPG Horton sphere	Hindustan Orgnic Chemical Ltd. Earnakulam	4.00
		120 M lighting tower for SHAR centre	L & T Manapakkam	1.50
		Periodical visits carrying out number of designs	Reliance Industries	1.80
		Site inspection along with necessary equipment for test	HPCL, Bombay	4.00
33	Dr. V. Kalyanaraman	Application of sleeved column system in earthquake resistant building system	TI Engg. Services, Chennai	3.5

Sl. No	Name of the Faculty	Title	Industry	Amount (in lakhs)
	Dr. V. Kalyanaraman	Structural soundness and rehabilitation measures of Hangars at Kochi	Cochin Navy	1.8
		Design of 80m microwave towers using cold roll formed steel sections	NSL Limited, Andhra Pradesh	0.60
		Design of 0.8 T x 7m console centre and steel works	Saudi Crane & Steel Works Factory Ltd., Kingdom of Saudi Arabia	0.50
34	Dr. H.Achyutha	Proof testing of prototype neoprene bearings	Hevea Rubber Industries, Kottayam	0.50
35	Dr. A.Meher Prasad	Design of the proposed jetty at Andaman	Andaman Laksha-deep Harbour works	0.50
		Analysis and design of 70m high bye pass vertical stack	BHEL	2.00
36	Dr.S.B.Pattnaik	Checking of design calculations and drawings for proposed factory at Velachery	Rane Nestech Ltd.	0.60
		Testing of road construction materials under marine environment	Andaman Harbour works	0.44
37	Dr. V.Tamizh Arasan	Technical investigation for formation of new highway	Corporation of Chennai	7.0
		Feasibility study for provision of grade separation at busy highway intersections	Corporation of Chennai	7.0

5.3 RBIC :

S.No	Name of the Investigator/ Co-investigator	Title	Amount (in lakhs)
1.	Dr. S.Mohan Dr. H.Raman (till June 97)	Assessment of ground water recharge potential in Neyveli NLC Latd., Neyveli	2.5

5.4 Retainer Consultancy:

S.No	Name of faculty	Title	Industry	Amount
1.	Dr.S.R.Gandhi	Foundation design for various projects	Fichtner Consulting Engineer (P) Ltd.	Rs.12,000/= per year
		Foundation design for various projects	Larsen and Toubro Limited	Rs.24,000/= per year
	Dr. S.R. Gandhi	Foundation design for various projects	Military Engineering Services, Andaman	Rs.6,000/= per year

S.No	Name of faculty	Title	Industry	Amount
2.	Dr.N.Kumar Pitchumani	Stress Analysis for underground Powerhouse Cavern, Pykarra Hydroelectric Project	National Institute of Rock Mechanics	Rs.40,000/= per year (approx.)
3.	Dr. K.Elango	Periyar-Vaigai System simulation	Anna University	Rs. 5000
4.	Dr. V.Kalyanaraman	Technology Rural Development Project	Gandhigram Trust, Dindigul Anna District	

5.5 Journal Editorial Boards:

S.No.	Name of Faculty	Level	Journal
1.	Dr. V.Kalyanaraman	Member, Editorial Board	Int. JI. of Construction Steel Research, UK
2.	Dr.B.S.Thandaveswara	Member, Editorial Board	Jl. of Hydraulics, ISH Pune
3.	Dr.R.Pitchai	Member, Editorial Board	Indian JI. of Environmental Health (NEERI, Nagpur)

5.6 Others:

- Dr.S.Mohan Reviewed 5 papers for Institution of Engineers (India) and one paper for Indian JI. of Engg. and Material Science
- Dr. V.Kalyanaraman Member at large - Structural Stability Research Council, USA, Task Group 13 - Thin Walled Metal Construction
- Member - Project Advisory Committee, Civil and Mechanical Engineering, Department of Science and Technology, New Delhi
- Member - Structural Engineering Sectional Committee, Bureau of Indian Standards
- Member Chairman - Bureau of Indian Standards, Committee constituted to rewrite the IS:801 - Code of Practice for the design of cold formed steel members.
- Dr.R.Sivanandan Reviewed a research paper for presentation (and later for presentation) at the 1998 Annual Meeting of the Transportation Research Board (TRB), National Research Council, Washington DC, 11-15, Jan. 1998.
- Introduced applications of transportation engineering software as part of the course(s). Hands-on experience was provided to the students by giving them opportunity to work on it in the computer lab. Term project using the software was also designed.
- Dr.R.Pitchai Served as reporter and Member of the Working Group of the session on "Traffic Enforcement" during the workshop on "Road safety action plan for Chennai", organised by the Institution of Automobile Engineers(India), Transport Advisory Forum of Indian Automobile Manufacturers (AIAM), held at IITM, January 31, 1998.

Chairman, Scientific Advisory Committee, National Institute of Occupational Health (ICMR), Hyderabad,, Attended & Chaired Subcommittee Meeting at Bangalore on 5.12.97

Member, Technical Advisory Committee, Tamilnadu Pollution Control Board, Madras

Member, Urban Infrastructure Projects Evaluation Committee, HUDCO, Chennai

5.7 Publications:

(a) National Journal:

1. Srinivasulu, G. and A.Ramachandraiah, "Prediction of clarity in auditoria using artificial neural networks", JI. of Acoustical Society of India, 1997.
2. Ramanamurthy, P.V. and A.Ramachandraiah, "Study of noise levels in a density built urban city", JI. of Traffic and Transportation, Vol.I(4), 95, pp .145 - 151. (published in 1997).
3. Rajasekhar, G. and K.Ramamurthy, "Evaluation of partially grouted concrete hollow block masonry under lateral loading", Indian Concrete Institute Bulletin, Vol.59, April-June 1997, pp.31-36.
4. Krishnan, G., and K. Ramamurthy, "Basic compressive stresses for concrete hollow block masonry", The Indian Concrete JI. Vol.71, No.4, April, 1997, pp.209-213.
5. Ramamurthy, K., "Proposed undergraduate curriculum on building services engineering", The Indian JI. for Technical Education, ISTE, Vol.20, No.2, April-June 1997, pp.23-26.
6. Ramamurthy, K. and K.S.Gumaste, "Properties of recycled aggregate concrete", Indian Concrete JI., Vol.72, Jan. 1998, pp.49-53.
7. Mohan, S. and K.Saravanan, "Computer aided design of reverse osmosis desalination plant", JI. of Indian Water Works Assn. Vol. 29, pp.85-91, 1997.
8. Rajagopalan, N. and V.S.Parameswaran, "Nonlinear finite element analysis of concrete flexural elements reinforced with precast prestressed beams, ING-IABSE, The Bridge & Structural Engineering, Vol. 27, No.4, Dec., 1997.
9. Rajagopalan, N. and V.Balakrishnan, "Geometric design of segmental beam - Parametric Study", ING-IABSE, The Bridge & Structural Engineering, Vol. 28, No.1, Mar., 1998.
10. Balaji K., S.Somayaji and A.Meher Prasad, "Estimation of risk of industrial structures against failure from cyclonic winds", JI of Indian Buildings Congress, Vol. 4, No.1, 1997, pp.8-19.
11. Madhanvan Pillai, T.M. and A.Meher Prasad, "Fatigue reliability analysis and inspection strategy of jacket", JI. of Structural Engineering, SERC, Madras, April 1998.

12. Prasad Varma Thampan C.K., A.Meher Prasad and C.S.Krishnamoorthy, "Genetic algorithms based methodology for reliability based structural optimization", *Jl. of Structural Engg.*, SERC, Madras, April 1998.

(b) International Journal:

1. Lekha, K.R., N.R.Krishnaswamy and P.Basak, "Consolidation of clay by sand drain under time dependent loading", *ASCE Jl. of Geotechnical & Geoenvironmental Engg.*, Vol. 124, No.1, Paper No. GT-14558TN, Jan. 1998.
2. Gandhi, S.R. and S.Selvam, "Group effect of driven piles under lateral load", *Jl. of Geotechnical and Geoenvironmental Engg.*, ASCE, Vol.123, No.8, pp.702-709, 1997.
3. Mohan, S., "Parameter estimation of non-linear muskingum models using genetic algorithm", *Jl. of Hydraulic Engg.*, ASCE, Vol.123, No.2, pp.137-142, 1997.
4. Mohan, S. and N.Arumugam, "Expert systems applications in irrigation management : An overview", *Computers and Electronics in Agriculture*, Elsevier Science, The Netherlands, Vol.17, pp.163-180, 1997.
5. Mohan and N.Arumugam, "Integrated decesion support system for tank irrigation system operation", *Jl. of Water Resources Planning and Management*, ASCE, Vol.123, No.5, pp.260-273, 1997.
6. Mohan, N.Arumugam and Ramaprasad, "Sustainable development and management of tank irrigation systems in South India", *Water International*, IWRA, Vol.22, pp.90-97, 1997.
7. Trinadha Rao, V. and V.R.Rengaraju, "Modeling conflicts of heterogeneous traffic at urban uncontrolled intersections". *Jl. of Transportation Engg.*, ASCE, Vol.124, pp.23-24, Jan-Feb. 1998.

(c) Proceedings of National Conferences:

1. Mathews, M.S., S. Narayanan, N.Lakshmanan, S.Arunachalam and S.Selvi Rajan, "Orientation of industrial sheds to strong winds", 2nd Nat. Conf. on Wing Engineering, Mar. 1997.
2. Ambalavanan, R., Krishnan Myer and K.Ramamurthy, "A Study of alternate systems of construction for typical LIG and EWS housing units", *Proc. of the Nat. Seminar on Cost-effective materials and techniques for mass housing*", 27-28th June, 1997, JNTU, Anantpur.
3. Ambalavanan, R., Satish, V. and K.Ramamurthy, "Influences of block geometrey in achieving cost-effective masonry construction", *Proc. of the Nat. Sem. on Cost-effective materials and techniques for mass housing*", 27-18th June, 1997, JNTU, Anantpur.
4. Ambalavanan, R., K.Ramamurthy and N. Narayanan, "Cost-effective foundation systems for mass-housing", *Proc. of the Nat. Seminar on Cost-effective materials and techniques for mass housing*", 27-28th June, 1997, JNTU, Anantpur.

5. Gurushankar, S. N.Narayanan and K.Ramamurthy, "Database on cost-effective construction techniques", Proc. of the Nat. Seminar on Cost-effective materials and techniques for mass housing", 27-28th June, 1997, JNTU, Anantpur.
6. Satyanarayana, K.N., Koshy Varghese and Sunil Gupta, "Multimedia approach to construction productivity studies", Proc. of the Sem. on Construction Engg. and Management for Infrastructure Development, 1997, 1.1 - S2.1.6.
7. Satyanarayana K.N., Koshy Varghese and Mohamed Arif", GIS basic decision support system for cyclone disaster management", Conf. on Geomatics in Disaster Management, Geomatics 97, Dehradun, 18-20 Sep., 1997.
8. Sowmitra, T., S.Pradeep and Koshy Varghese, "Development of a pavement management system using geographic information systems", Second Indian Arc/Info Users
9. Gandhi, S.R., K.N.Satyanarayana, J.P.Selvam and S.Selvam, "Trial soil-fly ash mix embankment for ash dyke", Nat. Sem. on Geotechnical Engineering, Bangalore 24-25 July, 1997, pp.83-84.
10. Krishnaswamy, N.R. and M.A.Athavan, "Stability analysis of footings on reinforced sand", Proc. of the Second IISC. Nat. Sem. on Geotechnical Engg., 24-25, July 1997, IISC Bangalore.
11. Rajagopal, K. N.R.Krishnaswamy and N.Unnikrishnan, "An innovative construction technique for reinforced soil-structures with weak backfill", Sem. on Innovative construction techniques & equipment for Hydro-power, Thiruvananthapuram, Setp. 1997.
12. Kumar Pitchumani, N. and B.Dasgupta, "Modelling for interaction of dam and reservoir on shallow seated power house caverns", Indian Geotechnical Conference, Vadodara, Dec. 1997, pp.189-192.
13. Mohan, S. and V.Jothiprakash, "An optimisation model for crop planning in a basin under deficit water conditions", Proc. of Nat. Conf. on Emerging trends in the Development of Sustainable Groundwater Sources, 27-28, Aug., 1997, UNTU, Hyderabad, pp.208-217.
14. Jothiprakash, V, S..Mohan and K.Elango, "Influence of percolation ponds - A recharging structure in a small watershed", Proc. of Nat. Conf. on Emerging trends in the Development of Sustainable Groundwater Sources, 27-28, Aug., 1997, UNTU, Hyderabad, pp.280-289.
15. Mohan, S. and N.Arumugam, "Need for optimal crop planning in tank irrigation systems,", Proc. Nat. Sem. on Application of computers in Irrigation Management, IMTI, Trichy, 5-6, Mar., 1998, pp.44-48.
16. Mohan, S. and R.Kannan, "GIS based decision support system for pollution assessment", Proc. Eighth User Interaction Workshop on Remote Sensing, NRSA, Hyderabad, 17-18, Mar. 1998, pp.56-60.

17. Mohan, S. and J. Anjaneyulu, "Aquifer transfer technique for waste water reclamation", Proc. Nat. Sem. on Application of treated effluent for Irrigation, REC Trichy, 23 March, 1998, pp.31-32.
18. Rajagopalan, N., K. Muthumani, N. Lakshmana Rao and N. Gopalakrishnan, "A simple model for the estimation of force time history during an elastic impact", Structural Engineering Convention, Feb. 1997.
19. Rajagopalan, N. "Acceptance test on concrete bridge structures", Nat. Sem. on Recent Trends in Testing of Concrete and Concrete Structures, Mar. 1997.
20. Kalyanaraman, V. and M.V. Sivaselvan, "Active control of the cross arm stayed column, recent advances in structural dynamics and aeroelasticity", 7th NASAS, 13-14 Aug. 1997, pp. III 234.
21. Achyutha, H., and P. Srinivasa Rao and C.S. Viswanatha, "Restoration of a damaged cinema theatre", Nat. Sem. on Recent Trends in Concrete and Steel Structures, Chennai, 25-26 April, 97, pp.364-369.
22. Achyutha, H., V. Paramasivam and M. Radhakrishna, "High strain rate effects on the mechanical properties of concrete and steel - A Review", 2nd Conf. on Engineering Applications of Solid Mechanics, IGCAR, Kalpakkam, 11-12, Dec. 97, pp.52-59.
23. Ajay Varma and A. Meher Prasad, "Dynamic analysis of guyed tower under simulated wind". Proc. of Wind effects on Structures, SERC, Ghaziabad, April 3-5, 1997.
24. Gopalakrishna, K, "Treatment of waste water from Sago Industry using RBC", Proc. of the Nat. Conf., Hyderabad, September 1997.
25. Muralikrishnan, J., C. Lakshmana Rao and V.R. Rengaraju, "Mechanics of airvoids reduction of asphalt concrete using mixture theory", Conf. on Engineering Applications of Solid Mechanics, IGCAR. Kalpakkam, pp.36-44, Dec. 1997.
26. Pattnaik, S.B. and T. Rath, "Feasibility study of privatizing the bus operations in an Indian Metropolitan using fuzzy sets: Chennai as a Case Study", Proc. of the Nat. Symp. on Mathematical Methods and Applications, IIT Madras Dec. 1997.

(d) Proceedings of International Conferences

1. Mani Monto, Koshy Varghese and G. Dattatri, "Development of a GIS based decision support system for sustainable transport - Environment optimization", Proc. of Int. Conf. on Remote Sensing and GIS/GPS (ICORG), June 1997, pp.67-72.
2. Menon Ranjit, Koshy Varghese, K. Ananthanarayanan and K.N. Satyanarayana, "Development of a GIS facilities management system for small communities", Proc. of Int. Conf. on Remote Sensing and GIS/GPS (ICORG), June 1997, pp.
3. Mohamed Arif, K.N. Satyanarayana and Koshy Varghese, "GIS based resource management for natural hazards", Proc. of Int. Conf. on Remote Sensing and GIS/GPS (ICORG), June 1997, pp.112-116.

4. Manoj Philip, N.Mahadevan and Koshy Varghese, "Optimal layout of industrial construction sites: A Genetic algorithm approach", Proc. of ASCE Congress on Computing in Civil Engg., Aug. 1997.
5. Gandhi, S.R., V.S.Raju and Bimal Kumar, "Densification of deposited ash slurry", Proc. of the 13th Int. Conf. on Solid waste Technology and Management, Vol.1, pp.4C1 - 4C8, Philadelphia, 16-19, Nov., 1997.
6. Rajagopal, K., N.R.Krishnaswamy and N. Unnikrishnan, "Numerical analysis of reinforced cohesive soil filled embankments on soft soil", Proc. of the Asian Regional Conf. on Geosynthetics, Geosynthetics Asia 97, 26-29, Nov., 1997., Bangalore pp. 133-140
7. Rajagopal, K., and S.Ramakrishnan, "Degradation behaviour of coir geotextiles within clay soils", Proc. of the Asian Regional Conf. on Geosynthetics, Geosynthetics Asia 97, 26-29, Nov., 1997., Bangalore pp VI33 - VI40.
8. Rajagopal, K. and S.Ramakrishnan, "A study on the coir reinforcement for strengthening soft soil subgrades", Proc. of 6th Int. Conf. on Geosynthetics, 25-29, Mar. 1998, Atlanta, Vol.2, pp.919-922.
9. Kumar Pitchumani, N. and M.R.Madhav, "Analysis at flexible reinforcement strip-soil interaction", Proc. of the 9th Int. Conf. on Computer Methods and Advances in Geomechanics, Wohan, China, Nov. 1997, pp.2349-2354.
10. Kalyanaraman, V. and H.Anand, "Long term degradation model and rational inspection strategy for steel railway bridges", Proc. Int. ERRI - Indian Railway Joint Sem. on Bilateral cooperation for Railway Research, 23-24, Feb., 1998, Vighyan Bhawan, New Delhi.
11. Achyutha, H., V.Paramasivam, K.Hari, K.Sree Harsha, P.C.Koteswara Rao and C.Sivathanu Pillai, "Tension stiffening and cracking in reinforced/prestressed concrete structural elements", Ibid, pp. 144.151.
12. Laster, J.D., P.Pisano, R.Sivanandan, M.Zarean, B.Hoflund and R.James, "Rural transit user needs assessment", Rural Advanced Technology and Transportation Systems, 1997, Int. Conf., Big Sky, Montana, USA, August 24-27, 1997.
13. Turochy, R.E., and R.Sivanandan, "Effectiveness of unmanned radar as a speed control technique in freeway work zones", Preprint 77th Annual Meeting, Transportation Research Board (TRB), National Research Council, Washington, DC, USA, January 11-15, 1998.
14. Pattnaik, S.B. and P.Ravindra, "Analysis of accidents involving road facilities", Proc. of the Int. Conf. on Road Safety, ICORS 97, Andhra University, Visakhapatnam, July 1997

6. Distinguished Visitors to the Department:

S.No	Name of the visitor and Designation	Date of visit	Purpose of visit
1.	Dr.V.R.Raju Keller (M) Sdn. Bhd Kuala Lumpur, Malaysia	6.8.97	To give a seminar talk
2.	Dr.V.S.Vutkuri Dept. Of Mining Engg. Univ. Of New South Wales, Australia	18.8.97	To give a seminar talk
3.	Mr.Raul Moulinie CEO, Z-Tech Group, Canada	4.3.98	To give a seminar talk
4.	Mr. Perna Joint Director Technical & Vocational Education Section, Ministry of Health & Education, Royal Govt. of Bhutan, Bhutan.	11.06.97	To visit the Department
5.	Mr.Kezang Principal Royal Technical Institute Pranscholing, Bhutan	11.06.97	To visit the Department
6.	Prof. H.D.Olbrisch Fachhochschule Nordostriedersachsen Suderburg, Germany	09.10.97	To get an over view of research activities
7.	Dr.M.Srinivasan Chairman, Transport Advisory Forum Madras	6.11.97	To deliver a Guest Lecture
8.	Dr.S.Ponnusamy Addl. General Manager Southern Railways (Retd.) Transportation Consultant, Madras	13.11.97	To deliver a Guest Lecture
9.	Dr.D.V.Reddy Professor and Director Centre for Marine Strs. & Geo Tech. Dept. of Ocean Engg., Florida Atlantic University, Florida	24.4.97	To deliver a Guest Lecture
10.	Prof.Dr.Ing. Hans G.Reimerdes Lehr Stuhl and Institute for Leicht Bau, RWTH, Aachen, Germany	18.8.97	Guest Lecture
11.	Prof. Wolfgang Heil Fachhoch Schule Karlsruhe, Germany	08.09.97	Visit
12.	Dr.K.G.Bhatia General Manager BHEL, New Delhi	16.10.97	Visit

S.No	Name of the visitor and Designation	Date of visit	Purpose of visit
13.	Dr.Ramesh Gambheera Hibbit, Karlsson & Sorensen Inc. USA	17.10.97	Guest Lecture
14.	Dr.Ing. J.Alter Scientist, Research Centre Julich, Germany	08.12.97	Guest Lecture
15.	Mr. Fisher INTES Stuttgart, Germany	22.01.98	

4.6 DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

1. Introduction :

The Department of Computer Science was established in 1973. It offers B.Tech, M.Tech , M.S. and Ph.D Programmes.

2. 1. Students on Roll:

Programme	I year	II year	III year	IV year	V year	Others	Total
B.Tech.	29	32	32	30	-	-	123
M.Tech.	51	37	-	-	-	-	88
M.S.	7	13	14	11	1	-	46
Ph.D.	3	2	2	2	6	-	15
Total	90	84	48	43	7	-	272

2.2. Number of Degrees awarded in the last convocation:

Programme	Total
B.Tech	30
M.Tech	45
M.S	15
Ph.D	3
Total	93

2.3 Names of student/scholar attended Conference/Seminar and Symposia abroad/India:

Sl.No.	Name of the Student/Scholar	Programme	Name of the Conf./Seminar/Symposia	Date & Venue
1.	Samphel Norden	B.Tech	4 th IEEE International Conference on High Performance Computing	Dec 18 - 21 Bangalore
2.	G.Sriram	M.Tech	ADCOMP - 97	Dec 15 - 17 Madras
3.	M.Sanjay	M.S	ICCV	Jan 02 - 07 Bombay
4.	Pavan Kumar	M.S	ISIRS	Jan 09 - 11 Bangalore
5.	M.Ravichandran	M.S	National Communication Conference (NCC '98)	Jan 31 - Feb 2 Bangalore
6.	Anita Mittal	M.S	4 th IEEE International Conference on High Performance Computing	Dec 18 - 21 Bangalore
7.	B.Ramasubramaniam	M.S	4 th IEEE International Conference on High Performance Computing	Dec 18 - 21 Bangalore

8.	G.Manimaran	Ph.D	5 th IEEE International Workshop on Parallel and Distributed Real-time Systems	April 1 - 3 Geneva
9.	G.Manimaran	Ph.D	4 th IEEE International Conference on High Performance Computing	Dec 18 - 21 Bangalore
			12 th IEEE International Parallel Processing Symposium	March 30 - April 3 USA
			6 th IEEE International Workshop on Parallel and Distributed Real-time Systems	March 30 - April 3 USA
10.	G.Mohan	Ph.D	International Conference on Advanced Computing	Dec 15 - 17 Chennai

3 Faculty and their Development:

3.1 Faculty Name and Qualification:

Name of Faculty

Specialisation

Professors

R. Kalyana Krishnan, Ph.D (Yale)

Computer Archive, Computer Graphics, Digital System Design, Microprocessors, Statistical Signal Processing

Kamala Krithivasan, Ph.D. (Madras)

Analysis of Algorithms, Automata Theory and Formal Languages, Computational Geometry, Computation Biology

C.R. Muthukrishnan, Ph.D. (IIT Kanpur)

Distributed Systems, Compilers and Operating Systems, Software Quality, Software Engineering, Object Oriented Design and Applications, Virtual Reality, Performance Modelling and Systems Simulation

C. Pandu Rangan, Ph.D. (IISc.)

Computational Geometry, Graph Algorithms, Machine Learning, Parallel and Randomized Algorithms, Cryptography, Computational Biology

S.V. Raghavan, Ph.D. (IIT Madras) **[Head]**

Performance Evaluation of Computer Systems, Computer Architecture, ASIC Design, Software Engineering Environments, Multimedia Systems, Mobile Networks, Highspeed Networks

B. Yegnanarayana, Ph.D. (IISc.)

Computer Vision, Digital Signal Processing, Neural Networks, Speech Processing

T.A. Gonsalves, Ph.D. (Stanford)

Computer networks, Distributed Systems, Operating Systems, Performance Evaluation, Telecommunications

Associate Professors

C. Siva Ram Murthy, Ph.D. (IISc.) Parallel and Distributed Computing, Real-Time Systems, Computed Networks

S. Raman, Ph.D. (IIT Madras) Microprocessors, Multimedia Systems, Natural Language Processing, Data Mining and KDD

Assistant Professors

Deepak Khemani, Ph.D. (IIT Bombay) Artificial Intelligence, Knowledge Based Systems, Natural Language Processing, Neural Networks

Hema A. Murthy, Ph.D. (IIT Madras) Computer Graphics, Pattern Recognition, Speech Processing, Fractals

D. Janaki Ram, Ph.D. (IIT Delhi) Distributed Systems, Object Oriented Systems, Database Systems, Software Engineering, CAD/CAM

P. Sreenivasa Kumar, Ph.D. (IISc.) Graph Algorithms, Parallel Computing, Sparse Matrix Computations

Sukhendu Das, Ph.D. (IIT Kharagpur) Computer Graphics, Computer Vision, Neural Networks, Robotics, Analog and Digital Systems

R. Sundar, Ph.D. (IIT Madras) Analog and digital systems, Microprocessors, Speech Processing, CAD for VLSI

C. Chandra Sekhar, Ph.D. (IIT Madras) Microprocessors, Digital systems Design, Neural networks, Speech Processing

Scientific Officer Gr.I

J.T. Sanjeeva Murthy, M.Tech. (IIT Delhi)

3.2 Short term courses/Workshops/Seminars/Symposia/Conferences organised by the Dept:

S.No.	Coordinator(s) Period	Title of the Workshop/Seminar/Symposium	
1.	Dr.B.Yegnanarayana Dr.Hema A Murthy Dr.C.Chandrasekar	Speech Technology	April 4 - April 6, 1997
2.	Dr.Hema A Murthy Dr.Sukhendu Das	Computer Graphics & Image Processing	April 18 - April 19, 1997
3.	Dr.S.V.Raghavan	Advanced Technologies in Communication Systems	Dec 6, 1997

3.3 Short term courses/Workshops/Seminars/Symposia/Conferences/ Training attended by the faculty members in recognised academic institutions and public sector units:

S.No.	Coordinator(s) Period	Title of the Workshop/Seminar/Symposium	
1.	Dr.T.A.Gonsalves	National Communication Conference, (NCC '98), IISc, Bangalore	Jan.31-Feb.2,97
2.	Dr.Sukhendu Das	ICCV, Bombay	Jan.4-8, 1998
		ISIRS, Bangalore	Jan.10-12,1998

3.4 Special lectures delivered by the faculty in other Institutions:

S.No.	Name of faculty	Topic of lecture	Venue & Date
1.	Dr.Kamala Krithivasan	Carrer in Computers	Madras Christian College, Tambaram
2.	Dr.Sukhendu Das	Computer Vision	March 6, 1998 TTTI, Madras - Dec.'1997.
3.	Dr.Hema A Murthy Dr.C.Chandrasekar	Speech Technology	
4.	Dr.Siva Ram Murthy	Efficient Resource Reclaiming in Multiprocessor Real-time Systems	University of Kaiserslautern Germany, Nov '97.
		Efficient Dynamic Scheduling in Multiprocessor Real-time Systems	Univ. of Stuttgart Dec. 1997.

3.5 Visits abroad by faculty:

S.No.	Name of faculty	Country visited	Date	Purpose of visit
1.	Dr.Kamala Krithivasan	Romania	Aug 16 -24 1997	Participate in a Workshop
2.	Dr.C.Siva Ram Murthy	Germany	Nov. - Dec. 1997	INSA Exchange Programme
3.	Dr.C.Pandu Rangan	Australia	May - June 1997	Discussions/Seminar
		USA	July - Aug 1997	Discussions, Book writing
		Korea	Aug - Dec 1997	Discussion/Seminars Joint Research
4.	Dr.T.A.Gonsalves	USA	May 1997	Inter OP Exhibition Project review Meeting
		France	Nov. 1997	Project review Meeting

3.5 Honours and Awards:

S.No.	Name of faculty	Honours/Awards	Awarded by	Date
1.	Dr.C.Siva Ram Murthy	Best Paper	IEEE Joint Workshop on Parallel and Distributed Real-Time Systems	April 2 '97
		LISTED IN WHO'S WHO IN THE WORLD		Jan. 1998

3.6 Journal Editorial Boards:

S.No.	Name of faculty	Level	Journal
1.	Dr.Kamala Krithivasan	Member of Editorial Board	JMPS

3.7 Design & Development Activities:

1. FDDI Uplink card for the NovaSwitch 2400ex (for Acacia Networks, USA)
2. XLS 424 4-segment Ethernet Switch (for Excellent Computers, Madras)
3. V5.2 Access Network protocol stack for the corDECT WLL system

3.8 Brief and specific details of process/instruments/equipment /software designed & developed:

(Dr.Hema A Murthy)

Implementation SPHIGS on Windows '95 platform

4 Research & Consultancy:

4.1 Sponsored Research Projects:

S.No.	Title	Period	Funding Agency	Amount (in Lakhs)	Coordinator(s)
1.	A computer based Teaching system for Foundations Course in CS	3 years	AICTE	2-7	Dr.C.Pandu Rangan
2.	Computational Geometry & Appl.	1994-98	DST	5.5	Dr.Kamala Krithivasan Dr.C.Pandu Rangan
3.	FDDI Station Management Protocols and ethernet bridge	1993-97	DOE	27.0	Dr. A. Jhunjunwala Dr.Baskar Ramamurti Dr.T.A.Gonsalves
4.	Development of Software of Russian-English translation	1995-98	ISRO	7.9	Dr.S.Raman Dr.R.Sundar

S.No.	Title	Period	Funding Agency	Amount (in Lakhs)	Coordinator(s)
5.	Development of Techniques for Classification of Urban Features from Remote Sensed Data for use In GIS Application : A Multi-disciplinary Approach	1997-2000	ISRO	4.5	Dr.B.Yegnanarayana Dr.Sukhendu Das
6.	Information Recovery from Partial Data for Image Processing Application	1997 - 200	ONR, USA	18.9	Dr.B.Yegnanarayana Dr.Sukhendu Das

4.2 RBIC (only ongoing)

S.No.	Name of investigator/ Co investigator	Title	Value
1.	Dr.T.A.Gonsalves Dr.Bhaskar Ramamurthi Dr.Ashok Jhunjhunwala	Wireless Local Loop	\$250,000
2.	Dr.T.A.Gonsalves Dr.Bhaskar Ramamurthi Dr.Ashok Jhunjhunwala	Computer Networking Activity	Rs.50.0
3.	Dr.T.A.Gonsalves Dr.Bhaskar Ramamurthi Dr.Ashok Jhunjhunwala	Dev. of ISDN Terminals	Rs.4.0 + R
4.	Dr.T.A.Gonsalves Dr.Bhaskar Ramamurthi Dr.Ashok Jhunjhunwala	ISDN Interface for Paradigm Exchange	Rs.9.0
5.	Dr.T.A.Gonsalves Dr.Bhaskar Ramamurthi Dr.Ashok Jhunjhunwala	Neuron Based Scada System - Phase II	Rs.12.0
6.	Dr.T.A.Gonsalves Dr.Bhaskar Ramamurthi Dr.Ashok Jhunjhunwala	Fibre in Local Loop	Rs.39.0

5 Research Publications:

(a) Journals: (Published papers only - International and national)

1. Sumeet Laborani and Kamala Krithivasan, Intersection Removal for Simple Polygons, Int. Journal of Computer Mathematics, Vol.64, pp.211-224, 1997.
2. Kamala Krithivasan, V.T.Chakravarthy and R.Rama, Array Splicing Systems, New Trends in Formal Languages LNCS, Vol.1218. pp.346-365.

3. V.T.Chakravarthy and Kamala Krithivasan, A Note on extended H systems with permitting/forbidden contexts of radius one, EATCS Bulletin, No.62, pp.208-213, 1997.
4. S.Jeyalakshmi and Kamala Krithivasan, Visibility of Rectangular Objects in L_1 metric, accepted for publication in International Journal of Computer Mathematics.
5. T.A.Gonsalves and A.Jhunjunwala, "Building a Cost-Effective Campus LAN:", Express Computer, 22 Dec 97, pp. 16 - 18.
6. G.Venkatesan, V.Rotics, M.S.Madanlal, J.A.Makowski, C.Pandu Rangan, Restrictions of Minimum Spanners Problems. Information & Computation vol 136, pp 143 - 164 , 1997.
7. S.Kartik and C.Siva Ram Murthy, "Task Allocation for Maximizing Reliability of Distributed Computing Systems", IEEE Trans. on Computers, vol. 46, no. 6, pp. 719-724, 1997.
8. Machiraju Vijay and C.Siva Ram Murthy, "Fault Tolerant Systolic Evaluation of Polynomials and Exponentials of Polynomials for Equispaced Arguments", IEEE Trans. on Circuits and Systems - Part I, vol. 44, no.3, pp.246-250, 1997.
9. K.Bhuvanewari, K.N.Balasubramanya Murthy, and C.Siva Ram Murthy, "A New and Faster Gaussian Elimination Based Fault Tolerant Systolic Linear System Solver" Journal of Parallel and Distributed Computing, Vol.44, no.2, pp. 107 - 122, 1997.
10. G.Manimaran, C.Siva Ram Murthy, Machiraju Vijay, and Krithi Ramamritham, "New Algorithms for Resource Reclaiming from Precedence Constrained Tasks in Multiprocessor Real-time Systems", Journal of Parallel and Distributed Computing, Vol.42,no.pp. 123-132, 1997.
11. Ajith Tom P. And C.Siva Ram Murthy, "An Improved Algorithm for Module Allocation in Distributed Computing Systems", Journal of Parallel and Distributed Computing, vol.42, no.1, pp.82-90, 1997.
12. V.Sudhakar and C.Siva Ram Murthy," A Modified Noising Algorithm for the Graph Partitioning Problem", Integration - the VLSI Journal, vol.22, pp.101-113, 1997.
13. G.Manimaran and C.Siva Ram Murthy, "A New Scheduling Approach Supporting Different Fault-tolerant Techniques for Real-time Multiprocessor Systems", Microprocessors and Microsystems Journal, vol.21, no. 3, pp. 163-173, 1997.
14. Paul P Ignatitus and C.Siva Ram Murthy, "On Task Allocation in Heterogeneous Distributed Computing Systems", International Journal of Computer Systems Science and Engineering, vol.12, no. 4, pp.231-238, 1997.
15. D.Antony Louis Piriya Kumar and C.Siva Ram Murthy, "Distributed Computation for a Hypercube Network of Sensor Driven Processors with Communication Delays Including Setup Time", IEEE Trans. on Systems, Man, and Cybernetics, March 1998.
16. G.Manimaran and C.Siva Ram Murthy, " An Efficient Dynamic Scheduling Algorithm for Multiprocessor Real-time Systems", IEEE Trans. on Parallel and Distributed Systems, vol.9, no.3, March 1998.

17. S.Vela and Hema A.Murthy, "Speaker Identification - A New model based on statistical Similarity", ICCLSDP -98, Calcutta, Feb.18-20, 1998, pp.7 - 12.
18. G.Sriram, S.Vela and Hema A.Murthy, "Fast and Efficient Image Compression for Multimedia, " Proc. SEARCC - 97-252, New Delhi, Dec 4-6, 1997.
19. G.Sriram S.Vela and Hema A.Murthy, " A new approach to Fractal Image Compression" Proc.ADCOMP - 97, pp.249 - 254 Dec 15 - 17 Madras, 1997
20. S.Vela, G.Sriram, Hema A. Murthy "New approaches to Speaker Identification based on Fractal", proc.ICSSP-97, pp.581-586 Aug 26 - 28 1997
21. Hema A.Murthy , Françoise Bernfayss, Larry Heek and Mikchel Wintraub, " Feature Extraction for speaker Identification over telephone channels, "Proc. Spcom.97, pp.43-50, Bangalore, India.

(b) Conferences: (Presented) -International and national

1. Rema and K.Krithivasan, An approximation algorithm for path planning in three dimensions, International Conference on Int.Robotics, Jan 1998, Bangalore.
2. S.Jeyalakshmi and K.Krithivasan - Some optimal isothetic polygem enclosing K Points, Int. Conf. On Int.Robotics, Jan 1998 Bangalore
3. Raghul Santharam and K.Krithivasan Graph splicing Systems, International Conference on graph connections, Cochin, Jan 1998.
4. G.Manimaran, M.Shashidhar, Anand Manikutty, and C.Siva Ram Murthy "Integrated Scheduling of Tasks and Messages in Distributed Real-time Systems", in Proc. 5th IEEE International Workshop on Parallel and distributed Real-time Systems, Geneva, Switzerland, April 1-3, 1997.
5. I.Santhosh Kumar, G.Manimaran, and C.Siva Ram Murthy, "A pre-run-time Scheduling Algorithm for Object-based Distributed Real-time Systems", in Proc. 5th IEEE International Workshop on Parallel and Distributed Real-time Systems, Geneva, Switzerland, April 1-3, 1997.
6. Anand Manikutty, M.Shashidhar, G.Manimaran, and C.Siva Ram Murthy, "DREAD: Distributed Real-time Air Defence System", in Proc. 5th IEEE International Workshop on Parallel and Distributed Real-time Systems, Geneva, Switzerland, April 1-3, 1997.
7. K.N.Balasubramanya Murthy and C.Siva Ram Murthy,"A New, Scalable Bidirectional Cholesky Factorization Algorithm for Solving Symmetric Positive Definite Systems on Hypercubes", in Proc. International Conference on Computer Applications in Electrical Engineering, Roorkee, September 8-11, 1997.
8. G.Venkatesan, G.Mohan, and C.Siva Ram Murthy," Probabilistic Routing in Wavelength- Routed Multistage, Hypercube, and Debruijn Networks" , in Proc. 4th IEEE International Conference on High Performance Computing, Bangalore, December 18-21, 1997
9. G.Manimaran and C.Siva Ram Muarthy, " Dynamic Scheduling of Parallelizable Tasks and Resource Reclaiming in Real-Time Multiprocessor Systems", in Proc.

- 4th IEEE International Conference on High Performance Computing, Bangalore, December 18-21, 1997.
10. R.Vijay Shankar, G.Mohan, and C.Siva Ram Murthy, "Permutation Routing in Wavelength routed Wrapped-around Shuffle Networks using Fewer Wavelengths", in Proc. International Conference on Advanced Computing, Chennai, December 15-17,1997.
 11. K.N.Balasubramanya Murthy and C.Siva Ram Murthy,"A Bidirectional Elimination Algorithm for Parallel Solution of Linear Equations using Square Root Free Givens Rotations", in Proc. International Conference on Advanced Computing, Chennai, December 15-17, 1997.
 12. K.Mahesh, G.Manimaran, C.siva Ram Murthy, and Arun Somani," Scheduling Algorithms Exploiting Spare Capacity and Tasks' Laxities for Fault Detection and Location in Real-time Multiprocessor Systems", in Proc. 12th IEEE International Parallel Processing Symposium, FL, USA, March 30-April 3, 1998.
 13. Samphel Norden, S.Balaji, G.Manimaran, and C.Siva Ram Murthy, "Deterministic Best Effort and Planning Based Protocols for Real-time Communication in Multiple Access Networks", accepted for presentation at the 6th IEEE International Workshop on Parallel and Distributed Real-time Systems, FL, USA, March 30-April 3, 1998.
 14. I.Santosh Kumar, G.Manimaran, and C.Siva Ram Murthy, "Static Scheduling of Object-based Real time Tasks with Probabilistic Conditional Branches in Distributed Systems" accepted for presentation at the 6th IEEE International Workshop on Parallel and Distributed Real-time Systems, FL,USA, March 30 April 3, 1998
 15. R.Sriram, G.Manimaran, and C.Siva Ram Murthy, "Air Traffic Control System", accepted for presentation at the 6th IEEE International Workshop on Parallel and Distributed Real-time Systems, FL,USA, March 30-April 3, 1998.
 16. R.Thirumurthy, N.P.Manoj, T.A.Gonsalves & C.Sanjay, "Design and Implementation of an FDDI-Ethernet Bridge", Proc. 4th National Conference Communi. (NCC '98), IISc, Bangalore, Jan. 98, pp. 155-160.
 17. S.E.Thomas & T.A.Gonsalves, "DiPCoST: A DSM Approach to Process Control", Proc. 4th National Conference Commun. (NCC '98), IISc, Bangalore, Jan.98, pp. 155-160.
 18. A.A.Chander, M.Ravichandran, V.P.Mane, & T.A.Gonsalves, "The IIT-M Intranet: A Case Study of Cost-Effective Networking", SECURENET-98 National Sem. on Security Aspects of Intranet/Internet, DOE/ITI/IETE, Bangalore, 7-8 Jan 98.
 19. D.Venkatesulu & T.A.Gonsalves, "Efficient, Fault-tolerant Reliable Broadcast in an Extended LAN", Proc. 22nd Local Computer Network Conf. Minneapolis, USA, Nov.97, pp. 149-158.
 20. Amitava Datta, K.Krithivasan and T.Ottamann, An Optimal Algorithm for One Separation of a set of Isothetic Polygons, CIAC'97, Italy, March 1997.

21. G.Kotsis, K.Krithivasan and S.V.Raghavan, Generative Workload models for Internet traffic, Proceedings of the ICICS Conference, Singapore, pp. 152-156, 1997.
22. G.Kotsis, K.Krithivasan and S.V.Raghavan, A Workload characterization Methodology for WWW application, Proceedings of PMCCN Conference, Japan 1997.
23. K.Krithivasan, Invited talk delivered at the Molecular Computing Workshop held in Mangalia, Romania.
24. V.Radhakrishnan, T.C.Chakravarthy and K.Krithivasan, Exact and Approximate Matching of Matrix Languages, International Conference on Discrete Mathematics and Allied topics, New Delhi, November 1997.
25. E.N.Bommaiah & T.A.Gonsalves, "A Disconnected File System for Mobile Linux Nodes", Proc. 10th International Conference Parallel & Distributed Computing Sys., 1 - 3 Oct. 1997, New Orleans, USA, pp 1-8.

6 Distinguished Visitors to the Department:

S.No.	Name of Visitor & Designation	Date of visit	Purpose of visit
1.	Dr.Nirmal Jain Managing Director Tata Infotech Ltd., Mumbai	6.3.1998	CS Colloquium
2.	Dr.Som Mittal Managing Director Digital Equipment (India) Ltd., Bangalore	9.1.1998	CS Colloquium
3.	Dr.R.Ramanujam Reader Institute of Mathematics Sciences Madras	3.10.1997	CS Colloquium
4.	Mr.Arun Jain CEO POLARIS Software Lab Ltd.	1.8.1997	CS Colloquium

4.7 DEPARTMENT OF ELECTRICAL ENGINEERING

1 Introduction:

The Department of Electrical Engineering is an integrated one encompassing both areas of Electrical and Electronics Engineering. At present the Department comprises the following laboratories.

- Communication Systems Laboratory/DSP Laboratory
- Electronic Circuits/Microelectronics Laboratory
- Amorphous Semiconductor Laboratory
- Aeronomy and Laser Communications Laboratory
- Microwave Laboratory, Antenna Laboratory
- Control and Robotics Laboratory
- Electrical Machines and Drives Laboratory
- Measurements and Instrumentation Laboratory
- Power Systems Laboratory
- High Voltage Engineering Laboratory
- Digital Systems and VLSI Laboratory
- Optical Communication Laboratory
- Photonics Laboratory

2 Academic Programmes:

B.Tech Degree in Electrical Engineering:

The department offers an integrated undergraduate degree in Electrical Engineering that combines aspects of power, control, communication and micro electronics engineering.

M. Tech Degree in Electrical Engineering:

Four major streams of study are available at M.Tech. level:

- Communication Systems Engineering
- Energy Systems Engineering
- Microelectronics
- Control, Guidance and Instrumentation Systems

The undergraduate curriculum is under review and a substantially revised curriculum will come in to effect beginning July '98. The department will introduce a five-year integrated M.Tech. Program beginning July '98.

Areas of research for M.S. and Ph.D. Degree in Electrical Engineering:

Electronic Circuits, Communication Systems, Digital Techniques and Computer Technology, Electromagnetic Interference and Compatibility, Antennas, Optical Communication, Image and Digital Signal Processing, Laser Communications, Microwave Engineering, Semiconductor Devices, Amorphous Semiconductor Devices, Control Engineering, Electrical Machines and Drives, Guidance Systems, High Voltage Engineering, Measurements and Instrumentation, Power Electronics, Power Systems, Photonics and Robotics.

2.1 Students on Roll (To be obtained from Academic Section):

Programme	I year	II year	III year	IV year	V year	Total
Ph.D.	2	3	2	5	6	18
M.S.	27	15	19	14	2	77
M.Tech.	53	32	-	-	-	85
B.Tech.	89	84	63	79	-	315
Total	171	134	84	98	8	495

2.2 Names of student/scholar attended Conference/Seminar and Symposia abroad/India:

Sl. No.	Name of the Student/Scholar	Programme	Name of the Conf./ Seminar/ Symposia	Date & Venue
1	P.K. Sundararajan	B.Tech.	Intl. VLSI Design Conference.	Jan. 4-7, '98, Madras
2	B. Jayaprakash V.S.S.V. Ramakrishna S. Chakravarthy	M.Tech.	-do-	-do-
3	G.M. Anitha B. Srikanth S.K.N. Khalid R. Sanjeev Shahanaaj Begum L. Sri Lakshmi Rajesh Raja Ram S. Venkatesh T.G. Venkatesh Ram Y. Gopal C.F. Prince	M.S.	-do-	-do-
4	S. Venkatesh	M.S.	SPCOM	IISc, July 17-19, '97
5	W. Mahesh G. Rajeev P. Kishore	M.S.	NCC 98	IISc., Jan.30-31, '98
6	Vasudevan Kasthuri	Ph.D.	-do-	-do-
7	K. Remashan	Ph.D.	Indn. Natl. Sci. Congress	Dec. '97

2.3 Number of Degrees Awarded in the last convocation:

Programme	Number awarded
B.Tech.	73
M.Tech.	27
M.S.	16
Ph.D.	5
Total	121

3 Faculty and their Development:

3.1 Faculty Name and Qualification:

Name and Qualification	Major area of Specialisation
Professors	
Ashok Jhunjunwala, Ph.D. (Maine)	Communication Networks, Fibre Optics, Surface Acoustic Wave Devices
M.V.Chalapathi Rao, Ph.D. (IIT Madras)	Control Theory
C.Eswaran, Ph.D. (IIT Madras)	Networks, Digital Filters, Microprocessors

Name and Qualification	Major area of Specialisation
P.A. Janakiraman, Ph.D. (IIT Madras)	Robotics, Control Systems, Instrumentation, Image Processing
A. Kuppurajulu, Ph.D. (Moscow)	Power Systems, Computer Applications
M. Mukunda Rao, Ph.D. (Andhra)	Lasers, Fibre Optics
M.S.Narasimhan, Ph.D. (IIT Bombay)	Antenna Engineering, Applied Electromagnetics
K.Narayana Bhat, Ph.D. (IIT Madras)	Semiconductor Fabrication
K.M.M. Prabhu, Ph.D. (IIT Madras)	Signal Processing
K.Radhakrishna Rao, Ph.D. (IIT Kanpur)	VLSI, Analog and Digital IC's
J.P. Raina, D.Sc. (Louvain)	Fibre Optics, Television
K. Ramar, Ph.D. (IIT Madras)	Power Systems, Computer Applications
P. Sankaran, Ph.D. (IIT Madras)	Networks, Magnetic Materials
V.V. Sastry, Ph.D. (IIT Kharagpur)	Machines, Power Electronics, Simulation
G. Sridhara Rao, Ph.D. (IIT Madras) [Head]	Machines, Power Electronics, Simulation
S. Srinivasan, Ph.D. (IIT Madras)	Microprocessors, Microcomputers
Vedam Subrahmanyam, Ph.D. (IIT Madras)	Power Electronics
V. Venkata Rao, Ph.D. (Iowa)	Digital Signal Processing,, Communications
C. Venkataseshiaiah, Ph.D. (IIT Madras)	High Voltage, Power Systems
Associate Professors	
Bhaskar Ramamurthi, Ph.D. (California)	Digital Communication and Communication networks, Signal processing
Dattatreyan, Ph.D. (Sheffield)	Microwaves
V. Jagadeesh Kumar, Ph.D. (IIT Madras)	Measurements, Instrumentation
P. Sasidhara Rao, Ph.D. (IIT Madras)	Electrical Machines
Assistant Professors	
Amitava Dasgupta, Ph.D (IIT, Kharagpur)	Si and GaAs Devices, Technology and Simulation
M. Antony Reddy, Ph.D. (IIT Kharagpur)	Electronic Circuits
Enakshi Bhattacharya, Ph.D. (TIFR Bombay)	Solid State Devices
S. Karmalkar, Ph.D. (IIT Madras)	VLSI, Semiconductor Devices
M. Krishnamurthi, M.Tech. (IIT Madras)	Power Systems

Name and Qualification

P.C. Majhee, M.Tech. (IIT Madras)
 G.T. Manohar, M.Tech. (IIT Madras)
 Nandita Dasgupta, Ph.D. (IIT Madras)
 T.J. Vitto, Ph.D. (IIT Madras)
 C. Mathiazhagan, Ph.D. (Univ. California)
 Vinita Vasudeven, Ph.D. (IIT Bombay)
 Devendra Jalihal, Ph.D. (Duke)
 R. Aravind, Ph.D. (California)
 K. Giridhar, Ph.D. (California)

Major area of Specialisation

Measurements, Instrumentation
 Microprocessors, computers, control systems
 Si and III-V Semiconductor Devices,
 Technology & Simulation
 Semiconductors
 RF SP, Analog Circuits for Telematics
 Devices, CAD for VLSI
 Statistical Signal Processing
 Image Processing and Compression
 Communication and Signal Processing

Lecturer

R. Sarathy

High Voltage Engineering

Principal Scientific Officer

P.R. Vaya,

Semiconductor Devices

Senior Scientific Officers

T.V. Gopal, M.S. (IIT Madras)
 K. Ponnuraju, Ph.D. (IIT Madras)
 H. Renganathan, M.S. (IIT Madras)

Measurements, Computer System
 Management
 Solid State Electronic Devices,
 Semiconductor Technology
 DSP. Microprocessor Systems

Senior Design Engineers

P. Ramaseshagiri Rao, M.S. (IIT Madras)
 Ranjana Shukla, M.S. (IIT Madras)
 V.N. Shukla, M.S. (IIT Madras)

Semiconductor Fabrication
 Microprocessors and Computers
 Microprocessors and Computers

3.2 Short-term Courses/Workshops/Seminars/Symposia/Conferences organised:

Sl.No.	Co-ordinators	Title	Period
1	V.V. Sastry, V. Rajagopalan	Digital Simulation of Power electronic System	22 & 23 Jan '98
2	M. Mukunda Rao	Optical Sensors for Non-invasive Diagnosis, IC & SR, IIT Campus, Madras	Feb. 18, 1998
3	S. Srinivasan	Program Co-chair VLSI Design '98	Jan 4 - 7, 1998

3.3 Short-term Courses / Workshops / Seminars / Symposia Conferences/ Training attended by the Faculty in recognised Academic Institutions and Public Sector Units:

Sl.No	Name of Faculty	Title	Institution	Period/Duration
1	S. Srinivasan	A series of five lectures on VLSI and DSP architectures	Regional Engineering College, Warangal,	March 1998
2	E. Bhattacharya A. Dasgupta N. Dasgupta K.N. Bhat	IX International Workshop on Physics of Semiconductor Devices	New Delhi,	Dec. 16-20, 1997)
3	K.N. Bhat	MRSI, 9 th AGM	Madras.	Feb. 11-13, 1998
4	S. Srinivasan	ICCIMA - 98	Australia	Feb. 9-11, 1998
5	Bhaskar Ramamoorthy R. Arvind D. Jalihal	SPCOM 97	IISc. Bangalore	July 17-20, '97
6.	Ashok Jhunjhunwala Bhaskar Ramamoorthy R. Arvind D. Jalihal K. Giridhar	NCC-98	IISc. Bangalore	Jan. 29-31, '98
7	C. Venkateshaiah	Intl. Conf. on Properties of Dielectric material	Seoul, Korea	May 25-30 '97
8	R. Sarathy	10 th Intl. Symposium of High Voltage Engg.	Montreal, Canada	Aug. 24-30, '97
9	K.R.K. Rao Vinita Vasudevan	VLSI Design, 1998	Madras	Jan 4-7, '98

3.4 Special Lectures Delivered by the faculty in other Instutitions:

S.No.	Name of Faculty	Topic of Lecture	Place and Date
1	V.V.Sastry	Electric Power Sector in India - Crisis and Opportunities	Humboldt Foundation, Bonn, 14-17 April, 1997
2	Amitava Dasgupta	Analytical Modelling of Hetero junction Bipolar Transistors in National Symposium Modelling of High Frequency Transistors	7 Nov. 1997 at New Delhi
3	Amitava Dasgupta	Modelling of Hetero junction Bipolar Transistors, a unified approach in International Workshop on Physics of Semiconductor Devices	New Delhi, Dec. 16-20, 1997
4	S. Srinivasan	Inaugural Address in the IETE Zonal Seminar on Neural Networks	Nov. 20-21, 1997,
5	S. Srinivasan	A series five lectures VLSI and DSP architectures in the Regional Engineering, Warangal	March 1998
6.	K.N. Bhat	"Polycrystalline Silicon Thin Film Transistors"	IX International Workshop on Physics of Semiconductor Devices, New Delhi, December 16-20, 1997)
7	K.N. Bhat	"Microelectronics and Microengineering Materials	MRSI, 9 th AGM Madras, Feb. 11-13, 1998.
8	K.N. Bhat	Micromachining of Silicon	Miniaturisation in Aerospace Systems, RCI, Hyderabad - 26, January 1998.
9.	K.N. Bhat	"Micromachine Accelerometer System"	Miniaturisation in Aerospace Systems, RCI, Hyderabad - 26, January 1998

S.No.	Name of Faculty	Topic of Lecture	Place and Date
10	K.N. Bhat	Silicon on Insulator (SOI) Technology and Devices"	SERC School on Materials and Advanced Research and Technology (SMART '97) 3-17, October 1997
11	A. Jhunjunwala	Wireless Communication for Cost-Effective Voice & Data connectivity in Indian Urban & Rural Areas	Symposium on Progress in Science, INSA, Hyderabad, November 1-3, 1997
12	A. Jhunjunwala	Development of Indigenous WLL Technology	Plenary session on Telecommunications, 85 th Session of Indian Science Congress, January 3-7, 1998, Hyderabad
13	A. Jhunjunwala	A Real Information Revolution in India	International Conference on Computers & Devices for Communication (CODEC '98), January 13-17, 1998, Calcutta
14	A. Jhunjunwala	Technological and Management Issues involved in corDECT development	Seminar of India Institute of Management, March 12, 1998, Ahmedabad
15.	A. Jhunjunwala	Fibre Optic Link Design	International Centre for Science & High Technology, September 14, 1997, Vietnam

3.5 Visits Abroad by Faculty:

S.No.	Name of Faculty	Country visited	Date	Purpose of visit
1	V.V. Sastry	Germany	April 1997 - 3 weeks	Invitation of Alexander Von Humboldt Foundation and had discussions with Prof. D. Schroeder at T.U. Munich and Prof. J. Holtz, Univ. of Wuppertal, FRG
2	A. Jhunjunwala	WorldTel, London. Las Vegas, USA	2.5.97 to 8.5.97	Presentation of corDECT WCC system; and Inter OP Conf., Las Vegas, and Review of WCC Project
3	A. Jhunjunwala	Changchun Saerghai, China	16.8.97 to 22.8.97	Presentation of corDECT WCC system
4	A. Jhunjunwala	Intl. Centre for Sci and High Tech, Vietnam	12.9.97 to 17.9.97	Lecture on Fibre Optic Link Design
5	A. Jhunjunwala	Opto Sensors, Malaysia	22.4.98 to 22.4.98	Presentation of corDECT WLL system
6	Amitava Dasgupta	Institute für Hochfrequenztechnik, Technische Hochschule Darmstadt, Germany	May 19 - Aug.15, 1997	under DAAD Reinvitation program
7	S. Srinivasan	Australia/Singapore	Feb. 7-17, 1998	--
8	P. Sasidhara Rao	Korea	1997-1998	Visiting Faculty
9	R. Sarathy	Canada	--	--
10	C. Venkateseshaiah	Korea	1997-1998	Visiting Faculty

**3.6 Design and Development Activities:
Brief and specific details of Process/Instruments/Equipment/Software
Designed and Developed:**

1. An algorithm for determining the center of gravity and orientation of an object for a Robotic vision system was implemented.
2. Digital simulation of Power Electronic Circuits: Computer Aided Modeling of Simulation of Using DYMOLA & DYMO SIM
3. Video course on Microprocessors and Applications 36 part lecture series, produced
4. Video course on electronic service.

**3.7 Details of patents held in the Department with the date of filing:
Patents awarded:**

1. Active Power Quality conditioner for reactive power & harmonics compensation", U.S. patent No.08/667, 924

**3.8 Research and Consultancy:
Sponsored Research Projects**

S. No	Title of Project	Duration	Sponsoring Agency	Value (in lakhs)	Other Investigator/ Co-Investigators
1.	Flight worthy micromachined Seismic Accelerometer	18 Months	DRDO, Delhi	17.25	P.R.S. Rao Amitava Dasgupta Nandita Dasgupta S. Karmalkar
2.	Development of SOI CMOS Process for Space Application	1 Year	ISAC/ISRO Bangalore	12.00	A. Das Gupta N. Das Gupta P.R.S. Rao
3.	Development of Bipolar and MOS Device simulator	4 years	DOE Delhi	21.05	Vinita Vasudevan Amitava Dasgupta P.R.S. Rao
4.	Study of slice Alloys		DST	6.67	Enakshi Bhattacharya
5.	Development of a-5::H Thin Film Transistors	1 year	DST	13.22	Enakshi Bhattacharya
6	Variable-speed constant frequency (brushless) generator applied to stand alone sea wave extraction,		NIOT, IIT Madras	16.0	V.V. Sastry
7	Object-oriented Simulation of Power Electronic Systems"			14.0	V.V. Sastry, Prof. D. Schroeder, T.U. Munich
8	Adaptive Moving Target Detections for Radar Signal Processing	Probable date of completion 31.3.99	DRDO	9.97	K.M.M. Prabhu

3.9 Industrial Consultancy:

S.No.	Name of the Faculty	Title	Industry	Amount (in Lakhs)
1.	K.N. Bhat A. Das Gupta N. Das Gupta S. Karmalkar P.R.S. Rao	POLYCRYSTALLINE Silicon Solar Cells with BSF	BHEL, Hyderabad	2.0
2.	Dr. S. Karmalkar Dr. C. Mathialagan	RF transistor developemnt	BEL, Bangalore	1.5

3.10 RBIC:

S.No.	Name of the Investigator/ Co-Investigator	Title	Amount (In Lakhs)
1	A. Jhunjunwala B. Ramamoorthy T.A. Gonsalves R. Arvind C. Mathiazhagan K. Giridhar D. Jalihal	Digital Pair Gain System	Rs.16 + R
2		Video Telephony	Rs.15
3		Development of ISDN Terminals	Rs.8.0 + R
4		ISDN Interface for Paradigm Exchange	Rs.9.0
5		E1 Circuit Multiplexer	Rs.1.5 + 2.5% R
6		Fibre In Local Loop	Rs.39.0
7		Simulation Study of Multi-Carrier Satcom Modem	Rs.4.0
8		Co-channel Signal Recovery	US \$20,000
9		Wireless Local Loop	Rs.500 + R
10		Computer Networking Activity	Rs.130 + R
11		Two Port Local and Remote Ethernet Bridge	R
12		Digital Telephone answering Machine	R

3.11 Retainer Consultancy :

S.No.	Name of the Faculty	Title	Industry	Amount (In Lakhs)
1	V.V. Sastry	Retainer Consultant	Tetra Controls Pvt. Ltd.	Rs.3000/- p.m.
2	V.V. Sastry, T.M.Rangarajan, T.V.Sivakumar	A feasibility study on brushless alternator for automotive application		Rs.50,000/-
3	V.V.Sastry Rohit K. Thirumala M. Krishnamoorthy	Power quality issues in a substation layout having power electronics loads"	SPB Project and consultant Ltd.	

3.12 Exchange programme with other Universities:

Mr. V. Naveen Kumar, Regular M.S. Scholar is visiting Inst. für Hochfrequenztechnik, Technische Hochschule Darmstadt, Germany for one year from Feb. 1998 to Jan. 1999 under DAAD program.

4 Journal Editorial Boards:

(Editors, Secretary, Treasurer, Membership etc.)

S.No.	Name of Faculty	Level	Journal
1	S. Srinivasan	Co-editor	Proceedings of VLSI Design-98

5 Publications:

(a) In Refereed National Journals:

- Sanjeev, P.R. Vaya, Y. Shen, J.O. Connor, V.B. King and S.J. Chua, Growth of Compressive strained InGaAs/GaAs multiple quantum well structures by MBE', Indian Journal of Pure and Applied Physics, vol.35, 448-51 (1997)

(b) In Refereed International Journals:

1. Jong-Heon Kim, C. Venkateshaiah and Joon-Ung Lee: 'A study on dielectric properties of printed Circuit Board (PCB) materials in the frequency range of 100 MHz to 1 GHz, Journal of Electrical Engineering and Information Science, Vol.2 No.2, 1997, pp. 40-44.
2. Tilak and K.N. Bhat "Electrical and Photovoltaic Characteristics of Polyemitter Solar Cells" Thin Solid Films (Europe), December 1997.
3. Tilak and K.N. Bhat "Effect of poly thickness and substrate doping on the electrical characteristics of polyemitter n+p junctions", Solid State Electronics (UK), vol 41, No.6, pp. 909-912, June 1997.
4. Sashidara Rao "A decoupled approach to the simulation of convector controlled Induction Motor Drive Dynamics", Journal of Electrical Engineering and Information Science, (A Joint Publication of KIEE, KITE, KISS, KICS, KEES, KIISC and IEEE, Korea), August 1997, vol.2, No.4, pp 79-85
5. Ashok Jhunjhunwala, CorDECT Wireles Local Loop System Towards 100 million Telephones in India, To be published in the "Times of India", London
6. Janakiraman and Abhijit Bhattacharya, Direct Pole placement without using observers Journal of Circuits Systems Computers, Vol. 7, No.2, PP 117 - 127, 1997, World Scientific Publishing Co.
7. Janakiraman & Abhijit Bhattacharya, A New procedure for Parameta Estimation by Exciting Limit cycle of specified periods by International Journal of Adaptive Control and signal processing Vol.11, pp 101 - 113 - 1997, John Wiley and Sons Ltd.
8. Verra Raju and K. Kuppurajalu," A closed large reactive power controller the power system voltage stability," Electrical Power and Energy systems, Vol. 19, No 3, pp. 153 - 164.
9. Sastry, M.R. Prasad & T.V. Sivakumar, "Optimal soft starting of Voltage controller-fed IM Drive based on voltage across thyristor." IEEE Trans. on PE, Vol 12, pp. 1041-1050.
10. Sastry, M.R. Prasad & T.V. Sivakumar, "Optimal soft starting of Voltage controller-fed IM Drive based on voltage across thyristor", IEEE Trans. on PE, Vol.12, pp.1041-1050.
11. Rao and V. Prahlad, "Aternable fuzzing logic catroller for vehicle-active suspension systems," Fuzzing sets and systems, 85 (1997), 11 - 21
12. Karmalkar, "A new equivalent MUSFET representation of the HEMT to analytically model non-linear charge control for simulation of devices and circuits," IEEE Trans. Electron Devices, ED-44, p.862, May 1997.
13. Karmalkar, D. Sridhar, J. Banerjee, "A Novel activation process for autocatalytic electroless deposition on silicon substrates, "Journal of Electrochem Society (U.S.A.), Vol.144, p.1696, May 1997.

14. Das Gupta, D. Arslau, A Sigurdardottir and H.L. Hartnagee, "A novel self-consistent simulator for current-voltage characteristics of semiconductor field emitters", Applied Physics Letter, Vol.72, No.10, pp. 1220 - 1222, March 9, 1998.
15. Kumar and K.M.M. Prabhu, "simulation studies of moving target detection a new approach with wigner-villii distribution", IEE Proc. Radar, Sman Navig., Vol. 144, No.5, pp. 259-265, October 1997.
16. Padala and K.M.M. Prabhu, "Systolic arrays for the discrete Hilbert transformer", IEE Proc. - Circuits Devices Syst., Vol.144, No.5, pp.259-264, October 1997.
17. Prabhu and R. Sharmuga Sundaram, "Fixed-point four analysis of discrete Wigner - Villii distribution", IEE Trans. on Signal Processing, Vol. 45, No.10, pp.2579 - 2582, October 1997.
18. Rangarajan and S. Srinivasan, "Generalised method for Pruning an FFT type of Transforms", IEE Proc. on vision, Image and Signal Processing, Vol.144, No.4, pp. 189 - 192, Aug. 1997.

(c) In Proceedings of National Conferences:

1. Remashan and K.N. Bhat "MIS Devices on n-GaAs Using Silicon Nitride/ $(\text{NH}_4)_2\text{S}_x$ Passivation" Proceedings of the 85th Session of the Indian Science Congress, Hyderabad, Part III, Young Scientists Abstracts, pp. 36-37.
2. Ashok Jhunjunwala, Wireless Communication for Cost-Effective Voice & Data Connectivity in Indian Urban & Rural Areas, Symposium on Progress in science, INSA, Hyderabad, 1 - 3rd Nov. '97.
3. Ashok Jhunjunwala, Use of LON Words for Industrial Automation, National Symposium on Advances in Industrial Instrumentation and Measurement Engineering (AIIME 2000), 28-30th Dec. '97, Madras
4. Ashok Jhunjunwala, P.R. Goundan, Rail Transport Telematics for Improved Train Operation & Safety, National Conference on communication '98 (NCC 98), Jan.29 - 31, 1998, IISc., Bangalore.
5. Ashok Jhunjunwala, Development of Indigeneous WLL Technology, Plenary session on Telecommunications, 85th Session of Indian Science Congress, Jan 3-7, 1998, Hyderabad.
6. Kishore, W. Mahesh, G. Rajeev, D. Jalihal, R. Arvind, "A real-time video conforming system", Proc. Of the 4th Natl. Conf. On Comm. Jan '98.
7. Enakshi Bhattacharya, P. Ramesh and C. Suresh Kumar " Study of Gold/ Porus silicon / Crystalline Silicon Junction", International conference on Science & Technology of Porus Silicon, 16-20 March 1997, Mellora, Spain.
8. Rao, K. Rameshwaran and A.V. Koshore 'A simple and Novel Fuzzy logic based algorithm for Radial Basis function Neural Networks, National Conference on Neural Networks and Fuzzy systems Anna University, Chennai, 23-25 July 1997, pp 319-315.

9. Pavan Kumar and A. Das Gupta, "Modelling of Hetrojunction Bipolar Transistors: a unified approach", Proc. International Workshop on Physics of Semiconductor Devices, pp.857-864, New Delhi, Dc.1997.
10. Pavan Kumar and A. Das Gupta, "A Comparison of Hetrojuncture Emitter Bipolar Transistors and Hetrojunction Bipolar Transistors using an analytical model", Proc. International Workshop on Physics of Semiconductor Devices, pp.900-903, New Delhi, Dec.1997.
11. Raghavan, S.K. Lahin and A. Das Gupta, "A nevel technique for submission separation between metal lines", Proc. SPIE Conf. On Microlithographic Techniques in IC Fabrication, Singapore, June 1997.
12. Ganesh Kumar, G. Nalinikanth and Nandita Dasgupta, "Enhanced and Stable Photolumiscence in Prorous Silicon by Thermal Oxidation" Satellite Symposium of MRSI at IIT Madras, Session III, p.19, Feb. 1998.
13. Ganesh Kumar and Nandata Dasgupta, "Stable and Improved Photolumiscence in Thermally oxidized porous selicon". Proc. International Workshop on Physics of Semiconductor Devices, pp. 640-643, New Delhi, Dec. 1997.
14. Mukunda Rao "Influence of Breathing on Artificial Blood flow to the Brain as monitored being optical sensors", at the National Conference on Biomedical Engineering held at Manipal Institute of Technology Manipal during April 9 - 11th 1998.
15. Prince & V. Vasudevan, Development of a symboli simulator using an OOD approach, 'Proc. of the First National Conf. on object oriented technology, Warangal, Aug. 1997.
16. Ganesh Madan and P.R. Vaya, Optical Phase sutability by circuit modelling of DHJ semiconductor laser'Proceedings of National laser Symposium, Ahmedabad, 200-201, Dec. 10-12 (1997).
17. Ganesh Madan, N. Gunasekaran and P.R. Vaya Circuit modeling of the effect of temperature on Semi Cond. Lasers', , Proc. of 9th Int. Natl. workshop on Physics of Semicond. Devices, New Delhi, 177-182, Dec. 16-20 (1997).
18. Rangarajan and S. Srinivasan. "Fast Image Compression by Adative Pruning, "Conf. on Signal Processing, Communication and Networking, Bangalore 1997.
19. Vasudevan, K. Giridhar, Bhaskar Ramamoorthy, "Non-coherent sequence Estimation of Multilevei signals in slowly fading channels", NCC '98 IISc. Bangalore Jan. 1898.
20. Sarathi, M. Krishnamurthi and M. Ramanathan, Breakdown Characteristic of short airgaps with artificial floating metal under transient voltages, INSULEC 1997, Fifth International seminar on Electrical and Electronics Insulating Materials and Systems, Section-III, Paper No.4, India.
21. Sarathi and Sridhar Krishnan, Effects of barrier in short airgap under oscillator, impulse voltages, INSULEC 1997, Fifth International Seminar on Electrical and Electronics Insulating Materials and Systems, Section-III, Paper No-7, India.

22. Sarathi, M. Krisnamurthi and S. Rengarajan, Studies on Breakdown Characteristics of Transformer Oil under Oscillatory Impulse Voltage, Trafotech-98, Fifth International Conference on Transformers, Section-II, Paper No.1, India.
23. Sarathi, Chaotic Behaviour of Electrical Trees, IUPAC Int. Symp. on Advances in Polymer Science and Technology, PP 902-905, India, 1998.
24. Sarathi, Morphology and Electrical Breakdown Characteristics of Polypropylene, IUPAC Int. Symp. on Advances in Polymer Science and Technology, PP 922-925, India, 1998, India.

(d) In Proceedings of International Conferences:

1. Jong-Heon Kim and C. Venkateshaiah: 'Measurement of Permittivity of printed Circuit Board Materials at RF' - proceedings of the 5th International Conference on Properties and Applications of Dielectric Materials (ICPADM '97) - May 25-30, 1997, Seoul, Korea, Vol.2, pp.1167-1169.
2. Venkateshaiah, R. Sarathi and Himangshu Rpo: 'Breakdown Strength of short airgaps under oscillatory impulse voltages' - Proceedings of the 5th International Conference on Properties and Applications of Dielectric Materials (ICPADM '97) - May 25-30, 1997, Seoul, Korea, Vol. 1, pp.186-189.
3. Sarathi, C. Venkateshaiah, and S. Muthukumar: 'Breakdown characteristics of short airgaps with artificial floating metals under oscillatory impulse voltages' - Proceedings of the 10th International Symposium on High Voltage Engineering (ISH-97), Aug.24-30, Montreal, Canada.
4. Sarathi, C. Venkateshaiah and G. Krishnappa: 'Breakdown characteristics of short airgaps under composite voltages' - proceedings of the 10th International Symposium of High Voltage Engineering (ISH-97), Aug.24-30, Montreal, Canada.
5. Sarathi, C. Venkateshaiah and Himangshu Roy: 'Effect of barriers in short airgaps under transient voltages' - Proceedings of the 10th International Symposium on High Voltage Engineering (ISH-97), Aug. 24-30, Montreal, Canada.
6. Sarathi, C. Venkateshaiah and Vivek Krishnana: 'Influence of barrier on breakdown characteristics of Transformer oil under different voltage profiles' - Proceedings of the 10th International Symposium on High Voltage Engineering (ISH-97), Aug. 24-30, Montreal, Canada.
7. Goundan, Ashok Jhunjhunwala, Intermediate Block Signalling (IBS) A Cost Effective Method to increase through put of Railways, 48th Vehicular Technology Conference (VTC '98), Canada
8. Ashok Jhunjhunwala, A Real Information Revolution in India, International Conference on Computers & Devices for Communication (CODEC '98), Jan. 13-17, 1998, Calcutta

9. Sethu Raman, P. Senni, Enakshi bhattacharya and A. Subramaniam, Study of PECVD grown slice alloys, International workshop on Physics of semiconductors 1997, p 682 - 685
10. Enakshi Bhattacharya and R. Chandrakanth, Photoluminescence from porous silicon formed by electrochemical etching of a-si, International workshop on Physics of semiconductors 1997, p 603 - 606.
11. R. Prasad & V.V. Sastry, Rapid prototyping tool for a fuzzy logic based soft-starter, IEEE Power Converter Conference, PCC97, Nagaoka, Japan, August 3-6, 1997.
12. Prasad & V.V.Sastry, "Rapid prototyping tool for a fuzzy logic based soft-starter", IEEE Power Converter Conference, PCCC 97, Nagaoka, Japan, August 3-6, 1997.
13. Kishore and MVC Rao, A novel fuzzy based algorithm for radial basis Function Neural Network' IEEE Conference on Neural networks, USA June 1997, pp 2007 - 2011.
14. Raina, "Laser phase noise effects in multi-level signalling schemes using cascaded optical amplifiers" pp - 640 - 645 [1997] "Selected paper from Photonics India '96" SPIE Vol. 3211.
15. Mukunda Rao, "Optical Monitoring of cardiac and Respiratory Rhythms in the skin perfusion in the Brain under controlled conditions, at the SPIE Photonics West Conference at San Jose during Jan. 24 - 30, 1998.
16. Satish Kumar and K.M.M. Prabhu, "Novel CORDIC - based systolic arrays for DFT and DHT", Proc. Of the HPC ASIA - 97, Seoul, Korea, Apr.28 - may 2, 1997, pp. 547 - 551.
17. Prabhu, "An efficient radix-3 FHT algorithms", Proc. Of the 13th Intel. Conf. On DSP, Santorini, Greece, July 2-4, 1997, pp.349 - 351.
18. Padala and K.M.M. Prabhu, "Novel Systolic arrays for Wigren - Villi distribution", Proc. Of the 13th Intl. Conf. On DSP, Santorini, Greece, July 2-4, 1997, pp.657 - 660.
19. Giridhar and K.M.M. Prabhu, "Doplu resolution analysis of radar returns", Proc. Of the 13th Intl. Conf. On DSP, Santirini, Greece, July 2-4, 1997, pp.781-784,
20. Prime & V. Vasudeven "Symbolic analysis of analog integrated circuits", Proc. of the IEEE Intl. Conf. On VLSI Design, 1998, pp. 167 - 172.
21. Shankar, S. Srinivasan and S.R. Rangarajan, "Efficient Implementation of MPEG video codec using dural precessos", 13th Intl. Conf. on Digital Signal Proc. Santorini, Greece, July 1997.
22. Krishnan and S. Srinivasan, " An area minimisation technique and implementing pipelived IIR Filters", Intl. Symposium on IC Technology, Systems and Application, ISIC - 97.
23. Srinivasan and B. Srikanth, "Implementation of a fast data access achitechture for two dimensional applications, "Intel. Conference on Computational Intelligence and Multimedia Applications, Australia, Feb. 1998.

24. Sarathi, Dynamical aspects of Electrical Trees, International Journal of Materials Letters, Vol-32, P351-354, 1997. (Journal)
25. Sarathi, M. Krishnamurthi and P. Reji, Breakdown characteristics of short airgaps with conducting particles under composite voltages, 1997 CEIDP, Minneapolis, Minnesota, USA.
26. Sarathi and Chandrasekara Karri, Effects of Barrier in short airgaps under oscillatory impulse voltages, 1997 CEIDP, Minnesota, USA.
27. Sarathi and Mohan Narayana Rao Sirsi, Studies on the effect of ageing on the dielectric strength of transformer oil under different voltage profiles, 1997 CEIDP, Minneapolis, Minnesota, USA.

6 Distinguished Visitors to the Department:

Sl.No.	Name of the Visitor and Designation	Date of visit
1	Alexander Vogt, Scientist, Institute für Hochfrequenztechnik, Technische Hochschule Darmstadt, Germany	Nov. 20, 1997 to Nov.24, 1997.
2	Vladimir Blazek of the Institute for High frequency Technology of the Technical University of achen/Germany	Feb. 10-24, 1998
3	Peter O, Lauritzen, University of Washington	
4	D. Schroeder, Volkswagen Foundation	Jan. 6-7, 1998
5	V. Rajagopalan, Univ of Quebec	Dec, 97 to Jan, 98

4.8 DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES

1 Introduction:

The Department of Humanities and Social Science was established in 1959. Ph.D., M.S., and M.Tech. programmes are being offered. The major areas of teaching and research of the Department are:

- Undergraduate courses in Humanities and Social Sciences.
- M.Tech. courses in Industrial Management.
- M.S. Programme in Operations Management, Applied Decision Analysis, Materials Management, Systems Analysis and Modelling, Financial Management, Business Policy/Strategic Management, Management, Organisational Behaviour, Personnel Management and Industrial Relations, Technology Management, Science and Technology Policy Studies.
- Ph.D Programme in New Literatures in English, Linguistic, Teaching of English as a Second Language (TESL), German Literature, modern Indian History, Socio-Economic Cultural Developments, Applied Economics, Psychology, Marketing Management, Organisational Behaviour, Personnel Management and Industrial relations, Financial Management, Business Policy/Strategic Management, Applied Decision Analysis, System Analysis and Modelling, Operations Management, Technology Management and Science and Technology Policy Studies.

2. Academic Programmes:

2.1 New Courses Introduced:

The following New Courses were introduced during the period under report.

Course No	Title	Faculty
HS 611	Contemporary Issues in Development	V B Athreya

2.2 Students on Roll:

Programme	I Year	II Year	III Year	IV Year	V Year	Total
Ph.D.	4	3	3	6	6	22
M.S.	3	5	2	-	-	10
M.Tech.	15	18	-	-	-	33
Total	22	26	5	6	6	65

2.3 Number of Scholarships/Fellowships Holders

Programme	Institute	CSIR	Others	Total
Ph.D	12	1	4 (QIP) 4 (Ext)	21
M.S.	9	-	-	9
M.Tech	26	-	-	26
Total	47	1	8	56

2.4 Number of Degrees Awarded

Programme	Number
Ph.D.	6
M.S.	4
M.Tech.	23
Total	33

3 Faculty and their development :

3.1 Details of Faculty:

Name of Faculty	Major Area of Specialisation
Professors	
R.N. Anantharaman, Ph.D.	Organisation and Consumer Behaviour, Social Psychology, Psycholinguistics
V B Athreya, Ph.D.	Economics
S.C. Chaudhary, Ph.D. (CIEFL Hyderabad)	Theoretical Linguistics, ELT & Need Based Courses in English.
L.S. Ganesh, Ph.D. (IIT Madras)	Technology Forecasting, Muticriteria Decisions, Project Management and Applied System Analysis.
T.T. Narendran, Ph.D. (IIT Madras)	Operations Management, Decision Support Systems, Group Technology
R. Rajagopalan, Ph.D. (IIT Madras) (On EOL)	Production Management, Group Technology. Science and Technology Policy, German
L.V.L.N. Sarma, Ph.D. (IISc) [Head]	Financial Management, Business Policy & Corporate Strategies.
Associate Professors	
(Mrs) Elizabeth Nainan Kurlan, Ph.D. (IIT Madras) (On EOL)	American Fiction
(Ms) Evangeline Manickam, Ph.D. (Madras)	English, French
S. Jayachandran, Ph.D. (IIT Madras)	Marketing Management
(Mrs) Malathy Duraisamy, Ph.D. (Madras)	Applied Economics/Econometrice, Labour Economics, Economics of Science and Technology.
V.R. Muraleedharan, Ph.D. (IIT Madras)	Health Economics, Public Policy, History of Healthcare in South India
C. Rajendran, Ph.D. (IIT Madras)	Production Management, Scheduling, Computer Simulation.

Name of Faculty
B. Subramanian, Ph.D. (Karnataka)

Major Area of Specialisation
German and Philosophy

Assistant Professors

M. Durgaprasada Rao, M.B.A (Andhra)
T.J. Kamalanabhan, Ph.D. (Madras)
S. Mohan, M.A. (Madras)
G. Srinivasan, Ph.D. (IIT Madras)
D. Veeraraghavan, Ph.D. (IIT Madras)

Management Accouts, General Management.
Industrial Psychology, Organisational Behaviour.
English, Science Fiction
Group Technology, Production Management, Operations Research.
Social and Economic History

DAAD Visiting Faculty

R.G. Koeckritz

German, Communication Strategies

Visiting Faculty

(Mrs) Zoya Abraham
Dr (Mrs) Devaki Reddy
Dr (Mrs) Nandini Iyengar
Mr Subbaiah Arunachalam

German Language Teaching
English, Linguistics
English
Management

3.3 Short-term Courses/Workshops/Seminars/Symposia/Conference Organised:

S.No	Co-ordinator (s)	Title of course/Workshop/Seminar/Sym./Conf.	Period
1.	B Subramaniam	UGC Refresher Course for English Teachers	Feb. 97.
2.	B Subramaniam & Max Muller Bhavan	International Photo Exhibition on Heinrich Boll	Nov. 97.
3.	B Subramaniam & MMB Madras/DAAD	International Colloquium on Heinrich Heine - An Intogerman encounter	Dec. 97
4.	TJ Kamalanabhan & D Durgaprasada Rao	Small Industries Management Assistance Programme	June 97 to Sept. 97
5.	R G Koeckritz	German Course for Students	Dec. 97 to Jan 98
6.	S C Chaudhary & S Mohan	English for Global Communication	Sept 97 to Oct 97
7.	C Rajendran	State of the art method for Proj. Planning and Control	Oct 97

**3.4 Short term Courses/Workshops/Seminars/Symposia/Conferences/
Training attended by the Faculty in recognised Academic Institutions
and Public Sectors:**

S.No	Name of Faculty	Title	Period/Duration
1.	B Subramaniam	International Symposium of Cultural Delimitations, JNU, New Delhi	Feb. 97
		National Seminar on Indian Modernities CIEFL Hyderabad	Feb. 97
		Kassner Symposium LMU, Munich	April 97
		World Congress of IDT, Amsterdam Univ.	Aug. 97
		Heine Symposium, MMB Madras	Dec. 97
2.	G Srinivasan	11th Conference with Industry - Lehigh Univ.	April 97
		2nd International Conference on Industrial Engg. Applications and Practice - San Diego	Feb. 98
		First National Conference on Intelligent Manufacturing Systems - A Technology Watch, Coimbatore	Feb. 98
3.	R G Koeckritz	India viz-a-viz German Speaking Countries, Mumbai	Feb. 98
4.	V B Arthreya	International Conference on India 1947-1997, Swallows, Denmark	Sept. 97
		International Workshop on Trade Liberalisation, Geader & Environment Shastri Indo-Canadian Inst., Canada	Dec. 97
		National Seminar on Nation in the Making, Bharathidasan Univ., Tiruchy	Feb. 98
		International Workshop on Abortion Facilities and Post Abortion Case Centre of Operations Research & Trng. New Delhi	March 98
5.	L V L N Sarma	Attended Annual Convention of the MMA at Madras	Feb. 98
		Invited by TJPS College, Guntur to give external lectures for their MBA students and faculty	Feb. 98
6.	Evangeline Manickam	UGC National Seminar on Configurations of Culture, Post-coloniality and Nationalism in Lit. in English, Univ. of Madras	Feb. 98.

**3.5 Invited Lectures delivered by the Faculty in Academic Institutions/
Public Bodies:**

S.No	Name of the Faculty	Topic of the Lecture	Delivered at	Date
1.	B Subramaniam	The Political Implications in CIEFL Economies 'Name of the Rose, UGC Lecture		Feb. 97
		Kulturelle Grenzzienhung Raja Raos Replik auf Rilke	Univ. of Gottingen, Karlsruhe	April 97

S.No	Name of the Faculty	Topic of the Lecture	Delivered at	Date
2.	G Srinivasa	Scheduling to Minimize Completion time Variance	Lehigh Univ., IE Dept	Sept. 97
		Optimization Techniques	CIT Coimbatore	Feb. 98
3.	TJ Kamalanabhan	Human Resource Practices	Indian Airlines	Sept. 97
		Interpersonnel Skills	BHEL, Madras	March 98
		Communication	IIT Madras	Feb. 98
4.	SC Chaudhary	Teaching English to the Disadvantaged British Council	The Hindu	March 97
5.	V B Athreya	Indian Economy since Independence	Bharathidasan Institute of Mgmt. Trichy	Dec. 97
6.	L V L N Sarma	Member of the Jury constituted by All India Management Association for selection of best Doctoral Dissertation in Management for giving the award during the Management Convention of AIMA	IISc. Bangalore	April 97
		External lectures to the MA students & staff	KSR Institute of Mgmt., Tiruchencode	Sept. 97
		Member of the Review Committee to review the progress and identify future course of action for the dept. of Management studies	IISc. Bangalore	Jan. 98
		Member in the panel of judges to select the best presentation in the competitions	Jain for Women, Vepery,	Feb. 98
		Externl lectures for their MBA students and faculty	TJPS College, Guntur	Feb. 98
7.	T T Narendran	Cellular Prod. System as an aide for Productivity in Cellular Manf. System Productivity Imp. Techniques	Pondy Univ.	March 98

3.6 Visits abroad by Faculty:

S.No	Name of Faculty	Country visited	Date	Purpose of visit
1.	B Subramaniam	Germany	April 97	Symposium
		Holland	Aug. 97	World Congress
2.	V B Athreya	Denmark	Sept. 97	Present paper at Conf. on Indian Devl.
		Canada	Dec. 97	Present paper at an Inti. W.Shop on Trade Liberalisation, Gender and Environment
3.	C Rajendran	Germany	Feb.96 - March 97	Humboldt Fellowship

3.7 Memberships/Fellowships in Professional Bodies:

S.No.	Name of the Faculty	Organisation
1.	Dr.B. Subramaniam	INST, Austria, Member, 1997
2.	Dr.G. Srinivasan	BOYSCAST Fellowship, Min. of Science & Technology, Govt. of India

4 Design and Development activities:

4.1 New Facilities added and Major Equipment procured:

Two Pentium systems and two inkjet printers added to the existing systems.

4.2 Sponsored Projects:

Title	Period	Funding Agency	Amount (in lakhs)	Co-ordinator(s)
Development of DSS for Aggregate Planning...	-	MHRD	6.0	G Srinivasan, R Rajagopal, T T Narendran
SIMAP	1997-2000	SIDBI	20.0	T J Kamalanabhan

4.3 Books:

Name of Faculty	Title	Publisher
Dr. B.Subramaniam, Secretary & Editor	Year book	Goethe Soc. of India

4.4 Industrial Consultancy :

S.No	Title	Organisation	Amount (in lakhs)	Co-ordinator(s)
1.	Software for Scheduling	Quantels Imaging Sys.	0.6	G Srinivasan
2.	ERP in Human Resource Dept.	RAMCO Systems	0.24	TJ Kamalanabhan
3.	Small Industries	Govt. of TN, Dept. of Ind. Program.	0.15	T J Kamalanabhan, L V L N Sarma
4.	Woemn in Panhayath Raj	MSSRF	0.25	V B Athreya
5.	Gender and Health Issues in Dharmapuri	DANIDA	1.14	V B Athreya

S.No	Title	Organisation	Amount (in lakhs)	Co-ordinator(s)
6.	RBIC Nature of Competition in Hospital Market in Madras City	Abt. Associates, Maryland, USA	6.5	D Veeraraghavan
7.	RBIC Role of Govt. in ADjusting Economies: A Case of Tamil Nadu Health Sector	London School of Hygiene & Tropical Medicine, London	1.5	V R Muraleedharan

5 Research Publications

(a) Papers Published in Journals

1. S Ramesh Kumar and T J Kamalanabhan, (1997) 'Strategic Options for Marketing Premium Products', Praachi Journal of Psycho-Cultural Dimensions, Vol.13, No.1, pp.19-22.
2. T J Kamalanabhan and J Uma, (1998); 'A Comparative Study of the Personality Patterns of Engineers and Scientists', Journal of Psychometry, Vol.11, No.1, pp.8-12.
3. S C Chaudhary, (1997), 'English Lexicography and Database English Dictionaries', in University News, 35.9, pp.1-9.
4. G Jayakrishnan Nair and T T Narendran, (1997), 'On the groupability characteristics of ordinal data in CMS', International Journal of Mgmt. and Systems, Vol.13, No.2, pp.145-156.

(b) In Refereed International Journals

1. Sekar Vembu and G Srinivasan (1997), 'Heuristics for Operator Allocation and Sequencing in Product-Line Cells with Manually Operated Machines', Computer and Industrial Engineering, Vol.32, 265-279.
2. K Bhaskar and G Srinivasan, (1997), 'Static and Dynamic Operator Allocation Problems in Cellular Manufacturing Systems', International Journal of Production Research, Vol.35, 3467-3481.
3. T J Kamalanabhan and V Vijaya, (1997), 'Work Values and Occupational Preferences among Students', Journal of Technical and Vocational Education, Vol.14, pp.40-51.
4. J Uma, R N Anantharaman & T J Kamalanabhan, (1997), 'Organisational Determinants of the Performance of Scientists in R & D Organisations in India: A Delphi Study', Indian Journal of Applied Psychology, Vol.34, pp.1-6.
5. S C Chaudhary, (1997), 'Testing Spoken English as a Second Language', in English Teaching Forum, pp.22-25.
6. B Sharada Priyadarshini and C Rajendran, (1997), 'Formulations of Heuristics for Scheduling in buffer-constrained flowshop and flowline-based manufacturing cell with different buffer-space requirements for jobs: Part-II', Int. Journal of Production Research, Vol.35, No.1, pp.107-122.

8. O Holthaus and C Rajendran, (1997), 'Efficient dispatching rules for scheduling in a job shop', *Int. Journal of Production Economics*, Vol.48, No.1, pp.87-105.
9. O Holthaus and C Rajendran, (1997), 'New dispatching rules for scheduling in a job shop - An experimental study', *Advanced Manufacturing Technology*, Vol.13, pp.148-153.
10. S Parthasarathy and C Rajendran, (1997), 'A simulated annealing heuristics to minimize tardiness in a flowshop with sequence-dependent setup times - A case study', *Production Planning and Control*, Vol.8, No.5, pp.475-483.
11. C Rajendran and H Zeigler, (1997), 'Heuristics for Scheduling in a flowshop with setup, processing and removal time separated', *Production Planning and Control*, Vol.8, No.6, pp.568-576.
12. S Parthasarathy and C Rajendran, (1997), 'An experimental evaluation of heuristics for scheduling in a real-life flowshop with sequence-dependent setup times of jobs', *Int. Journal of Production Economics*, Vol.49, pp.255-263.
13. C Rajendran, (1997), 'Book review of "Evolutional search and the job shop: Investigations on genetic algorithms for production scheduling" (author: Dirk C. Mattfeld; Publisher: Springer-Verlag, Heidelberg, Germany, 1996)', *Mathematical Methods of Operations Research*, Vol.45, No.1, pp.162-164.
14. C Rajendran and H Zeigler, (1997), 'An efficient heuristics for scheduling in a flowshop to minimize total weighted flowtime of jobs', *European Journal of Operational Research*, Vol.103, No.1, pp.129-138.
15. B Sharada Priyadarshini and C Rajendran, (1997), 'Heuristics for Scheduling in a Kanban System with dual blocking mechanisms', *European Journal of Operational Research*, Vol.103, No.3, pp.439-452.
16. B Sharada Priyadarshini and C Rajendran, (1997), 'Scheduling in a Kanban-controlled flowshop with dual blocking mechanisms and missing operations for part-types', *Int. Journal of Production Research*, Vol.35, No.11, pp.3133-3156.
17. Evangeline Manickam, (1997), 'Exploring the Wild Zone in Fay Weldon's "Female Friends"', *Manuscarya*, Vol.2, Nos.2&3, 1996 Dec. pp.25-31.
18. Evangeline Manickam, (1997), 'The Persistence of Memory and History', *New Perspectives in Indian Writing in English*, Ed. VN Narendra Kumar, Prestige, New Delhi, 1996, pp.97-105.
19. G J Nair and T T Narendran, (1997), 'Cluster Goodness: a new measure of performance.. in CMS', *Int. J. Prod. Economics*, Vol.48, pp.49-61.
20. G J Nair and T T Narendran, (1997), 'On the use of asymptotic Forms ... CMS', *Euro J of O.R.*, Vol.100, pp.429-440.
21. Rajkumar and T T Narendran, (1997), 'A bicriteria model for loading on PCB ...', *Prod. Plg. & Control*, Vol.8, pp.743-752.
22. Rajkumar and T T Narendran, (1997), 'A Heuristic for sequencing PCBs...', *Intl. Journal of OP & Production Mgmt.*, Vol.17, pp.446-467.

(c) In Proceedings of National Conferences

1. Uma J and T J Kamalanabhan, (1997), 'A comparative study of Scientifics in Public and Private Sector R & D Organisations', Managing Human Behaviour in Organisations - National & International Perspective, Indian Academy of Applied Psychology Conference held at TTTI Madras.
2. Shoba Albert and T J Kamalanabhan, (1997), 'Turnover Propensity among Professionals an Exploratory Study on Organizational Culture as a context for withdrawal behaviour', Managing Human Behaviour in Organisations - National and International Perspective, Indian Academy of Applied Psychology Conference held at TTTI Madras.
3. Bhaskara Reddy, Shunmugam and T T Narendran, 'An object oriented methodology for feature - based process planning system', 17th AIMTDR Conf., 9-11 Jan. 97, Warangal, pp.626-626.

(d) In Proceeding of International Conferences

1. Vinay Govande, G Srinivasan, Sekar Sundarajan and Emory W Zimmers, 'Cellular Manufacturing Current Implementation practices and Future Directions', Strategic Technologies for Global Manufacturing, April 1997.
2. Emory W. Zimmers, Sekar Sundarajan, Ron Sedlak and G Srinivasan, 'Agile Maintenance Manufacturing', 14th Int. Maintenance Conf., Atlanta, Aug. 1997.
3. Keith Gowan, Vinay Govande, G Srinivasan and Emory W Zimmers, 'Analysis and Development of Manufacturing Cell Design Algorithms', A Case Study Perspective, 2nd Int. Conference on IE Applications and Practice, San Diego, Nov. 1997.
4. Suresh Chander, C Rajendran and T J Kamalanabhan, 'A study on the Critical Dimensions of TQM in Service Organizations', presented and published in the proceedings of the Int. Conf. on Quality Engineering and Management held at PSG Tech. Coimbatore, 4-6 Aug., 1997.
5. Bhaskara Reddy, Shunmugam and T T Narendran, 'An object oriented methodology for operation and machine selection of feature-based process planning system', Int. Conf. on Manufacturing Automation (ICMA 97), 28-30, April 1997, Hong Kong.

6 Distinguished visitors to the Department:

S.No	Name of the Visitor and Occupation	Date of Visit	Purpose of Visit
1.	Prof. Dietmar Rothermund, Head, South Asia Institute, Heidelberg		Discussion with HSS Faculty
2.	Dr. Kristen Westergaard, Professor, Centre for Devl. Resh. Copenhagen	10.11.97-11.11.97	To give Seminar on village studies and The Green Revolution in Bangladesh

S.No	Name of the Visitor and Occupation	Date of Visit	Purpose of Visit
3.	Dr Alan Hedley, Professor, Univ. of Waterloo, B.C. Canada	05.02.98	To talk on Gender & Development
4.	Dr A Valdyanathan, Professor Emeritus, MIDS, Madras and Former Peg. Comn. Member	05.03.98- 10.03.98	To talk on subsidies and MNCs
5.	Dr C B Padmanabhan, Ex-Unesco Advisor	17.04.97	Financing of High Education in Tamil Nadu
6.	Dr. Mohan K Menon, Professor, Univ. of Alabama, USA	22.8.97	To delivery seminar talk

6.1 Any other Relevant Details:

1. An Memorandum of Understanding with Small Industries Development Bank of India was signed on April 3, 1997.
2. An Memorandum of Understanding with South India Regional Council (SIRC) of Institute of Cost and Works Accountants of India was signed on July 16, 1997.

4.9 DEPARTMENT OF MATHEMATICS

1 Introduction:

The Department of Mathematics was established in 1959 along with the Institute. It offers both Ph.D and M.Sc. programmes in Mathematics. In addition, the Department has taken the responsibility of teaching Mathematics courses to B.Tech., M.Tech. and Ph.D students of the Institute. The major areas of research of the department are:

1. Algebra and its Application
2. Applied Probability
3. Approximation Theory
4. Computational Fluid Mechanics
5. Continuum Mechanics
6. Coding Theory
7. Data Networks
8. Differential Equations and III-Posed problems
9. Fluid Mechanics
10. Functional Analysis
11. Fuzzy Sets and Systems
12. Graph Theory and Combinatorics
13. Inventory and Reliability
14. Mathematical Logic & Applications
15. Mathematical Modelling
16. Mathematical Physics
17. Nonlinear Analysis
18. Numerical Analysis
19. Operations Research
20. Operator Theory
21. Queueing Theory
22. Statistical Quality Control
23. Stochastic Process and their applications
24. Theoretical Computer Science
25. Data Networks.

2 Academic Programmes :

2.1 New Courses introduced:

The following new courses were introduced during the period under report.

S.No.	Course No.	Title	Faculty
1.	MA 692	Mathematics for Environmental Engineering	Dr. P.R. Parthasarathy Dr. (Mrs) S. Kalpakam Dr. A. Rangan
2.	MA 743	Fuzzy set theory and its Applications	Dr. P.V. Subrahmanyam Dr. S.H. Kulkarni Dr. P. Veeramani

2.2 Students on Roll: (as on 31-03-1998):

Programme	I Year	II Year	III Year	IV Year	V Year	Others	Total
M.Sc	27	22	-	-	-	-	49
Ph.D	4	5	1	4	5	-	19
Total	31	27	1	4	5	-	68

2.3 Number of Scholarship holders:

Programme	Institute Scholarship	Others	Total
M.Sc.	14	--	14
Ph.D.	13	3 (CSIR)	16
Total	27	3	30

2.4 Number of Degrees Awarded in the last Convocation:

Programme	Number Awarded
Ph.D.	7
M.Sc.	21
Total	28

2.5 Names of Student/scholar attended Conference/Seminar and Symposia abroad/India:

S.No.	Name of the Scholar	Programme	Name of the Conference/Seminar/Symposia	Date and Venue
1.	Ms. V. Indra	Ph.D	International Conference on Algebra and its applications.	Nov. 13-16,1997 Aligarh
			63rd Annual Conference of the Indian Mathematical Society	Dec. 27-30,1997 Ahmed Nagar
			85th Annual Conference of the Indian Science Congress	Jan. 3-6, 1998 Hyderabad
			International Conference on Recent Developments in Mathematical Analysis with Application to Industrial Problems	March 2-5, 1998 BHU, Varanasi
2.	D. Meiyappan	Ph.D	International Conference on Algebra and its Applications	Nov. 13-16,1997 Ahmed Nagar
			63rd Annual Conference of Indian Mathematical Society	Dec. 27-30,1997 Ahmed Nagar
			85th Annual Conference of Indian Science Congress Association	Jan. 3-7, 1998 Hyderabad
			International Conference on Recent Development in Mathematical Analysis with Application to Industrial Problems	Mar. 2-5, 1998 BHU, Varanasi

S.No.	Name of the Scholar	Programme	Name of the Conference/ Seminar/Symposia	Date and Venue
3.	R. Sujatha	Ph.D	63rd Annual Conference of the Indian Mathematical Society	Dec. 27-30, 1997 Ahmed Nagar
			International Conference on Recent Developments in Mathematical Analysis with applications to Industrial Problems	Mar. 2-5, 1998 BHU, Varanasi

3 Faculty and their Development:

3.1 Details of Faculty:

Name and Qualifications	Specialisation
Professors	
A. Avudainayagam, Ph.D (IIT Madras)	Fluid Mechanics, Suspension Rheology, Polar Fluids, Low Reynolds numbers flows
P. Bhattacharyya, Ph.D (London)	Complex analysis, Theory of Splines, Lacunary Interpolation, Approximation Theory
(Mrs.) S.Kalpakam, Ph.D (IIT Madras)	Applied Probability and Stochastic Processes, Operations Research
S.H. Kulkarni, Ph.D (IIT Bombay)	Functional Analysis, Numerical Analysis
S.N. Majhi, Ph.D (IIT Madras)	Fluid Mechanics, Bio-Fluid Mechanics, Mathematical Modelling
P.R.Parthasarathy, Ph.D (Annamalal) [Head]	Applied probability and Stochastic Models, Mathematic Ecology, Operations Research Statistical Inference
U.N. Srivastava, Ph.D (IIT Madras)	Applied Mathematics, Differential Equations, Continuum Mechanics, Singular Perturbation Problems, Boundary Layer Theory, Differential Inequalities, Mathematical Ecology, Dynamical Systems.
P.V.Subrahmanyam, Ph.D (IIT Madras)	Point Theory/Analysis
Associate Professors	
S.A. Choudum, Ph.D (IIT Madras)	Graph Theory, Combinatorics
S.G. Kamath, Ph.D (IIT Madras)	Theoretical Physics, Elementary Particle Physics
A. Rangan, Ph.D. (IIT Madras)	Probability Theory, Stochastic Processes, Operations Research, Applications to Biological Sciences, Neural Methods, Inventory Controls, Ecology Reliability

M.Thamban Nair, Ph.D (IIT Bombay)

Functional Analysis, Linear Operator Equations

(Mrs.) R.Usha, Ph.D (IIT Madras)

Fluid Mechanics Bio-fluid Mechanics

P. Veeramani, Ph.D (IIT Bombay)

Functional Analysis

Assistant Professors

Arindama Singh, Ph.D (IIT Kanpur)

Numerical Analysis, Mathematical Logic.

Y. Nagendra, Ph.D (IIT Kharagpur)

Statistical Quality Control

(Mrs.) R. Rama, Ph.D (Anna Univ)

Theoretical Computer Science, L-Systems, Formal Languages Automata Theory

(Mrs.) W.B. Vasantha, Ph.D (Madras)

Algebra, Coding Theory, Fuzzy Sets and Systems, Application of Algebra

Senior Scientific Officer (Gr.I)

K. Swaminathan, Ph.D (Agra)

Fluid Dynamics, Ship Hydro-Dynamics, Systems Simulations and Development of Software for Control Systems

During the year under review, the following faculty members retired on superannuation.

Prof. C.V. Raghava Rao
Prof. V. Subba Rao
Prof. R. Subramanian
Prof. S.N. Venkatarangan

Research Associates

Dr. P.V.S.N. Murthy
Dr. R. Radha, Ph.D.(Madras)
Dr. G. Sarada, Ph.D.(IIT Madras)
Dr. Sushama N. Agrawal

3.2 Short-term Courses/Workshops/Seminars/Conferences Organised:

Sl. No.	Title	Date	Co-ordinator(s)
1.	National Conference on Fuzzy Sets and Applications	June 9-10, 1997	Prof. PV Subrahmanyam Dr. S. Mohan (CE)
2.	Formal Languages, Logic and Graph Theory	December 8-21, 1997.	Dr. (Mrs.) R. Rama Dr. Arindama Singh Prof. K. Krithivasan (CS & E)

Sl. No.	Title	Date	Co-ordinator(s)
3.	One Day Symposium on Mathematical Methods and Applications in honour of Srinivasa Ramanujan	22.12.97	Prof. S.N. Majhi
4.	National Science Day [50th year of India's Independence]	28.02.98	Prof. P.R. Parthasarathy [Head]

3.3 Short-term Courses/Workshops/Conferences attended by the faculty:

S. No.	Name of faculty	Title	Period
1.	Dr. Arindama Singh	National Conference on Mathematical Analysis and related topics, held at Berhampur Univ.	July 1997
		National Conference on Wavelets and Numerical Methods, held at Utkal Univ.	January 1998
2.	Dr. S.A. Choudum	Conference on Graph Theory and Its Applications, University of Mumbai, Mumbai	Apr 23-26, 1997
		Seminar on Combinatorial Mathematics and Applications, Karnataka Univ. Belgaum Campus, Belgaum	Sept. 25-27, 1997
3.	Prof P.V. Subrahmanyam	Association of Mathematics Teachers, India Conference at Tirukkivilur	Dec. 1997
4.	Dr. M. Thamban Nair	12th Annual Conference of the Ramanujam Mathematical Society at J. N.N. College of Engineering, Shimoga	May 23, 1997
5.	Dr. (Mrs.) R. Usha	1997 ASME Fluids Engineering Conference, Vancouver, Canada.	June 22-26, 1997
6.	Dr. P. Veeramani	International Conference on Recent Developments in Mathematical Analysis with Applications to Industrial Problems, Banaras Hindu University, Varanasi.	March 2-5, 1998

3.4 Special Lectures delivered:

S. No.	Name of Faculty	Topic of Lecture	Delivered at	Date
1.	Dr. Arindama Singh Aug.1997	A series of lectures on Mathematical Logic and Applications	Manonmaniam Sundaranar Univ, Tirunelveli	
2.	Prof (Mrs) S.Kalpakam	Invited talk on Stochastic Inventory Systems during International Conference on Stochastic Processes and Their Applications	Anna University, Chennai	Jan.8,10, 1998

S. No.	Name of Faculty	Topic of Lecture	Delivered at	Date
3.	Prof. PR Parthasarathy	Applications of Birth and Death Process	University of Osnabrueck, Germany	May 20, 1997
		Transient Analysis of a Loss Network	University of Osnabrueck, Germany	June 18, 1997
		Quadratic Birth and Death Processes and Their Applications"	Twente University, The Netherlands	July 1, 1997
		Queueing Theory in Industry,	University of Kaiserslautern, Germany	July 10, 1997
		Density-dependent Population Models	University of Osnabrueck, Germany	July 16, 97
		Applications of Birth and Death Processes"	Jadhavpur Univ. Calcutta	Sept. 23-25, 1997
4.	Prof. R.Subramanian	Birth and Death Processes associated with Rogas, Ramanujan continued function	Anna University Chennai	Jan. 9,98
		A course of 2 lectures on Reliability Theory	MGR Engg College, Chennai	April, 97
5.	Dr. P. Veeramani	A series of five lectures on "Set Theory	At the Mathematics Training and Talent Search Programme at IIT Madras	May 22-30, 1997
6.	Dr. M.Thamban Nair	Operator Equations and Ill-Posed Problems	Department of Mathematics, Cochin Univ. of Sci. and Tech, Kochi.	June 4, 97

3.5 Visits Abroad:

S. No.	Name of Faculty	Country visited	Date	Purpose of visit
1.	Prof. P.R. Parthasarathy	Germany	May-July 1997	To avail Indo-German project
		Netherlands	1.7.97	To given an invited lecture in Twente Univ.
		Belgium	20.06.97 to 22.06.97	For discussion with Prof. Van Assche, Katholieke Univ.
2.	Prof. P.V. Subrahmanyam	Bratislava,	June 20- July 10, 1997	INSA Senior Slovakia Scientist Exchange Programme
		Prague,	June 20- July 10, 1997	Int. Conf. Czech. Rep. IFSA 97

4 Design and Development activities:

4.1 Sponsored Projects:

S.No.	Title	Period	Funding Agency	Amount (Rs.in lakhs)	Co-ordinators
1.	Knowledge Compilation with nonpropositional clauses	1997-1999	DST	4.73	Dr. Arindama Singh
2.	Anomalies in 2+1 dimensional quantum field theories	1994-1997	DST N.Delhi	1.76	Dr. SG Kamath
3.	Queueing Models of Computer	1996-1999	Indo-German		Prof. P.R. Parthasarathy
4.	Transient Analysis of Queueing and related systems	1994-1997	NBHM project	3.5	Prof. P.R. Parthasarathy
5.	On Estimating Errors In Regularization Methods for Ill-Posed Operator Equations	Three years	NBHM-DAE	1.79	Dr. M. Thamban Nair

3.2 Honours and Awards:

S.No.	Name of Faculty	Honours/Awards
1.	Prof. (Mrs.) S. Kalpakam	Biography selected for inclusion in the 15th Edition of Marquis Who's Who in the World
2.	Prof. P.R. Parthasarathy	Elected Fellow of Tamil Nadu Academic Sciences

3.3 Weekly Seminar :

Under the auspices of Mathematics Department, a seminar talk is being arranged on every Thursday at 3.00 p.m. The speakers include visitors from abroad, faculty members of various Institutions in Chennai and various Departments from IITM Chennai. The post-graduate students of the Department, the Research Scholars and the Faculty Members of the Department and interested persons from the other neighbouring Institutions are highly benefited by this programme. Topics dealt with by the speakers range from pure mathematics to applications relevant to engineering problems, social sciences and biological sciences. The Co-ordinator of this programme for the period under report was Dr. (Mrs.) R. Rama.

3.4 Other Activities:

MATHEMATICS TRAINING AND TALENT SEARCH (M.T. & T.S.) PROGRAMME 1997

Mathematics Training and Talent Search (M.T & T.S.) Programme was conducted in the Department of Mathematics, I.I.T. Madras during May 22 - June

17, 1997. The Programme was funded by the National Board of Higher Mathematics. Programme Director was Prof. S. Kumaresan of University of Mumbai and Prof. S.H. Kulkarni, I.I.T. Madras was the local organizer. The aims of the programme were as follows:

1. To teach mathematics in an interactive way (rather than usual passive presentation) promoting active learning.
2. To promote independent thinking in mathematics.
3. To provide a platform for the talented students to interact with the leading experts in the field.

These were in all 120 participations - 40 each at 3 levels: Level O consisting of students of 2nd year B.Sc., Level I consisting of students of the final year B.Sc. and Level II consisting of students of 1st year M.Sc. The daily programme consisted of lectures in the morning (from 9.00 a.m. to 12-30 noon) and problem sessions in the afternoon from 2.00 p.m. to 5.00 p.m.) Levels I and II had four basic courses: Algebra, Analysis, Geometry and Topology. Students of Level O were offered courses in Basic Real Analysis, Linear Algebra, Geometry, Discrete Probability, Combinatorics and Elementary Number Theory. The faculty was drawn from the leading institutions in the country: Tata Institute of Fundamental Research, Mumbai; University of Mumbai, Indian Institute of Science, Bangalore, Institute of Mathematical Sciences, Chennai, S.P.I.C. Mathematical Institute, Chennai and IITM, Chennai.

5 Research publications:

1. Arindama Singh, Oscillation and Dominance, Proc. National Conference on Mathematical Analysis and Related Topics, Berhampur University, July 1997.
2. Arindama Singh, Do Euler's Schemes and Decouplings Commute?, Proc. National Conference on Wavelets and Numerical Methods, Utkal University, January 1998.
3. Avudainayagam, A. (with Geetha, J.), A boundary integral equation for the two-dimensional oscillatory Stokes flow past an arbitrary body, Journal of Engineering Mathematics, pp. 1-8 (1997).
4. Choudum, S.A. (with Ponnusamy, B.), Ordered and Canonical Ramsey numbers of Stars, Graph & Combinatorics, 13 (1997), 147-158.
5. Kalpakam, S. (with Sapna, K.P.), A Lost Sales Inventory System with Supply Uncertainty, Computers Math. Applic., 33 (1997), 81-93.
6. Kamath, S.G., Zeta-function regularisation and scale and conformal anomalies for the Landau problem, Mod. Phys. Lett., A12 (1997), 2631-2640.
7. Parthasarathy, P.R., The effect of superinfection on the distribution of the infectious -period - A continued fraction approximation. IMA. J. Math. Appl. in Med. and Biol. 14 (1997), 113-123.

8. Parthasarathy, P.R. (with Lenin, R.B.), On the exact transient solution of finite birth and death processes with specific quadratic rates, *The Mathematical Scientist*, 22 (1997), 92-105.
9. Parthasarathy, P.R. (with Conolly, B.W. and Dharmaraja, S.), A Chemical queue. *The Mathematical Scientist.*, 22 (1997), 83-91.
10. Parthasarathy, P.R. (with Agrafiotis, G.K.), On the total overtime service in some loss queueing systems. *J. Appl. Stat. Sci.*, 5 (1997), 27-37.
11. Parthasarathy, P.R. (with Vijayalakshmi, V.), Transient analysis of an (S-1,S) inventory model - A numerical approach. *Int. J. Comp. Math.*, 59 (1997), 177-185.
12. Parthasarathy, P.R. (with Lenin, R.B.), On the numerical solution of transient probabilities of quadratic birth and death processes. *Journal of Difference Equations and Applications*, 3 (1997), 1-15.
13. Parthasarathy, P.R. (with Lenin, R.B.), On the numerical solution of transient probabilities of a statedependent multiserver queue. *Intern. J. Computer Math.*, 66 (1998), 241-255.
14. Rama (with Krithivasan, K. and Chakravarthy, V.T.), *Array Splicing Systems*, Lecture Notes in Comp. Sci. No.1218, (1997), 346-365.
15. Rama, R. (with Smitha, T.A.), Some results on Generative Power of total contextual Grammars, *OSMMA-98*, IIT Madras, (1997), p.22.
16. Subrahmanyam, P.V. (with S.K. Sudharsanam), On the Integrable Solutions of a Class of Fuzzy Functional Equations, *IJUFKS*, 5, (1997), 59-69.
17. Subrahmanyam, P.V. (with S.K. Sudharsanam), An existence Theorem for a Fuzzy Functional Integral Equation, *Jl. Fuzzy Mathematics*, 5, (1997), 723-732.
18. Subrahmanyam, P.V., Higher Order Fuzzy Functional Equations for, *Proc. National Symposium on Fuzzy Sets and Applications*, June 1997, 165-168.
19. Subrahmanyam, P.V., A Fixed Point Theorem for Dissipative Mappings in Fuzzy Metric Space, *Proc. International Conference IFSA 97*, Prague, Czech Rep., 2, (1997), 15-17.
20. Subramanian, R. (with Anantharaman, V.), Control of Repair States in a Three Unit Cold Standby Redundant System, *Journal of Applied Statistical Science*, 6, No.2/3 (1997), 173-187.
21. M.Thamban Nair (with M.Hegland and R.S. Anderssen), The trade-off between regularity and stability in Tikhonov Regularization, *Mathematics of Computation*, 66 (1997), 193-206.
22. Thamban Nair (with S. George), Error bounds and parameter choice strategies for simplified regularization in Hilbert scales, *Integral Equations and Operator Theory*, 29 (1997), 231-242.

23. Usha, R., On the Influence of Wall properties in Peristaltic transport of particle-fluid suspensions, Proc. 1997 ASME Fluids Engineering Conference, Vancouver, Canada, # 3044.
24. Usha, R. (with Rukmani Sridharan), Effects of injection on the squeeze flow in the presence of a magnetic field, ZAMM, 77 (1997), 719-720.
25. Usha, R. (with Rukmani Sridharan), Effect of mass transfer on a similar flow in the magnetohydrodynamic squeeze film, Trans. of ASME - Journal of Applied Mechanics, 64 (1997), 240-243.
26. Usha, R. (with Prema, K.), Interaction of pulsatile and peristaltic transport induced flows of particle fluid suspension, ZAMM, 78 (1998), 207-212.
27. Usha, R. (with Vimala, P.), Magnetohydrodynamic Disk Braking, ZAMM, 78 (1998), 283-288.
28. Veeramani, P. (with George, A.), On some results of analysis for Fuzzy Metric Spaces, Fuzzy Sets and Systems, 90 (1997), 365-368.
29. Veeramani, P. (with Sadiq Basha, S.), Best Proximity Pairs and Best Approximations, Acta Sci Math (Szeged), 63 (1997), 289-360.
30. Veeramani, P., Proc. on Some results in Fuzzy Normed Spaces, Proc. Nat. Conf. on Fuzzy Sets and Their Applications, IIT Madras, June 9-10, 1997, pp.104-113.

6 Distinguished visitors to the Department:

S. No.	Name of the visitor and occupation	Date	Purpose of visit
1.	Mr. N.L.M. Murukutla Tata Consultancy Services Chennai	10.04.97	To give Special Seminar
2.	Dr. Robin Wilson The Open University, U.K.	28.04.97	To give Special Seminar
3.	Prof. Junzo Watada School of Industrial Eng. Osaka Institute of Tech. Osaka, Japan.	28.04.97	To give Special Seminar
4.	Prof. Krishnaswamy Alladi University of Florida, USA	14.08.97	To give Special Seminar
5.	Dr. R.K. Kaul Institute of Mathematical Sciences Chennai	20.11.97	To give Special Seminar
6.	Dr. Helmut Neunzert Director, Institut fur Techno-und Wirtschaftsmathematik, Univ. of Kaiserslautern Germany	29.12.97	To give Special Seminar
7.	Prof. James H. Matis Texas A & M University, USA	12.01.98	To give Special Seminar

S. No.	Name of the visitor and occupation	Date	Purpose of visit
8.	Prof. X.G.Viennot Universite Bordeaux, France	12.01.98	To give Special Seminar
9.	Dr. Peter Bruns Department of Mathematics and Informatics University of Osnabrueck, Germany	19.03.98	To avail IIT Madras-BMBF project
10.	Prof. Winfried Bruns Department of Mathematics and Informatics University of Osnabrueck, Germany.	30.03.98	To give Special Seminar

6.1 Journal Editorial Boards (Editors,Secretary, Treasurer,Membership, etc)

6.2

S.No.	Name of Faculty	Level	Journal
1.	Prof. R. Subramanian	Editorial Board	Indian Society for Probability and Statistics
2.	Prof. A. Avudainayagam	Referee	Quarterly Journal of Mechanics and Applied Mathematics
3.	Prof. P.R. Parthasarathy	Regional Editor	Statistical Theory and Methods Abstracts
		Advisory Editor	Inf. and Opt. Sci
		Associate Editor	Appl. Stat. Sci
		Associate Editor	Pure and Appl. Math. Sciences
		Associate Editor.	J.Decision and Math. Sciences

4.10 DEPARTMENT OF MECHANICAL ENGINEERING

1 Introduction:

The department of Mechanical Engineering was established in the year 1959. The department offers PhD., M.S., M.Tech and B.Tech. programmes. The department has excellent facilities to carry out state-of-the-art research and three major disciplines of Mechanical Engineering, namely, Thermal Engineering Stream, Design Stream and Manufacturing Engineering Stream.

The Thermal Engineering Stream comprises of six laboratories namely, Heat Transfer and Thermal Power, Hydro-Turbo Machines, I.C.Engines, Refrigeration & Airconditioning, Thermal-Turbo Machines and Thermodynamics and Combustion.

The Design Stream consists of Machine Elements and Mechanical Handling laboratories.

The Manufacturing Engineering Stream consists of the Manufacturing Engineering Section and Precision Engineering & Instrumentation laboratories.

2 Academic Programmes

2.1 New Courses Introduced:

S.No.	Course No.	Title	Faculty
1.	ME218	Materials Science Technology	Dr.R.Krishnakumar & Dr.R.Gnanamoorthy
2.	ME 602	I C Engines Combustion and Pollution	ICE Faculty
3.	ME 605	Principles of Turbomachinery	Dr.V. Balabaskaran & Dr.M. Govardhan
4.	ME 640	Design of Combustion Engines	ICE Faculty
5.	ME 641	Two Stroke Engines	ICE Faculty
6.	ME 642	Simulation of IC Engine Processes	ICE Faculty
7.	ME 643	Recent Developments in I C Engines	Dr.B.Nagalingam
8.	ME 644	Alternative Fuels for I C Engines	Dr.P.Srinivasa Rao & Dr.K.V.Gopaakrishnan
9.	ME 645	Gas Turbines	Dr.V.Ganesan
10.	ME 646	Electronic Engine Control & Management	Dr.A.Ramesh
11.	ME 647	Dynamics of I C Engines	ICE Faculty
12.	ME 648	Transport Processes in Engines	Dr.Pramod S.Mehta
13.	ME740	Mechatronic Systems	Dr.M.Singaperumal, Dr.T.Nagarajan & Mr.D.V.R.L.Rao

2.2 Students on Roll :

Programme	I Year	II Year	III Year	IV Year	V Year	Total
B.Tech	90	84	87	87	-	348
M.Tech	95	85	-	-	-	180
M.S	23	20	20	3	5	71
Ph.D	11	5	7	7	26	56
Total	219	194	114	97	31	655

2.3 Number of Scholarship/Fellowship holders:

Programme	Institute Scholarship	Others	Total
M.Tech	74	20	94
M.S.	27	42	69
Ph.D	22	54	76
Total	123	116	587

2.4 Names of student /scholar attended Conference/Seminar and Symposia abroad/India

S.No	Name of the Student/Scholar	Name of Conf./Sem./Symp.	Date & Venue
Ph.D			
1	Tamma Bhaskar	XV National Conf. on IC Engines & Combustion Anna University	Dec.16-18, 1997
2	J.M.Mallikarjuna	-do	-do-
3	A.V.Sitarama Raju	-do-	-do-
4	E.Ramakrishnan	XV National Conf. on IC Engines & Combustion Anna University	Dec.16-18, 1997
5	T.MichaeKumar I N.	-do-	-do-
6	RoshanKumar	National Seminar on Intelligent Manufacturing Systems	Coimbatore Feb.6-7, 98
7	A.RameshBabu	Fifth Pacific Rim Int. Conf. on Waterjet Technology	New Delhi, Feb.'98
8	R.Deivanathan	International Conf.on Quality Management,	Coimbatore, Aug.'97
9	Jagannathan	AIMTDR'97	Warangal, Jan. '97
10	P.G.Mathews	AIMTDR'97	Warangal, Jan. '97
11	SV Bhaskara Reddy	AIMTDR'97	Warangal, Jan. '97
12	SVR Surya Narayana	AIMTDR'97	Warangal, Jan. '97

S.No	Name of the Student/Scholar	Name of Conf./Sem./Symp.	Date & Venue
13	R.DelvaNathan	AIMTDR'97	Warangal, Jan. '97
14	M.B.Kiran	AIMTDR'97	Warangal, Jan.'97
15	T. Ravisundar	7 th Asian Cong. Of Fluid Mech.	Dec.8-12, 1997 I.I.T., Madras
16	Ganesha Udupa	17 th AIMTDR,	Jan 1997, REC, Warangal
17	S.Kumuda	CIRP Conference	Aug 1997
	M.S		
18	M.Raghu	XV National Conf. on IC Engines & Combustion Anna University	Dec. 16-18, 1997
19	R.Vasu	-do-	-do-
20	K.Anji Reddy	-do-	-do-
21	G.Prakash	-do-	-do-
22	Ramanan .L,	3 rd Int. Conf. On Modern practice in stress and vibration analysis,	Dublin, Ireland, Sept. 1997
23	V.H.R. Subramanian	Int. Conf. on Mfg. Automation-ICMA'97	Hong Kong, April 28-30, 1997
24	N.Sitarama Chakravarthy	Fifth Pacific Rim Int. Conf. on, Waterjet Technology	New Delhi, Feb.'98

S.No	Name of the Student/Scholar M.S.	Name of Conf./Sem./Symp.	Date & Venue
25	V.H.R.Subramanian	AIMTDR'97	Warangal, Jan. '97
	P.Sitarama Chakravarthy	-do-	-do-
	K.G.R.Koteswara Rao	-do-	-do-
	A.Krishna Kishore	-do-	-do-
26	R.Srikanth	Int. Conf. On Computational Linguistics, Indian Statistical Speech and Document Processing and Pattern Recognition Unit I Computer Vision Institute	Feb 18-20, 1998 Calcutta
27	Sanjiv Kumar	UGC Seminar on Mechatronics	March 1997, MIT, Chennai

2.5 Number of Degrees Awarded in the last convocation:

Programme	Number awarded
B.Tech	82
M.Tech	61
M.S	18
Ph.D	22
Total	183

3 Faculty and their Development:

3.1 Faculty details:

Name and Qualifications

Major Area of Specialization

Professors

Ajit Kumar Kolar, Ph.D (IIT Madras)	Fluidized bed combustion
Balabaskaran, V., Ph.D (IIT Madras)	Hydroturbomachines
Bhaskaran, K.A., Ph.D.(IIT Madras) [Head]	Combustion and Propulsion
Ganesan, V., PhD (IIT Madras)	I.C Engines & Gas Turbines
Gopalakrishnan, K.V., PhD (IIT Madras)	I.C. Engines
Gopinath, K., PhD(IIT Madras)	Machine Design, Tribology and Powder Metallurgy
Krishnaiah Chetty, O.V., Ph.D (IIT Madras)	Conventional and Unconventional machining, FMS, CIM, Scheduling, Petrinets
Krishnamoorthy, R., Ph.D(IIT Madras)	Metal cutting, Grinding, Unconventional Machining, Ceramics

Name and Qualifications

Major Area of Specialization

Krishna Sastri, V.M., PhD (Delaware, USA)	Heat Transfer
Kumaraswamy, S., Ph.D (IIT Madras)	Hydroturbomachines
Madhusudana Rao. M., PhD (IIT Madras)	Mechanical Handling, Materials Handling
Nagarajan. T., Ph.D (IIT Madras)	Robotics, Pneumatics, Medical Instruments
Natarajan, R., Ph.D (Waterloo) (Director, IIT Madras)	Heterogeneous Combustion, Energy Conservation, Rocket and Ramjet Combustion, Thermodynamics, Analysis of Energy Systems
Phillip, P.K., Ph.D (IIT Madras)	Material removal processes, CAD/CAM, Fluid power, Tool Design
Pramod S Mehta, Ph.D (Loguhborough, UK)	I.C.Engines
Premananda Shet. U.S., Ph.D (IIT Madras)	Combustion and Propulsion, Computational Fluid
Radhakrishnan. V., Ph.D (IIT Madras)	Metrology, Automation, Grinding, CIM
Raman.R., Ph.D (IIT Madras)	Precision Engineering & Instrumentation
Seetharamu, K.N., Ph.D (IIT Madras)	Heat Transfer, Fluid flow
Shunmugam.M.S., Ph.D (IIT Madras)	Metrology, BTA, Gear Machining, Grinding, EDM, Statistical Quality Assurance, Automation, Computer Aided Manufacturing Systems and Control
Singaperumal, M., Ph.D (IIT Madras)	Fluid power, Electro-hydraulic servo- systems, Low-cost automation, Modelling and simulation, Mechatronics
Siva Prasad, N., Ph.D (IIT Madras)	CAD, FEM, Machine Design, Computer Graphics
Sriramulu, V., Ph.D (IIT Madras)	Combustion and Propulsion
Srinivasa, Y.G., Ph.D (IIT Madras)	Instrumentation & Control, Active noise control, Active suspensions
Srinivasa Rao, P., Ph.D (IIT Madras)	I C Engines
Srinivasa Murthy. S., Ph.D (IIT Madras) Refrigeration & Airconditioning	Refrigeration & Airconditioning
Sundararajan, T., PhD (Pennsylvania)	Dynamics & Heat Transfer
Venkatesh, A., Ph.D. (IIT Madras)	Solar Energy Utilization
Venkatesan, S.P., PhD., (IISc, Bangalore)	Heat Transfer
Vijay R Ragavan, PhD (IIT Madras)	Heat exchangers and Cooling towers, Heat recovery and conservation
Associate Professors	
Govardhan, M., PhD (IIT Madras)	Thermal turbomachines

Name and Qualifications	Major Area of Specialization
Jayaparkash, V., PhD(IIT Madras)	Machine design, FEM analysis, CAD Chemical Machinery Design
KrishnaKumar,R., Ph.D(IIT Madras)	Non-linear and linear finite elements, CAD, Fracture Mechanics
Krishnamurthy, S.,PhD(IIT Madras)	Machine Design, Tribology
Kuppusamy,G., Ph.D(IIT Madras)	Automation, CAD/CAM, Metal cutting, Machine Tools
Mani, A., Ph.D(IIT Madras)	Refrigeration & Air conditioning
Muthuveerappan,G.,(IIT Madras)	Machine design, Vibrations
Narayanasamy,K., Ph.D(IIT Madras)	Precision Eng., Manufacturing methods in precision engineering
Prasad. B.V.S.S.S., PhD(IIT Kharagpur)	Turbo Machines
Raju Sethuraman. R., PhD(IIT Bombay)	Machine Design, Fracture Mechanics
Ramamoorthy, B., PhD(IIT Madras)	Metrology, CAI/sensors/Mfg. Eng./ Quality control
RameshBabu. N., Ph.D(IIT Madras)	CNC, CAM, LBM, Grinding, PLC Applications
Vijayaragavan,L., Ph.D.(IIT Madras)	Metal Cutting, CAD, Grinding, Condition Monitoring & Surface technology
Assistant Professors	
Gnanamoothy, R., PhD(IIT Madras)	Machine design , Materials Technology
Gopaln, K.N., PhD(IIT Madras)	Analysis, Simulation & Dynamics
Mayuram, M.M.,PhD(IIT Madras)	Machine Design & Surface Engg.
Prakash M Maiya, Ph.D	Refrigeration & Air conditoning
Ramalingaeswara Rao, D.V. M.Tech(IIT Madras)	Instrumentation & Control Engg.
Ramesh, A., PhD(IIT Madras)	Alternative fuels, Performance improvement of two stroke & Four stroke engines
Sarit Kumar Das, PhD(Sambhalpur)	Heat Transfer, Heat exchanger,CFD
Sitaram. N.,PhD(Pennsylvania)	Turbo Machines, Heat Transfer
Venkatarathnam, G.,Ph.D(IIT Kharagpur)	Refrigeration & Airconditioning
Chief Design Engineer	
Chennabasavan, T.S., Ph.D(IIT Madras)	Design, Porous bearings
Senior Design Engineer	
Kalandar Saheb,S.D., M.Tech(IIT Madras)	Jigs and Fixtures, Powder metallurgy of Gears, Design for Manufacture, Design of Mechanical machines and Equipments
Scientific Officer	
Boopathy, S., Ph.D(IIT Madras)	Robotics and Automation, CAD/CAM, Manufacturing Logistics
Senior Maintenance Engineer	
Arun, A., B.E(Madras Univ)	Refrigeration & Airconditioning

3.2 Short-term Courses/Workshops/Seminars/Symposia/Conferences organized:

S.No.	Co-ordinators	Title	Period
1.	Dr.Ajit Kumar Kolar	International workshop on renewable Energy applications	9-11, April 1997
2.	Dr.S. Kumaraswamy	Water Jet Technology (organised jointly with FPSI-Madras Chapter & IIPE)	Nov.11,1997
		REAPOI '97 Intl. Conf. Member, Organising committee	April 9-11, 1997
3.	Dr.S. Kumaraswamy & Dr.V. Balabaskaran	7 th Asian Cong. of Fluid Mechanics Members of the Organising Committees	Dec.8-12, 1997
4.	Dr.B.Nagalingam	One-day Seminar on Control of Air Pollution from Road Vehicles in India	30 June 1997
5.	Dr.V.Ganesan	ISTE Workshop on "Helping 6-8 students develop better learning skills and habits"	Nov 1997
		A Learning Centred Approach to Engineering Education in the 21st Century	5-6 Jan 1998
6.	Dr.Pramod S. Mehta	Technology Appreciation Programme on "Analytical Tools for Engine Emission Diagnostics	14 Feb 1998
7.	Dr.N.Siva Prasad	Design & Manufacture for KCP	2 weeks 1997
8.	Dr.B.Ramamoorthy	One Day Tech.App. Prog. on 'Computer Aided Inspection'	March 18,1998
9.	Dr.N.RameshBabu	One day seminar on 'Waterjet Technology'	Nov.1997
		One day seminar on 'Waterjet Technology' Central Power Research Institute, Bangalore, (organised jointly with Inst. Of Plant Engineers)	Nov.1997
		Fifth Pacific Rim Int. Conf. on Waterjet Technology New Delhi	Feb.1998
		Programme on 'Engineering Design & Manufacturing' for KCP, Chennai	Sep.-Oct 1997
10.	Dr.R.Krishnakumar	Programme on 'Finite Elements Technology' for Industrial participants	April 1997
		Programme for 'TISCO' Jamshedpur	
11.	Dr.M.Singaperumal	Fluid power systems and control-short term module for TISCO	Dec 22-24, 1997
		Oil & Gas flow measurements Director, FCRI	Oct 15-17, 1997
		National seminar of IIPE	Dec 19-20, 1997
12.	Dr.S.Srinivasa Murthy	Refrigeration & Airconditioning	
13.	Dr.A.Mani	Refrigeration & Airconditioning	
14.	Dr.G.Venkatarathnam	Refrigeration & Airconditioning	
15.	Dr.M.P.Maiya	Refrigeration & Airconditioning	
16.	Dr.M.Govardhan	Introduction to Steam and Gas Turbines	May 31, 1997
17.	Dr. N. Sitaram & Dr. M. Govardhan	Modern Measurement Techniques of Turbomachinery	July 7 - July 18, 1997
18.	Dr. M. Govardhan (Co-ordinator Dr. R. Natarajan)	29 th National Seminar on Energy Strategies of 21 st Century	Sept. 27, 1997

3.3 ShorttermCourses/Workshops/Seminars/Symposia/Conferences/ Training attended by the Faculty in recognized Academic Institutions and Public Sector Units:

S.No	Name of Faculty	Title	Institution	Period /Duration
1.	Dr.S.P.Venkateshan	13 th National heat and mass transfer conference	IIT Kanpur	28-31 Apr 1997
2.	Dr.Sarit Kumar Das	13 th National heat and mass transfer conference	IIT Kanpur	28-31 Apr 1997
3.	Dr.V. Balabaskaran	7 th Asian Cong. of Fluid Mechanics	IIT Madras	Dec.8-12, 1997
4.	Dr.S. Kumaraswamy	7 th Asian Cong. of Fluid Mechanics	IIT Madras	Dec.8-12, 1997
		Sym on Foreign Media and Indian Democracy & Multinational and Indian Industry	IIT Madras	Jan.4-6, 1998
		CII-Partnership Summit 1998	CII Chennai	Jan.10, 1998
		DAAD seminar on Sciences of the Future	IIT Madras	Mar.4-6, 1998
5.	Dr.V. Balabaskaran	DAAD seminar on Sciences of the Future	IIT Madras	Mar.4-6, 1998
6.	Dr.V.Ganesan	The VII Asian Congress of Fluid Mechanics	IIT Madras	8-12 Dec 1997
		XV National Conference on I.C.Engines and Combustion	Anna Univ.	16-19 Dec 97
7.	Dr.B.Nagalingam	The VII Asian Congress of Fluid Mechanics	IIT Madras	8-12 Dec 1997
8.	Dr.Pramod S Mehta	The VII Asian Congress of Fluid Mechanics	IIT Madras	8-12 Dec 1997
9.	Dr.A.Ramesh	The VII Asian Congress of Fluid Mechanics	IIT Madras	8-12 Dec 1997
10.	Dr.B.Nagalingam	XV National Conference on I.C.Engines and Combustion	Anna Univ.	16-19 Dec 97
11.	Dr.Pramod S Mehta	XV National Conference on I.C.Engines and Combustion	Anna Univ.	16-19 Dec 97
12.	Dr.K.V.Gopala - krishnan	XV National Conference on I.C.Engines and Combustion	Anna Univ.	16-19 Dec 97
13.	Dr.A.Ramesh	XV National Conference on I.C.Engines and Combustion	Anna Univ.	16-19 Dec 97
14.	Dr.V.Radhakrishnan	7 th Int. conf. on Metrology and Properties of Engineering Surfaces	Sweden	2-4 th April'97
15.	Dr..P.K.Philip	SME Int. Conf.	Detroit, U.S.A.	Oct.5-8,1997
16.	Dr.B.Ramamoorthy	SME Int. Conf.	Detroit, U.S.A.	Oct.5-8,1997
17.	Dr..P.K.Philip	AIMTDR-97	REC, Warangal	Jan.'97
18.	Dr..R.Krishna-moorthy	AIMTDR-97	REC, Warangal	Jan.'97
19.	Dr..M.S.Shunmugam	AIMTDR-97	REC, Warangal	Jan.'97
20.	Dr.L.Vijayaraghavan	AIMTDR-97	REC, Warangal	Jan.'97
21.	Dr.B.Ramamoorthy	AIMTDR-97	REC, Warangal	Jan.'97
22.	Dr.N.RameshBabu	AIMTDR-97	REC, Warangal	Jan.'97
23.	Dr.S.Boopathy	AIMTDR-97	REC, Warangal	Jan.'97
24.	Dr..O.V.K.Chetty	5thPac.Rim Int.Conf. on Waterjet Tech.	NewDelhi	Feb.'98

S.No	Name of Faculty	Title	Institution	Period / Duration
25.	Dr.N.RameshBabu	5thPac.Rim Int.Conf. on WaterJet Tech.	NewDelhi	Feb.'98
26.	Dr.B.Ramamoorthy	Int.Conf.on Quality Management	Coimbatore	Aug.'97
		National Seminar on 'Intelligent Manufacturing'	Coimbatore	Feb.'98
27.	Dr.V.Radhakirshnan	Technology Symposium - Baden-Wuttenberg, Germany	Chennai	Mar 26-27 1998
28.	Dr.P.K.Philip	Technology Symposium - Baden-Wuttenberg, Germany	Chennai	Mar 26-27 1998
29.	Dr.R.Krishnamoorthy	Technology Symposium - Baden-Wuttenberg, Germany	Chennai	Mar 26-27 1998
30.	Dr.M.S.Shunmugam	Technology Symposium - Baden-Wuttenberg, Germany	Chennai	Mar 26-27 1998
31.	Dr.O.V.Krishnahlah - Chetty	Technology Symposium - Baden-Wuttenberg, Germany	Chennai	Mar 26-27 1998
32.	Dr.B.Ramamoorthy	Technology Symposium - Baden-Wuttenberg, Germany	Chennai	Mar 26-27 1998
33.	Dr.G.Kuppusamy	Technology Symposium - Baden-Wuttenberg, Germany	Chennai	Mar 26-27 1998
34.	Dr.L.Vijayaragavan	Technology Symposium - Baden-Wuttenberg, Germany	Chennai	Mar 26-27 1998
35.	Dr.S.Boopathy	Technology Symposium - Baden-Wuttenberg, Germany	Chennai	Mar 26-27 1998
36.	Dr. M. Madhusudana Rao	BHEL	Trichy	Two Days
37.	Dr.M. Singaperumal	Science of the Future-DAAD, Seminar for fellowship		Mar 4-6, 1998
38.	Dr.M. Singaperumal	Fluid power exhibition and seminar, FPES98	FPSI, Banalore	Jan 23-25, 1998
39.	Dr.M.P.Maiyay	Second International Work shop on Renewable Energy Application to Plantation and other Industries	IIT Madras	April 9-11,1997
40.	Dr.S.Srinivasa-Murthy	International Symposium on	University	Aug 29-30,1997
	Dr.M.P.Maiya	Advances in Alternative & Renewable Energy	Teknologi Malaysia	
41.	Dr.S.Srinivasa Murthy	Recent Advances in Environment Friendly R & AC	University Teknologi Malaysia	July 25-26,1997
	Dr.M.P.Maiya			
42.	Dr.M.P.Maiya	Cooling Tower and water treatment	ISHRAE Chennai,India	Aug 29-30,1997
		National Solar Energy Convention 97	Anna University Chennai	December 22-24,1997
43.	Dr.A.Mani	Solar World Congress	Korean Energy Research Institute South Korea	Aug 97
45.	Dr. B.V.S.S.S. Prasad	4 th NAL (India) - CAE (China) Workshop on Advanced Gas Turbine Technologies I- Turbomachinery	NAL, Bangalore	June 10-12, '97
		7 th Asian Congress of Fluid Mechanics	IIT Madras	Dec 8-12, 1997
		3 rd ASME-ISHMT and 14 th ISHMT Conference	IIT Kanpur	Dec 29-31, '97
46.	Dr. M. Govardhan	7 th Asian Congress of Fluid Mechanics	IIT Madras	Dec 8-12, '97
47.	Dr. N. Sitaram	7 th Asian Congress of Fluid Mechanics	IIT Madras	Dec 8-12, '97

3.4 Special Lectures Delivered by the faculty in others Institutions:

S.No	Name of the Faculty	Topic of Lecture	Venue& Date
1.	Dr.V. Balabaskaran	Mass Flow Measurements	QIP Summer School on Modern Measurement Techniques of Turbomachinery I.I.T., Madras July 7-18, 1997
2.	Dr.S. Kumaraswamy	High Speed Photography	QIP Summer School on Modern Measurement Techniques of Turbomachinery I.I.T., Madras July 7-18, 1997
3.	Dr. A. Ramesh	Automotive Pollution and its Control	MIT, Madras 11.12.97
		Natural Gas as an Automotive fuel for pollution control	MIT, Madras 12.12.97
4.	Dr. Pramod S Mehta	Phenomenological Models	14.02.98 IIT Madras
5.	Dr. V. Ganesan	A Thermodynamic Model for S.I. Engine Combustion	14.02.98 IIT Madras
6.	Dr.M.M. Mayuram	Design & Manufacture for KCP Ltd.	IIT Madras, 1997
		Thermal Spraying	Pondicherry Engg.College
7.	Dr.S.Krishnamurthy	Design & Manufacture for KCP Ltd.	IIT Madras, 1997
8.	Dr..R.Krishnamoorthy	Condition Monitoring in Mfg.Process	PES College of Eng.Mandya, July 14-26, 1997
9.	Dr.L.VijayaRaghavan	Condition Monitoring in Mfg.Process	PES College of Engg. Mandya, July 14-26, 1997
10.	Dr.B.Ramamoorthy	Condition Monitoring in Mfg.Process	PES College of Engg. Mandya, July 14-26, 1997
11.	Dr.N.RameshBabu	Trends in CNC machining	3 rd SERC School in Advanced Manufacturing, June'97
		Flexible Manufacturing Systems	3 rd SERC School in Advanced Manufacturing, June'97
		Research on Advanced Methods of	Processing Materials 2 nd Indo-Japan workshop on Advanced Manufacturing Systems, IIT Mumbai, Nov.'97
		Waterjet Technology	Indo-British seminar on Advanced Manufacturing Technology, PSGCT, Coimbatore, Dec.'97
12.	Dr..O.V.K.Chetty	Flexible Manufacturing Systems	RVR JC College of Engg. Guntur, Nov.'97
		Advances In Manufacturing	RVR JC College of Engg. Guntur, Jan.'98

S.No	Name of the Faculty	Topic of Lecture	Venue& Date
13.	Dr.B.Ramamoorthy	Errors in Inspection	Keynote Address for National Seminar on 'Intelligent Manufacturing' at CIT, Coimbatore, Feb.'98.
14.	Dr.G.Kuppusamy	BondGraph Applications in Manufacturing	Workshop on Bondgraph techniques, Pune, Jan.18-20, 1998
15.	Dr.M. Singaperumal	Seminar on Mechtronics	KREC, Surathkal, 7-9 March 1997
		Mechatronics-Challenges and Opportunities	Anna University Chennai Mar 28-29,1998
		Electro-hydraulic Servo-system	NSTL, Visakhapatnam, July 9-13, 1997
		Condition monitoring in fluid power	PES College of Engg., Mandya, 14-26,July 1997
		Mechtronic System Design	KREC Surathkal, 28 July-9Aug, 1997
		Mechatronics - The technology for the 21th century	Anna University, Chennai, 2 Mar, 1998
16.	Mr.D.V.R.L.Rao	Control Engineering	NSTL Visakhapatnam
17.	Dr.Y.G.Srinivasa	Condition monitoring in manufacturing Systems	PES College of Engg., Mandya, 14-26,July 1997
18.	Dr.K.A.Bhaskaran	Current Trends in Engineering Education	Adiparasakthi College of Engineering, Memaruvathur in January 1998.
		Globalisation of Engineering Education	PSG College of Technology, Coimbatore March 1998
19.	Dr. M. Govardhan	Steam and Gas Turbines	MRL RESOT 18-11-97

3.5 Visits Abroad by Faculty:

S.No	Name of Faculty	Country visited	Date	Purpose of visit
1.	Dr.V.M.K.Sastri	USA	Apr - June 1997	Private
2.	Dr.Sastri Kumar Das	Germany	Apr - June 1997	Joint research project
3.	Dr.Raju Sethuraman	Japan	May-July 1997	Visiting Research fellow
4.	Dr.K.Gopinath	Russia	October 1997	Toevaluate Multiaxis Testing machine at IMSP Ufa.
5.	Dr..V.Radhakrishnan	Germany Sweden	Sep.'96-Aug.'97 2-4 th April'97	Due to Humboldt Award To attend 7 th Int. conf. on Metrology and properties of Engineering Surfaces
		Singapore	Sep.'97-Feb.'98	Visiting Professor at NUS

S.No	Name of Faculty	Country visited	Date	Purpose of visit
6.	Dr.P.K.Philip Detroit	U.S.A.	Oct.5-8	To attendSME Int. Conf. at
7.	Dr.B.Ramamoorthy Detroit	U.S.A.	Oct.5-8	To attend SME Int. Conf. at
8.	Dr.S.Boopathy	Germany	Sep.'97-Oct.'97	Volkswagen Project
9.	Dr.S.Srinivasa Murthy	Malasiya	June 20-27,1997	To attend Symposium & Workshop and Present the Paper
10.	Dr.A.Mani	South Korea	Aug.24-29,1997	To attend and present paper in the Conference Paper
11.	Dr.G.Venkatathnam	Portland,USA	July 28-1 Aug,1997	To attend and present the Paper
12.	Dr.M.P.Maiya	MalaysiaJuly	20-27 1997	To attend Symposium & workshop and Present paper
13.	Dr. V. Sriramulu	Japan	April 97 toMarch 98	Visiting Professor

3.6 Honours and Awards obtained:

S.No	Name of Faculty	Name of Award/Honour	Awarded by	Awarded for	Date
1.	Dr.V. Balabaskaran	Invited to be a member of the Intl. Advisory Committee	Third Intl. Conf. On Pumps and Fans organised by Tsinghua Univ., China to be held during	Oct.3-16, 1998	
2.	Dr.V.Ganesan	Anna University National Award	ISTE	Outstanding Academic of the year 1997	Dec.'97
		ISTE-GSFC Award	ISTE	Best M.Tech Thesis	1997
3.	Dr.A.Ramesh	Best paper Award	Anna University	best paper prize	1997
4.	Dr.V.Radhakrishnan	Humboldt Award	Humboldt Foundation Germany	Contribution in Manf. Eng. at Int. Level	1996
		NRDC Top Award for Invention	NRDC Invention in Fluidised Abrasive Polishing Technology		Jan1998
		Best Paper Award	Inst. of Engineers		Dec.'97
5.	Dr.P.K.Philip	Best Paper Award	Inst. Of Engineers		Jan'98
6.	Dr.R.KrishnaKumar & Dr.P.K.Philip	Best Paper Award National Conf. on Intelligent Manufacturing	CIT, Coimbatore		Feb.'98

S.No	Name of Faculty	Name of Award/Honour	Awarded by	Awarded for	Date
7.	Dr.R.KrishnaKumar	Best Paper in Pipe Welding	American Welding Society		1998
8.	Dr.M. Singaperumal, Ganesha Udupa Dr. R.Sirohi & Dr.M.P.Kothiyal	First prize for the best Paper	AIMTDR	outstanding paper on Metal Cutting and allied process	Jan 9-11-1997
9.	Dr. M. Govardhan	Mentioned In Who's Who	Marquis Who's Who In the World	For Contribution to Science and Technology	1997

3.7 Books/Monographs authored or co-authored:

S.No	Name(s) of Author(s) Publisher	Title of Text Book/Monograph	
1.	Dr.N.RameshBabu	Editor, Proceedings of 5 th Pacific Rim Int. Conf. on Waterjet Technology, 1998	Allied Publishers, New Delhi
2.	Dr.M.Sinaperumal S.Mouleshwaran	TPM Approaches and Challenges Proc. of National Seminar, Dec 1997	Indian Institute of Plant Engrs.
3.	Dr.R.Raman	Principles of Mechanical Measurements(II Ed.) Pvt.Ltd.	Oxford and LBH Pub. Co. New Delhi
4.	Dr.S.Srinivasa Murthy Dr.G.Venkataramnam Dr. T. Engler, Dr. L. R. Oelrich & Dr.A.R.Balakrishnan	Refrigerant Mixtures as Alternatives to HCFC 22 & 502	DKV Germany
5.	Dr.S.Srinivasa Murthy	Heat and Mass Transfer'97	NarosaPublishersDr.G.Biswas, (A Springer VerlagDr.V.Dhir & Collaborator)Dr.K.Muralidhar

3.8 Fellowships of Academies and Professional Societies: (Humboldt/INAE/INSA/Hon. FRA, etc.)

Name of Faculty	Name of the Academy/ Professional Society	Level	Year of Admission
1. Dr.V.Ganesan	Combustion Institute (USA)	Life Member	1989
2. Dr.B.Nagalingam	Combustion Institute (USA)	Life Member	1989
3. Dr. Pramod S.Mehta	Combustion Institute (USA)	Life Member	1989
4. Dr.A.Ramesh	Combustion Institute (USA)	Life Member	1989
5. Dr.V.Ganesan	Institution of Engineers (India) Society of Fluid Mechanics and Fluid Power (India) Society of Automotive Engineers (SAE, USA) Indian Society for Technical Education (ISTE)	Member Life Member Member Member	1990 1995 1996 1996

Name of Faculty	Name of the Academy/ Professional Society	Level	Year of Admission
6. Dr.B.Nagalingam	Society of Automotive Engineers (SAE, USA)	Member	1996
7. Dr.A.Ramesh	Society of Automotive Engineers (SAE, USA)	Member	1996
8. Dr.B.Nagalingam	Indian Society for Technical Education (ISTE)	Member	1996
9. Dr.M.Madhusudana Rao	ASME	Member	1991
10. Dr.M.Singaperumal	Fluid Power Society of India	Member	1982
	Inst. of Engineers (India)	Member	1987
	Association for Machines and Mechanisms	Member	1995
	Indian Institution of Plant Engineers	Secretary (Training Division)	1996
	IFTOMM Technical Committee on Mechatronics	Member	1994
11. Mr.D.V.R.L.Rao	Instrument Society of India	Life Member	1996
12. Dr.Y.G.Srinivasa	Association for Machines and Mechanisms	Member	1995
13. Dr.K.A. Bhaskaran	Institution of Engineers of India	(FIE) Fellow	

40 Design and development Activities:

4.1 Brief and specific details of Process/Instruments/Equipment/Software Designed and developed:

- Fluidised Abrasive Polishing Setup
- Magnetic Abrasive Machining Setup
- Portable Airconditioner for stratified Cabin Airconditioning. A small portable AC of cooling capacity 1 kW is designed, fabricated and tested for cabin air conditioning. Cooling load in the cabin is reduced using air stratification technique. The portable AC of stated capacity is found sufficient for cabins.
- Heat flux probes for High Power Boilers for BHEL, Trichy by Dr. B.V.S.S.S. Prasad (Co-coordinator).

4.2 Details of patents held in the Department with the data of filing: Patents awarded:

Fluidised Abrasive Jet Polishing (Dr.V.Radhakrishnan & Dr.Jagannathan)

Patents filed:

Quick Stop Device for Friction Welding (Dr.M.S.Shunmugam & Dr.Rajaram)

Novel Method of Metal Deposition in EDM (Dr.P.K.Philip, Dr.M.S.Shunmugam & Dr.Gangatharan)

5. Research and Consultancy:

5.1 Sponsored Research Projects on hand:

Sl. No	Title	Period	Funding Agency	Amount (In lakhs)	Co-Ordenators
1.	Atmospheric circulating Fluidised bed boiler	2 years	MHRD	3.64	Dr.Ajit Kumar Kolar, Dr.V.K.M.Sastri & Dr.P.S.Mehta
2.	Theoretical and experimental Investigator(fast breed reactpr)	2 years	IGCAR	9.04	Dr.Sarit Kumar - Kalpakkam Das, Dr.R. Usha & Dr.S.P.Venkatesan
3.	Development of hyperboric Dispersion equipment	2years	IIT BMBF	Travel and stay grant	Dr.Sarit Kumar Das
4.	Development of a Slurry Pumping System using jet pumps	3 years	NIOT	49.70	Dr.S. Kumaraswamy Dr. M. Madhusudana Rao
5.	Investigations of Multi-phase jet Mixing and Combustion in a Dump Combustor	29.3.95 to 28.3.98	ARDB	8.03	Dr.V.Ganesan
6.	Numerical Prediction of Flow and Combustion in Gas Turbine Combustion Systems	1997 to	ARDB	4.34	Dr.V.Ganesan
7.	Modelling of Isothermal and Reacting Flow in Afterburners	1998 to 2001	ARDB	9.085	Dr.V.Ganesan
8.	Design Modification to Improve Fuel Economy and Emission of a Conventional Two-Stroke Spark Ignition Engines	26.8.96 to 31.3.99	MHRD-TDM	7.5	Dr.A.Ramesh Dr.K.V.Gopalakrishnan Dr.B.Nagalingam
9.	Development of Engine Systems For Rural Application using Renewable Gaseous Fuels	26.8.96 to 31.3.99	MHRD- TDM	9.5	Dr.A.Ramesh Dr.K.V.Gopalakrishnan Dr.B.Nagalingam
10.	Development of a Fuel Efficient Low Emission Two-Stroke Spark Ignition Engine Design	8.4.96 to 7.4.98	DST	3.59	Dr.A.Ramesh
11.	Investigation of Flow-Comb Interaction in the Comb. Chamber of Low Emission DI Diesel Engine	April 97 to March 1998	DST	6.2	Dr.Pramod S Mehta and Dr.B.Nagalingam
12.	Automatic& Adaptive grid generation for Engg. Analysis	1996-98	ARDB	9.75	Dr.N.Siva Prasad, Dr.K.N.Seetharamu and Dr.T.Sundararajan
13.	FEA of Weldments using Adaptive grids	1996-99	DST	6.07	Dr.N.Siva Prasad and Dr.K.N.Seetharamu
14.	LBB validation for pressure Vessel	1997-99	IGCAR	17.00	Dr.Raju Sethuraman Dr.Lakshmana Rao
15.	Under water ship repair Tech.	1997-2000	NRB	22.00	Dr.K.Gopinath, Dr.R.Gnanamoorthy Dr.S.K.Malhothra & Dr.R.Natarajan
16.	Development of Technand Equipment for Rapid Prototyping	1996-98	DST	13	Dr.V.Radhakrishnan, Dr.N.Ramesh Babu & Dr.S.Boopathy

Sl. No	Title	Period	Funding Agency	Amount (In lakhs)	Co-Ordenators
17.	Quality Loops in Manufacturing	1996-98	Volkswagen Foundation Germany	20	Dr.V.Radhakrishnan, Dr.B.Ramamoorthy, Dr.N.Ramesh Babu & Dr.S.Boopathy
18.	Powder Metallurgy	1997-98	DST		Dr.P.K.Phillip Dr.R.KrishnaKumar
19.	Application of Waterjet Tech. in Manufacturing	1995-98	DST	46	Dr.OVK Chetty, Dr.N.Ramesh Babu
20.	Offline Planning and Simulation of Multiple Mobile Crane Lifts	1997-98	DST	10	Dr.N.Ramesh Babu Dr.S.Boopathy with Civil Engg.Dept.(Dr.Koshy Vargheese & Dr.K.N.SathyaNarayana)
21.	Vision applications in Inspection	1995-97	CSIR		Dr.V.Radhakrishnan, Dr.B.Ramamoorthy
22.	Development of Slurry Pumping System using Jet Pumps	1995-98	NIOT	50	Dr.M.Madhusudana Rao Dr. S. Kumaraswamy
23.	Technology Development of Active suspension for cars	2years	IIT BMBF	Travel and stay grant	Dr.Y.G.Srinivasa
24.	Development of Active and Semi-active Suspensions for vehicles	3-years	DST	9.4	Dr. Y.G.Srinivasa Dr.K.Narayanasamy
25.	Evaluation of tribological characteristics of plasma sprayed ceramic coatings	3-years	MHRD	8	Dr.K.Narayanasamy Dr.R.Krinshnamoorthy
26.	MMC for Automation applications	3 years	MHRD(7DM)	85	Dr.M.Singaperum R.Palaninathan and C.V.Gokulratnam
27.	Heat Recovery Systems: Heat Pump Assisted Agricultural Dryer Dev.	Planning Commission	MHRD-Technology Mission	80	Dr.S.Srinivasa Murthy Dr.M.P.Maiya Dr.A.R.Balakrishnan
28.	Vapour Absorption Heat Pump-Chiller Development	Planning Commission	MHRD Technology Mission	120	Dr.S.Srinivasa Murthy Dr.M.P.Maiya Dr.A.R.Balakrishnan
29.	Vapour Compression Heat Pump-Chiller Development	Planning Commission	MHRD Technology Mission	100	Dr.S.Srinivasa Murthy Dr.M.P.Maiya Dr.A.R.Balakrishnan
30.	Environmentally Friendly Alternatives to CFCs for Compression Heat Pump		MHRD	5	Dr.S.Srinivasa Murthy & DLR Bonn (Indo-German Cooperation)
31.	High Performance Finite Ele. Analysis for Manufacturing Industry using Parallel Virtual	3 years	DST	12.29	Dr.C.S.Krishnamurthy Dr.R.Krishna Kumar Dr.T.Sundararajan & I Dr.C.Pandurangan
32.	Development of a Propulsion Integrated System Software for Launch Vehicle	3 years	ISRO	7.76	Dr.K.A. Bhaskaran Dr.T.Sundararajanfor Dr.S.Kumaraswamy & Dr. M. Govardhan

Sl. No	Title	Period	Funding Agency	Amount (in lakhs)	Co-Ordenators
33.	Modelling of Isothermal and Reacting Flow in Afterburners	3 years	ARDB	9.90	Dr.V.Ganesan & Dr.T.Sundararajan
34.	Self Rectifying Air Turbine	1½ years	NIOT	3.45	Dr. M. Govardhan
35.	Gas Entrainment Studies in LMFBR Scale Models	2 years	IGCAR	4.37	Dr. B.H.L. Gowda & Dr. B.V.S.S.S. Prasad

5.2 Industrial Consultancy :

Name of the Faculty	Title	Industry	Amount(in Lakhs)	
Dr.Sarit Kumar Das& Dr.Vijay R.Ragavan	Improvement of kitchen heat recovery	Mangal Ravi Associates	0.1	
Dr.S. Kumaraswamy	Technical consultancy for the CETPs for Tanneries	TALCO	1 % of Proj. cost	
	Technical consultancy for the CETPs for Textile effluents	TNPCB	1 % of Proj. cost	
	Technical consultancy for the CETP at Kasipalayam, Tirupur	KCETP	1.5 % of Proj.cost	
	Technical consultancy for the Graphite beneficiation plant	Prototype testing of a process Pump	TAMIN	1 % of Proj. cost
			Kirloskar Bros. Ltd.	1.5
	Selection of a pumping system for a dyeing unit Proceesors	S.P. Textile	0.1	
	Technical advice on the design of pumping system for the new Veeranam project	STC. Mumbai	0.26	
Dr.V. Balabaskaran	Technical consultancy for the CETP at SIPCOT & SIDCO	TNPCB	1 % of Proj. cost	
Dr.P.Srinivasa Rao	MK-25 Engine Test (100 hours)	M/s.GreavesLtd.	1.25	
Dr.K.Gopinath & Dr.Raju Sethuraman	Load testing and stress analysis of Aluminium cable trays	Crompton Greaves	0.60	
Dr.K.Gopinath & Dr.R.Gnanamoorthy	Inspection of Roller Bearings	Madras Bearing Agency	0.04	
	Inspection of Ball bearings	Cross Marks	0.10	
Dr.K.Gopinath	Design & Selection of seals tractor transmission	Mahindra & Mahindra	0.16	
Dr. OVK Chetty, '	Product Development',	Baroda Lamp Works,	0.13	
Dr.S.Boopathy,	'Manufacturing Logistics for ERP',	NM Compusys Chennai	0.12	
Dr.G.Kuppusamy,	Improving productivity and quality,	Fluidyne Engineers, Chennai	0.12	

Name of the Faculty	Title	Industry	Amount(In Lakhs)
Dr.T.Nagarajan	Torque test of Telephone potentiometer	Aaron Electronics	0.04
Dr.Y.G.Srinivasa & Dr.T.Nagarajan	Medical Imaging (Educational consultancy)	IACAS	1.00
Mr.D.V.R.L.Rao	Magnetic Fluid Grinding		
Dr.S.Srinivasa Murthy	Development & Commision of Railway Coach airconditioning system test-rig (in Three phases; I & II phases completed; III ongoing)	ICF Madras	----
	Thermal Analysis of Liquid LPSC Fuel Pumps for Rocket Engine	ISRO, Trivandrum	1.2
	Design and Testing of Grilles for Air Inlet-Outlet	Air-Breeze HVAC Systems India (P)Ltd. Chennai	1.00
Dr.T.Sundararajan	Computational Fluid Flow Simulation of Gimballled Rocket Nozzles in Ejector-Diffusers for CUS Engine Development	LPSC, Trivandrum	2.0
	Development of a software for the simulation of Steering Engine Test performance	LPSC, Trivandrum	2.0
Dr. M. Govardhan	Design and Calibration of an Orifice Plate	Tuscon Exports Ltd.	0.12
	Calibration of 'S' Type Probes	GM Industries Hyderabad	0.045
Dr. N. Sitaram	Calibration of Nozzles	CVRDE, Madras	0.3

5.3 RBIC (Research Basad Industrial Consultancy):

Name of the Investigator/ Co- investigator	Title	Number	Amount (In Lakhs)
Dr.Ajit Kumar Kolar Dr.B.V.S.S.Prasad & Dr.S.P.Venkatesan	Development of heat flux probe	RB/9697/MEE/002/ BHEL/AJKK	3.15
Dr.V.M.K.Sastri Dr.S.P.Venkatesan & Dr.A.K.Kolar	Development of partial spray system to augment HT in ageing plant condensers		15.732
Dr.Pramod S Mehta	Development of a Model for Combustion Soot and NO _x from a Direct Injection Diesel Engine	ANL,USA	\$10000
Dr.R.Krishnamoorthy Dr.L.Vijayaragavan	Studies in Grinding Wheel	Carborandum Universal Chennai	2.00
Dr.R.KrishnaKumar	Centre for Advanced FEA	Consortium of Industries	27.00

Name of the Investigator/ Co- Investigator	Title	Number	Amount (in Lakhs)
Dr.Y.G.Srinivasa, Dr.M.Singaperumal & Mr.P.V.Manivannan	Development of fuzzy logic control for hydraulic linear/ rotary actuator speed and position control.	RB/97-98/MEE/ 003/CVRD/YGSR	1.90
Dr. M.Singaperumal	Short term Module on Fluid Power	RB/ 97-98/MEE/002/TTIS/MSPN	1.90
Dr.A.Mani & Dr.A.Venkatesh	Analysis, design and development of water evaporative cooler of 2 TR LIB	RB/4/96-97/ ME/NSTL	1.5
Dr. B.V.S.S.S. Prasad (Co-investigator)	Temperature Distribution in Turbo Pump Assembly		1.5

5.4 Retainer Consultancy :

Name of the faculty	Title & Industry	Amount (in Lakhs)
Dr.O.V.K Chetty	Fluidyne Industries, Chennai,	1.44
	ASML, Bangalore,	0.72
Dr.N.Ramesh Babu	ASML, Bangalore,	0.72
Dr.M.S.Shunmugam	Kerry Jost Engg, Ambattur, Chennai	0.30
Dr.M.Madhusudana Rao	McCreade Software*Consultant (Asia) Pvt. Ltd.	
Dr.T.Nagarajan & Dr.M.Singaperumal	Development of under- NIOT water manipulator	20
Dr.A.Mani	Developement of solar water heating system India Fabricators	Each Rs.2000/= pm
Dr.A.Venkatesh	(Solar Energy Division) Madras	

5.5 Exchange programme with other Universities:

- Exchange visits under Volkswagen Project - to QFM, Univ. of Erlangen-Nuremberg, Germany
- Students exchange programme with German Govt. - Visit of 2 M.Tech. Students

5.6 Journal Editorial Boards:

(Editors, Secretary, Treasurer, Membership etc.)

S.No	Name of Faculty	Level	Journal
1.	K.Gopinath	Member editorial board Reviewer	Intl. J.of P/M Science & Tech. Wear Journal
2.	Dr.OVK Chetty	Member-Editorial Board	West Indian Journal of Engineering

5.7 Publications:

(a) In Refereed National Journals:

1. N. Siva Prasad and K.N. Seetharamu, Some Studies on Track Pin Rubber Bushes, Defence Science Journal, Vol.47, No.2, pp 251-257 (1997).
2. M. Mala and N. Siva Prasad, Structural analysis of tracked vehicle hull, Defence Science Journal, Vol.47, No.2, pp 259-264 (1997).
3. S.H.Ko, R.Gnanamoorthy and S.Hanada, Effect of Environment on the Tensile Ductility and Fracture of Iron Aluminides, Mater. Sci. and Eng. A, 222 (1997) 133.
4. Ch. Sathaiah, M.Madhusudana Rao and M.A.Parameswaran, Analytical Modelling of the Flow of Bulk Solids through Chutes, I.E.(I) Journal-MC, Vol.78, November 1997, pp140-144,
5. Bhaskaran, K.A., Analysis of Metallised Propellant Ignition Process under conductive heating, Defence Science Journal, October 1997 (accepted)
6. Suresh, V., Job Kurian, Bhaskaran, K.A., Ignition of Aluminium Particles in a Two Phase Flow, presented at the 48th Annual General Meeting of the Aeronautical Society of India, VSSC, Trivandrum, January 1997.
7. Shet, U.S.P., Ramanjula Reddy, S. and Ramachandran, G., Turbulence Effects on Combustion Generated Noise in Premixed Flames, Journal of Acoustic Society of India, Jasi, Vol.XXV, pp. III.8.1 - III.8.7, 1997.
8. Govardhan, M., And Vasanthakumar, P., Instantaneous Measurements Behind an Axial Flow Fan Subjected to Radial Distortion, Journal of the Institution of Engineers (India), Calcutta, Vol.78, pp.75-84, Aug.1997.
9. Govardhan, M. and Sastri, S.S.S.R.K., Flow Studies through a Turbine Cascade with Large Tip Clearance, Journal of Institution of Engineers (India), Vol.78, pp.132-139.

(b) In Refereed International Journals:

1. N.Ramesh and S.P.Venkateshan, Optimum finned tubular space radiator, Heat Transfer Engineering, Vol.18, No.4, pp.69-87, 1997.
2. K.Sri Jayaram, C.Balaji and S.P.Venkateshan, Interaction of Surface Radiation and Free convection in an enclosure with a vertical partition, ASME J.Heat transfer, Vol.119, pp.641-645, 1997.
3. A.Venkata Ramayya, Ajit Kumar Kolar, S.P.Venkateshan, Estimation of bubble parameters from differential pressure measurements in gas fluidised beds, Powder Technology, 1997.
4. D.V. Girish, M.M. Mayuram and S. Krishnamurthy, Influence of steel peening on the surface durability of Thermo Mechanically treated En 24 steel spur gears, Accepted for publication in TRIBOLOGY Int. Journal.

5. N. Siva Prasad and M. Srinivasan, Effect of boundary restraints and welding sequence on residual stresses in weldments, *Int. JI. for the Joining of Mtls.* Dec. 1997.
6. N. Siva Prasad and S. Sridhar, Elasto-Plastic analysis using shell element considering both geometric and material non-linearity, *Int. JI. of Structural Engg.* 1998.
7. K. Gopinath and R. Gnanamoorthy, Analytical Estimation and experimental confirmation of the safe operating regime for sintered steel gears, *Int. JI. of Materials & Production technology*, Vol.12, No.4-6, 1997, pp 346-355.
8. Ch Pavanachand and R.Krishna Kumar, Yield function parameters for metal powder compaction based on unit cell studies, *Acta Met.*, V.45, No.4, pp.1425-1444, 1997.
9. G.Ravichandran, V.P.Raghupathy, N.Ganesan and R.Krishna Kumar, Prediction of axis shift distortion during circumferential welding of thin pipes, *Welding Journal*, V.76, No.1, pp.39s-54s, 1997.
10. P.Nainan, Kurian, K.S.Beena, and R.Krishna Kumar, Settlement of reinforced sand in foundations, *ASCE International JI. of Geotechnical and Geoenvironmental Engineering*, Vol.123, No.9, Sept. 1997, pp.818-826.
11. R.Krishna Kumar, Remeshing Issues In the Finite Element Analysis of metal forming problems, *JI. of Material Processing Tech.*, Vol.75/1-3, pp.63-74, March 1998.
12. S.A.Kumar, H.V.Ravindra and Y.G.Srinivasa, In-process tool wear monitoring through time series modeling and pattern recognition, *Int.J. Prod. Res.*, 1997, Vol. 35, No. 3, pp. 739-751.
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15. S.Gowri, G.Uma Shankar, R.Krishnamoorthy and K.Narayanasamy, Expert system for process optimization of atmospheric plasma spraying of the performance ceramics, *Jr. of Materials Processing Technologies*, 63(1997), pp. 724-732.
16. T.Asokan and M.Singaperumal, Control of interaction impedance using an electro-hydraulic servo system - an application to robotic deburring, *Jr. of Matl. Proc. Tech.* 65(1997), 172-178.
17. M.Ram Gopal and S.Srinivasamurthy Design and performance of a metal hydride airconditioner *Int.Jr.of Energy Research*, Vol.21, No.1, 1997, pp 55 - 67.
18. K.S.Sujatha, A.Mani and S.Srinivasamurthy Finite element analysis of a bubble absorber *Int.Jr.of Num.Methods in Heat and Fluid Flow*, Vol.7, No.7, 1997, pp 737 - 750

19. K.S.Sujatha, A.Mani and S.Srinivasamurthy Analysis of a bubble absorber working with R22 and five organic absorbents *Waerme und Stoffubertragung*, Vol.32, 1997, pp 255 - 259
20. Manikumari, V.A.V.L.P., Mani, A. and Sastri, V.M.K Analysis of fluid flow in a diverging tube of circular cross-section *Journal of Energy, Heat and Mass Transfer*, Vol.19, 11-16, 1997
21. Sumathy, K., Venkatesh, A. and Sriramulu, V., Effect of seasonal variation on the performance of a solar water pump, *International Journal of Ambient Energy*, Vol.18, No.3, pp.135-141, July 1997.
22. V.C.Venkata Rao, P.C.Das & T.Sundararajan, An Adaptive hp-version of the Finite Element method Applied to Flame Propagation Problem, *International Journal of Numerical Methods in Engg.*, V. 40, 1997, pp.3181-3203.
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24. P.Nithiarasu, K.N.Seetharamu & T.Sundararajan, Non-Darcy double-diffusive natural convection in axilsymmetric fluid saturated porous cavities, *Waerme und Stoffubertragung*, V.36, 1997, pp. 427-434
25. A.R.Chaudhuri, K.N.Seetharamu & T.Sundararajan, Modeling of Steam Surface Condenser Using Finite Element Method, *Communications in Numerical Methods in Engg.*, V.13, 1997, pp.909-921.
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32. A.S.R.Sarma, T.Sundararajan & V.Ramjee, Numerical Simulation of confined Laminar Jet Flows, accepted for publication in Int. J. Num. Methods in Fluids, 1997.
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(c) In Proceedings of National Conferences:

1. K.Sreenath Rao and Ajit Kumar Kolar, 15th National conference on IC Engines and combustion , Anna University, modelling of char combustion in the dilute region of a circulating fluidised bed combustor, 1997.
2. Ajit Kumar Kolar, Pramod S.Mehta and D.Prakash 15th National conference on IC Engines and combustion , Anna University, An integrated model for pressurised fluidised bed combustor, 1997.
3. Sastha Prasad,V. and Sarit Kumar Das, A hyperbolic dispersion model for analysis for the transient response of a packed bed, presented at Sixteenth National Symposium on Cryogenics-97 and workshop on industrial cryogenics, Indian institute of Technology, Kharagpur, on December 10-12, 1997.

4. C. Kumaravelu, N.S. Nagaratnam, and V. Ganesan, Computer Aided of Fuel Injection Equipment Components for Diesel Engines, Proceedings of the XV National Conference on I.C. Engines and Combustion, College of Engineering, Guindy, Anna University, Madras, Dec. 17-19, 1997.
5. J.M. Mallikarjuna and V. Ganesan, Extended Expansion Engine - A numerical Prediction, Proceedings of the XV National Conference on I.C. Engines and Combustion, College of Engineering, Anna University, Madras, Dec. 17-19, 1997.
6. Ravichandran, K. Sundararajan, T., Ganesan, V. and Natarajan, R. Jet Mixing in a Three-Dimensional Dump Combustor Proceedings of the XV National Conference on I.C. Engines and Combustion, College of Engineering, Anna University, Madras, Dec. 17-19, 1997.
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8. V. Ganesan, Present Energy Scenario and future of natural gas, Proceedings of the QIP Short-term Course on Use of Natural Gas in Internal Combustion Engines, IIT, Madras, 1997.
9. A.V. Sita Rama Raju, Sande Elahi Musa, A. Ramesh and B. Nagalingam, Development and Testing of a Lean Burn Spark Ignition Engine Operating on LPG, Proceedings of the 15th National Conference on I.C. Engines and Combustion, College of Engineering, Anna University, Madras, Dec. 17-19, 1997.
10. Ramesh. A., B. Nagalingam and K.V. Gopalakrishnan, Experimental Investigations on the performance and combustion of a LPG Diesel Dual Fuel Engine, Proceedings of the 15th National Conference on I.C. Engines and Combustion, College of Engineering, Anna University, Madras, Dec. 17-19, 1997
11. M.S. Channe Gowda, A. Ramesh, B. Nagalingam and K.V. Gopalakrishnan, Effect of Combustion Chamber Insulation and Leaning of the Mixture on the Performance and Emissions of a Two Stroke SI Engine, Proceedings of the 15th National Conference on I.C. Engines and Combustion, College of Engineering, Anna University, Madras, Dec. 17-19, 1997.
12. R. Vasu, E. Ramakrishnan, A. Ramesh, B. Nagalingam and K.V. Gopalakrishnan, Measurement and control of particulate emission in a four stroke single cylinder diesel engine using LPG, Proceedings of the 15th National Conference on I.C. Engines and Combustion, College of Engineering, Anna University, Madras, Dec. 17-19, 1997
13. A.Ramesh, Gasoline Fuel Injection System, Proceedings of the 15th National Conference on I.C. Engines and Combustion, College of Engineering, Anna University, Madras, Dec. 17-19, 1997
14. C.J. Gangadhara Gowda, Y.G. Srinivasa annd Pramod S. Mehta, Prediction of Aerodynamic Noise from Multi-hole Multi-stage Expansion in Control Valve, Fifth International Congress on Sound and Vibration, University of Adelaide, South Australia, Dec. 15-18, 1997.

15. Pramod S Mehta and Bhaskar Tamma, Effect of Swirl and Fuel Injection Characteristics on Premixed Phase of Diesel Combustion, SAE Paper - 980534, International Congress and Exposition, Detroit, Michigan, Feb. 23-26, 1998.
16. T. Bhaskar and Pramod S Mehta, Prediction of Turbulence in a Motored DI Diesel Engine Using a Quasi-Dimensional k-e Model, Proceedings of the 1997 Spring Technical Conference of the ASME Internal Combustion Engine Division - ICE - Vol.28-1, paper no.97-ICE-6, 1997.
17. Debesh Lahiri, Pramod S Mehta, Ramesh B. Poola and Raj Sekar, Utilization of Oxygen-Enriched Air in Diesel Engines; Fundamental Considerations, Proceedings of the 1997 Annual Fall Technical Conference of the ASME Internal Combustion Engine Division - ICE-Vol.29-3, paper No.97-ICE.
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24. Krishna Kishore, A. and Ramesh Babu, N., Multiobjective Heuristic Scheduling of FMS. Proceedings of the 17th All India Manufacturing Technology Design and Research Conference at Warangal, India, January 1997, 701 - 706.
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2. T. Ravisundar, E.G. Tulapurkara and V. Balabaskaran, Effect of swirl in an elbow type draft tube, Proc. of 7th ACFM, Dec. 8-12, 1997, I.I.T., Madras, pp673-675.
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21. Dr.M.Prakash Maiya Dr.S.Srinivasa Murthy Evaporative air-precooling for energy efficient air conditioning of an office building:A case study Johor Bahru Malaysia July 22-24,1997
22. Dr.S.Srinivasa Murthy Dr.M.Prakash Maiya Developments in solid absorption refrigeration and heat pump systems Johor Bahru Malaysia July 22-24,1997
23. Dr.T.Engler, Prof.L.R.Oellrich Dr.S.Srinivasa Murthy Dr.G.Venkatarathnam Das Verhalten zeotroper Hamburg,Germany Kohlenwasserstoffgemische als FCKW-Alternative in Waermepumpen 19-21, November 1997
24. Dr.G.Venkatarathnam Mr.G.V.Pasad Dr.S.Srinivasa Murthy Performance of hydrocarbon based mixed refrigerant cascade refrigeration system for very low temperature applications New Delhi, March 18-20,1998
25. Dr.G.Venkatarathnam Mr.N.Agarwal Dr.S.Srinivasa Murthy Study of ternary hydrocarbon zeotropic mixtures as alternatives to CFC 114 in high temperature heat pumps, New Delhi, March 18-20,1998
26. Dr.M.P.Maiya, Second International Work- shop on Renewable Energy Application to Plantation and other Industries, IIT Madras India April 9-11,1997
27. Dr.M.P.Maiya, International Symposium on Advances in Alternative & Renewable Energy University August 29-30,1997 Teknologi Malaysia

28. Dr.M.P.Maiya, Recent Advances in Environment Friendly R & AC University July 25-26,1997 Teknology Malaysia
29. Dr.M.P.Maiya, Cooling Tower and water treatment, ISHRAE August 29-30,1997 Chennai,India
30. Dr.M.P.Maiya, National Solar Energy Convention 97, Anna University December Chennai, 22-24,1997
31. Dr.G.Venkatarathnam, A Straight Forward Method for the Sizing of Perforated Plate Matrix Heat Exchangers Conf.Portland 1997 Cryogenic Engg. July 28-Aug.1USA
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42. T.N. Shiridhara and N. Sitaram, Three Dimensional Flow at the Exit of a Centrifugal Compressor at Design Condition. Proc. Of the IVth NAL (India) - CAE (China) Workshop on Advanced Gas Turbine Technologies (Turbomachinery), pp.3.72-3.79, June 10-12, 1997, Bangalore, India.
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6. Distinguished Visitors to the Department:

S.No	Name of the Visitor and Designation	Date of Visit	Purpose of visit
1.	Dr. David Holloway President SAE	24.11.97	SAE Activities
2.	Dr.Ing.Herbert Heitland Professor Institut fur Fabra zeugbau, Wolfsburg Germany	16.12.97 to 20.12.97	Special Lectures
3.	Prof. John C. Dent	6.02.98 to 14.02.98	The British Council, University, U.K sponsored Loughborough Exploratory visit for collaboration
4.	Dr. John McTague Vice President	26.03.98	Laboratory visit during institution of Henry Ford Chair
5.	Dr. John Parker Managing Director, Mahindra Ford India Ltd	26.03.98	Laboratory visit during institution of Henry Ford Chair
6.	Prof.Dr.Ing- A.Weckenmann, Professor Univ. of Nurenberg - Erlangen	Mar 11-19	Volkswagen Project

S.No	Name of the Visitor and Designation	Date of Visit	Purpose of visit
7.	Prof.Dr.Ing- H.Louis, Professor Univ. of Hannover, Germany	Feb '98	
8.	Dr.Mohan M.Vijay, Scientist National Research Council, Canada	Nov.'97	
9.	Dipl.Inf.M.Knauer, Scientist, Univ. of Nurenberg - Erlangen	Mar 1997	Volkswagen Project
10.	Dipl.Ing.D.Geus, Scientist Univ. of Nurenberg - Erlangen	Nov-Dec.'97	Volkswagen Project
11.	Prof. W.Schwarz, Uni Siegen	Jan 1998	Deep sea mining
12.	Prof. Bantel, M. Frankfurt	Aug 7 1997	Former Prof. of PEIL
13.	Prof. Eberhardt,H.J. FH Bremen	Nov 22-26 '97	For establishing partner for international co-operation
14	Prof. S. Okajima, Hosei University, Japan	Dec17-19 '97	Lecture and interaction with the Department
15	Prof. Ram S. Azad, Univ. of Malibu	26-2-97	Exchange of Information
16	Prof.Kllne, University of Paterborn	Jan '98	Fluid power expert
17	Prof.Poo Aun, Director, P.R.Krishnaswamy, Programme Manager, PG School of Engg. & NUS, Singapore.	Feb. 98	-----
1.	Prof. Wolfgang Winkler, Fachhochschule, Hamburg	Feb-'98	Fuel Cell systems
19.	Prof. De Werra and Prof. Stephan, Swiss Delegates	25-2-98	
20.	Prof. Oellrich, Univ. of Karlsruhe	March-'98	

4.11 DEPARTMENT OF METALLURGICAL ENGINEERING

1 Introduction:

The Department of Metallurgical Engineering was established in 1959. Ph.,D., M.S., M.Tech. and B.Tech. Programmes are being offered by the Department. The major areas of teaching and research of the Department are:

- Metal Casting
- Metal Forming
- Metal Joining
- Materials Technology

2 Academic Programmes:

B.Tech, M.Tech, M.S and Ph.D

2.1 New Courses Introduced :

S.No.	Course No.	Title	Faculty
1	MT 668	Advanced Powder Processing	Dr.Paramanand Singh

2.2 Students on Roll (as on 31.08.97):

Programme	I year	II Year	III Year	IV Year	V Year	Total
B.Tech	32	28	26	31	-	117
M.Tech	18	11	-	-	-	29
M.S	3	1	2	1	-	7
Ph.D	4	1	3	3	16	27
Total	57	41	31	35	16	180

2.3 Number of Degrees Awarded in the last convocation:

Programme	Numer Awarded
B.Tech	29
M.Tech	12
M.S	4
Ph.D	5
Total	50

3 Faculty and their development:

3.1 Faculty details:

Name and Qualification	Major Area of Specialisation
Professors	
Achar, D.R.G, Ph.D	Welding Technology
Gokularathnam, C.V., Ph.D	Physical Metallurgy, X-ray diffraction, Powder diffraction, powder metallurgy advanced ceramics, SEM & TEM
Padmanabhan, K.A., Ph.D (Cantab) (on lien)	Metal forming, rolling, sheet metal forming, forging, mechanical metallurgy superplasticity
Pathak, S.D., Ph.D	Mechanical Behaviour, Mechanical Metallurgy, Fatigue Fract. Mech.
Prabhakar, O., Ph.D	Metal casting, Non-destructive testing and process modelling
Prasad Rao, K., Ph.D	Metal Joining, Corrosion
Raghavan, S., Ph.D.	Thermodynamics, Solid electrolyte sensors, Hot corrosion
Sehsadri, S.K., Ph.D.	Chemical Metallurgy Surface Technology
Sundaresan, S., Ph.D.	Metal Joining
Venugopal, P., Ph.D.	Metal Forming Processes, Press Tool Design, Hammers and Presses, Cold extrusion of materials
Associate Professors	
Kesavan Nair, P., Ph.D.	Physical Metallurgy
Paramanand Singh, Ph.D.	Powder Metallurgy, Ceramics Composites and Material Science
Assistant Professors	
Guha, B., Ph.D.	Fatigue & Fracture of Welded Joints, Appln FEM/CAD in the Area of Welding Technology
Sampath, V., Ph.D.	Materials technology, electroslag refining
Swaminathan, K., Ph.D.	Sheet Metal forming, Forming Limit Diagrams
Sohini PalDay (Mrs), Ph.D.	Chemical Metallurgy Advanced Materials
AICTE Emeritus Fellows	
Prof.K.S.Raghavan	Electron Microscope
Prof.K.J.L. Iyer	Physical Metallurgy

Name and Qualification**Major Area of Specialisation****Scientific Officers**

Annamalai, S., M.S.	Metal Forming, Forming of P/M Components & Material Testing
Bhattacharyya, S.S, Ph.D.	Superplasticity & High Temperature Behaviour, Metal Forming
Jothinathan, G., M.Tech.	NDT Metal Casting, Electro Met. Corrosion
Kumaran, S., M.S.	Non Ferrous Extraction Metallurgy, Chemical Metallurgy

Technical Officer

Raghunathan Rao, B., Ph.D.	Physical Metallurgy, Metallography and Heat Treatment Metallurgical Failure analysis.
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3.2 Short term courses/Workshops/Seminars/Symposia/Conferences organised:

S.No.	Co-ordinators	Title	Period
1.	S.K.Seshadri R..Krishanmurthi	Advances in Surface Engineering	29-30, July 1997
2.	V,Sampath Raghunatha Rao, B.	Heat Treatment of Metallic Materials	17-18 Oct. 1997

3.3 Short term courses/ Workshops / Seminar / Symposia / Conference / Training attended by the faculty in recognised Academic Institutions and Public Sector Units.

S.No.	Name of the faculty	Title	Institution	Period/Duration
1.	Prof.D.R.G. Achar	National Welding Seminar	Indian Institute of Welding	11.12.97 to 14.12.97
		Beam Welding Technology - Colloquium	Institute of Welding Technology, TU Braunschweig Germany	4.7.97 & 5.7.97
		Seminar on Materials Research	DVM-Hamburg and Lufthansa Technik GmbH Germany	6.6.1997
		DAAD Seminar on Science of the Future	IIT Madras Chennai	4-3-1998 to 6-3-1998
2.	Prof.S.Sundaresan	National Welding Seminar	Indian Inst. Of Welding Bangalore	Dec.11-13, 1997

S.No.	Name of the faculty	Title	Institution	Period/Duration
	Prof.S.Sundaresan	Workshop on Trends in Weldability of Steels	Indian Inst. Of Metals Tiruchirappalli	Jan.19-20, 1998
3.	Dr.Paramanand Singh	23rd Annual Technical Meeting of PMAI	New Delhi	Feb.10-12, 1997
		3rd India Int.Refractories Congress 1998	Calcutta	Feb.11-13, 1998
4.	Dr.B.Guha	Seminar on ISRO-IIT Project	Space Tech. Cell Madras	
5.	Dr.V.Sampath	Trends in Evaporative Foam Pattern Casting Process	IIT Madras	14th Aug 1997
		4 India-Japan Joint Seminar on Manufacturing Sciences of Advanced Composites	IIT Madras	19-20 Jan 1998

3.4 Special Lectures delivered by the faculty in other Institutions:

S.No.	Name of Faculty	Topic of Lecture	Venue & Date
1.	Prof.D.R.G.Achar	Weldability of Dissimilar Steels - Stainless steel - Incoloy-Low Alloy Steel	Avesta Sheffield R & D Division Sweden, 3-6-97
		Schweisstechnische Forschung am Indian Inst. Of Tech. Madras	University Dresden, Germany. 26.6.97.
		Schweissaktivitaeten des IIT Madras	Inst.fuer Werkstoffe der Energietechnik, Forschungszentrum Germany, 30.6.97
		Schweistechnischen Forschungsaktivitaeten des IIT Madras -Research related to Computer Aided Simulation of Heat Flow in Welding	Institut fuer Schweisstechnik RWTH, Aachen Germany, 3.7.97.
		Forschung auf dem Gebiet werkstoffbedingter Fragen beim Schweißen am Indian Inst. of Technology, Madras.	Institut fuer Werkstofforschung, GKSS Forschungszentrum Germany, 7.7.1997
		Current Trends in Research in the Area of Materials Joining in Germany.	IIM, Madras Chapter Madras, 2-9-97
		Welding Technology and Inspection	RESOT Centre, MRL Madras, 8-9.9.97

S.No.	Name of Faculty	Topic of Lecture	Venue & Date
2.	Prof.S.Sundaresan	Welding of ferritic, martensitic & duplex stainless steels	Madras, 27.6.97
		Weldability of Al & Ti alloys	Hyderabad, 24.7.97
		Welding of dissimilar materials	Hyderabad, 24.7.97
		Metallurgical aspects of welding Carbon and Stainless steels	Madras, 16-20.9.97
		Weldability of Al & Ti alloys	Banglaore, 10.12.97
		Welding Processes	Madras, 5.11.97

3.5 Visits Abroad by Faculty:

S.No.	Name of Faculty	Country Visited	Date	Purpose of Visit
1	Prof.D.R.G.Achar	Federal Republic of Germany	May-August 1997	German Academic Exchange Fellow
		Sweden	30.05.97 to 04.06.97	Avesta Sheffield Research Foudation (Sponsored Research)

3.6 Honours and Awards Obtained:

Sl.No.	Name of Faculty	Name of Award/Honour	Award by	Award for	Date
1.	Prof. K.A.Padmanabhan	Sc.D.Degree	Casmbridge Univ.	Material Science & Metallurgy	1997
2.	Prof.D.R.G.Achar	SIR L.P. MISRA MEMORIAL AWARD	Indian Institute of Welding	Outstanding Contributions in Welding Technology	11.12.97
3.	Prof.S.Sundaresan	I.T Mirchandani Memorial Award	Indian Institute of Welding	Best research paper	11.12.97
		D & H Secheron Award	Indian Institute of Welding	Best Paper Presentation	11.12.97
4.	Dr.S.S.Bhattacharya	Forschungesti-pendium Research Fellowship	AvH Foundation Germany		December

**3.7 Fellowships of Academies and Professional Societies:
(Humboldt/INAE/INSA/Hon.FRA etc.**

Name of Faculty	Name of the Academy/ Professional Society	Level	Year of Admission
Dr.S.S.Bhattacharyya	Alexander von Humboldt Foundation, Germany	Forschungstypendium	Dec.97

4 Design and Development Activities:

**4.1 Brief and specific details of Process/instruments/equipment/software
Designed and Developed:**

In-situ Replication Technique using inexpensive materials for measurements of short crack initiation and propagation has been developed and is being refined.

Vacuum Degassing Unit:

An unit was developed to cass the powder in Aluminium foiles, heat at 250 - 300 C and then degas it and crimp to seal the ends. It has been used to produced lot pressed sintered aluminium composites.

LAN for Metal Forming Laboratory and general computational facilities.

5 Research and Consultancy:

5.1 Sponsored Research Projects :

S.No.	Name of the Faculty	Title	Industry	A mount (In lakhs)
1.	Dr.D.R.G.Achar Dr.B.Guha	Cascade in Welding Tech.	DST	12.46
2.	Dr.S.Sundaresan	Effect of fusion zone grain refinement on weldability of Al & Ti alloys	AR&DB	5.85
3.	Dr.S.Sundaresan	Welding of duplex stainless steels	AICTE	3.00
4.	Dr.S.Sundaresan Dr.K.J.L.Iyer	Welding procedure development and perfor- mance evaluation of steam generator transition joints	BRNS	11.13
5.	Dr.S.Sundaresan Dr.S.K.Seshadri Dr.V.M.Radhakrishnan Dr.K.J.L.Iyer	Welding and stress corrosion cracking of maraging steel	DRDL	3.25
6.	Dr.S.Sundaresan Dr.V.M.Radhakrishnan Dr.K.J.L.Iyer	Fundamental investigations of advanced ferrous alloys	Indo-US	3.93

S.No.	Name of the Faculty	Title	Industry	A mount (in lakhs)
7.	Dr.B.Guha Dr.K.Prasad Rao	Application of Electron Beam Welding Technique on Ti-6Al-4V	ISRO-IITM	5.49
8.	Dr.B.Guha Dr.K.Prasad Rao	Improvement of Toughness of Ti-6Al-4V Welds	DST	7.18
9.	Dr.P.Venugopal Dr.S.S.Bhattacharyya	Open Die Extrusion of sintered powder metallurgical proforms	DST	18.69
10.	Dr.K.A.Padmanabhan Dr.S.S.Bhattacharyya	Fatigue Behaviours of New Microalloyed Fourtie Pearlitic steels	VW Foundation, Germany	DM90000
		Fundamental Studies....	NRL Washington	13.80
		Phenomonology & Rheology	ILTP, DST	4.75

5.2 Industrial Consultancy:

S.No.	Name of the Faculty	Title	Industry	A mount (in lakhs)
1	Dr.S.Sundaresan	Failure analysis of ERW pipe	Indian Oil Corpn.	0.25
		Failure analysis of welded component	Nagarjuna Fertilizers	0.50
2	Dr.S.D.Pathak	High Temperature Properties of 21CrMoV55I steel	Fomas India Ltd.,	0.10
		Stress Rupture & high temp.tensile	U-Tech.Consultants & Engineers (p) Ltd. Behaviour	1.10
		..do.. of Power Plant tubes	-do-	1.10
		-do-	-do-	1.10
		Kic of Marageing steel	Fomas India Ltd.	0.25
		Fatigue Behaviour of of tubes	Tube Investments of India	0.54
		TI - 6 AL - 4V welded material behaviour in tension at RT.	TEAM, Chennai	0.50

5.3 RBIC :

S.No.	Name of the Investigator/ Co-Investigator	Title	Number (in lakhs)	Amount
1	Dr.S.D.Pathak	Fracture Toughness by CTOD of Microalloyed steel		3.00
2	Dr.K.Swaminathan	Characterisation of formable grade steels produced of the Hot Strip Mill, TISCO		6.00
3	Dr.S.S.Bhattacharyya Dr.K.A.Padmanabahan Dr.K.Swaminathan	Forming limit diagrams of sheet alloy steels, TISCO		6.00

5.4 Retainer Consultancy :

S.No.	Name of the Faculty	Name of Industry	Amount (in lakhs)
1.	Dr.S.D.Pathak	Kartik Steels, Madras	0.36

5.5 Journal Editorial Boards: (Editors, Secretary, Treasurer, Membership etc.)

Sl.No.	Name of Faculty	Level	Journal
1.	Dr.S.Sundaresan	Member, Editorial Board	Trans.Ind.Inst.of Metals
		Member, Editorial Board	Indian Welding Journal
2.	Dr.Paramanand Singh	Member, Editorial Board	Transaction of Powders Met.Association of India
		Hon.Treasurer,	Indian Inst. Of Metals
3.	Dr.D.R.G. Achar	Chairman	Indian Institute of Metals Madras Chapter
		Member	National Governing Council Indian Institute of Metals

5.7 Publications:

(a) Refereed National Journals:

1. Achar, D.R.G., "Current Developments in Welding Consumables", Engineering Advances, 9, 12, Nov.1997 P63.
2. Achar, D.R.G., "Trends in Welding Science and Technology in the early 21st Century", Engineering Advances, 9, 12, Nov.1997, P56.

3. Effect of additives on the cathode current efficiency of nickel deposited with pulse current. Devaraj G and S.K. Seshadri, Trans. Metal Finishers Assoc. of India, 1997 6(1), 25 - 29.
4. Shankar, T.P.S. Gill, S.L. Mannan and S. Sundaresan, "Fusion zone and heat affected zone cracking susceptibility of stabilised austenitic stainless steels", Science and Technology of welding and joining, Vol.3, No.1, 17 - 24, 1998.

(b) In Refereed International Journals:

1. Kesava Murthy and S. Sundaresan, "Effect of microstructural features on the fracture toughness of a welded alpha-beta Ti-Al-Mn alloy", Engineering Fracture Mechanics, Vol 58, No.1/2, 29 - 41, 1997.
2. Kesava Murthy, N.C. Sekhar and S. Sundaresan, "Thermomechanical processing of a welded alpha-beta Ti-Al-Mn alloy and its effect on microstructure and mechanical properties", Materials Science and Technology, Vol.13, No.4, 343 - 348, 1997.
3. Kesava Murthy and S. Sundaresan, "Fatigue crack growth behaviour in a welded alpha-beta Ti-Al-Mn alloy in relation to microstructural features", Materials Science and Engineering A, Vol 222, 201 - 211, 1997.
4. Kesava Murthy, N.B. Potluri and S. Sundaresan, "Fusion zone microstructure and fatigue crack growth behaviour in Ti-6Al-4V alloy weldments", Materials Science and Technology, Vol 13, No.6, 503-510, 1997.
5. Krishnaraj, K.J.L. Iyer and S. Sundaresan, "Behaviour of austenitic nitrocarburised AISI 1040 steel in Falex testing", Materials Letters, Vol 32, 355 - 357, 1997.
6. Krishnaraj, K.J.L. Iyer and S. Sundaresan, "Scuffing resistance of salt-bath nitrocarburized medium-carbon steel", Wear, Vol 210, 237 - 244, 1997.
7. Kesava Murthy and S. Sundaresan, "Phase transformations in a welded near-alpha titanium alloy as a function of weld cooling rate and post-weld heat treatment conditions", Journal of Materials Science, Vol 33, 817-826, 1998.
8. Krishnaraj, P. Bala Srinivasan, K.J.L. Iyer and S. Sundaresan, "Optimization of compound layer thickness for wear resistance of nitrocarburized HII steels", Wear, Vol 215, 123-130, 1998.
9. Magnetic moment studies on nickel coated titanium powder.
10. Ramaseshan R, N.G. Nair and S.K.Seshadri, J. Mater. Sci. Letters, 1997, 16, 1441 - 43.
11. Chandrasekaran and Paramanand Singh, "Sintered Iron Based Antifriction Materials with B-SiC Addition", Wear 206, 1 - 7, 1997.
12. Selvam, N.G. Nair and Paramand Singh, "Synthesis and Characterization of SiC Whiskers from Coconut Shells", J. Mater. Sci. Lett. 17, 57 - 60, 1998.

13. Rao and B. Guha, "Effect of welding process on fatigue crack growth behaviour of austenitic stainless steel welds in low alloy (Q&T) steel", *Theo. & Appl. Fract. Mech.* 27. 141 - 148, 199.
14. Sing, K.P. Rao and K. Swaminathan, "Influence of Limit Stress States and Yielding Criteria on the Prediction of Forming Limit Strains in Sheet Metals", *Metallurgical and Materials Transactions A*, 28 (1997), 2323 - 2333.
15. "A Model for Grain Boundary Sliding and its Relevance to Optimal Structural Superplasticity - III: The Effects of Flow Localisation and Specimen Thickness on Superplasticity in Alloy Supral 100", V.V. Astanin, K.A. Padmanabhan & S.S. Bhattacharya, *Materials Science and Technology*, V.12, 1996, pp 545 - 550.
16. "A Model for Grain Boundary Sliding and its Relevance to Optimal Structural Superplasticity - IV: Experimental Verification", T.A. Venkatesh, S.S. Bhattacharya and K.A. Padmanabhan, *Materials Science and Technology*, V12, 1996, pp635 - 643.
17. "On the Apparent Activation Energies for Superplastic Flow", S.S. Bhattacharya and K.A. Padmanabhan, *Materials Science Forum*, V196, 1997, pp 65-70.
18. "On the Numerical Verification of a Mechanistic Model for Optimal Superplastic Flow", S.S. Bhattacharya and K.A. Padmanabhan, *Materials Science Forum*, V 196, 1997, pp 59-64.
19. "A Mechanistic Model for Boundary Sliding Controlled Optimal Superplastic Flow", S.S. Bhattacharya and K.A. Padmanabhan, *J. Materials Processing and Manufacturing Science* Vol 5, No.3 Jan. 1997, pp 225 - 240.

(c) In Proceedings of National Conferences

1. Achar, D.R.G. "Trends in Welding Science and Technology in the early 21st Century", *Proc. of National Welding Seminar, Indian Institute of Welding*, 11 - 14 Dec. 197, Bangalore, XV-XXVIII, Invited Memorial Lecture Paper.
2. Muthupandi & S. Sundaresan: Structural changes in the welding of duplex stainless steels and their effect on mechanical properties. *Proc. National Welding Seminar of Indian Institute of Welding, Bangalore*, pp.132 - 138, Dec. 1997.
3. Shankar, T.P.S. Gill, S.L. Mannan & S. Sundaresan: Effect of Ti/C ratio on hot cracking of a stabilised, fully austenitic stainless steel, *ibid.*, pp 276 - 282.
4. Sundaresan & V. Muthupandi (Invited Paper): Physical metallurgical considerations in the joining of duplex stainless steels. *Proc. IIM Workshop on Trends in the Weldability of Steels, Tiruchirapalli*, pp.263 - 274, Jan. 1998.
5. Materials Research Society of India (MRSI) Annual Conference Feb. 1998; G-4: Tensile & Notch Tensile Properties of Al-Mg-Si Alloy, S. Karunanidhi & S.D. Pathak.
6. Rao, B. Guha, G. Malakondiah & V.M. Radhakrishnan, "Effect of specimen geometry on fatigue crack growth behaviour of FCAW - joints of low-alloy (Q&T) high strength steel", *Org. by I.I.W., presented at National Welding Seminar (NWS) at Bangalore from 11 - 13 Dec. 1997*, 210 - 215 .

7. Reddy, B. Guha & D.R.G. Achar, "Numerical Simulation of Temperature Distribution in GTA Weldments, Org. by I.I.W., presented at National Welding Seminar (NWS) at Bangalore from 11 - 13 Dec. 1997, 210 - 215.
8. Balasubramanian & B. Guha, "New model to predict the fatigue life of Shielded Metal Arc Welded Cruciform Joints of NAXTRA-70 Steel", Org. by I.I.W., presented at National Welding Seminar (NWS) at Bangalore from 11 - 13 Dec. 1997, 210 - 215.
9. "Quality Steels for Modern Automobile Industry in India", published in the Proceedings of the National Seminar on Quality Parameters for Steels for the Automotive Industry, organised by the Ministry of Iron & Steel, Chennai, 5-1-1998. Authors: V. Sampath & B. Raghunatha Rao.
10. "Some studies on Electromagnetic Behaviour of Fibre-Reinforced Composites for Radome Applications", presented at the 9th ASM of the Materials Research Society of India, 11 - 13 February 1998, Chennai. Authors: V. Sampath, A. Sundar & N.G. Nair.

(d) In Proceedings of International Conferences

1. Reactive processing of r - TiAl/Ti₂ A/C composites from elemental powders, Ramaseshan R, H. TSuala, H. Marbuchi, K. Morei, S.K. Seshadri and N.G. Nair, Second International Symposium Structural Intermetallics, Pennsylvania, Sept. 21 - 26, 1997.
2. Balasubramanian & B. Guha, "Developing a mathematical model to predict the fatigue life of MIG welded cruciform joints", Proc. International Conference on "Quality Engineering and Management" held in P.S.G. College of Technology, Coimbatore, India, August 4 - 6, 1997.
3. Balasubramanian & B. Guha, Proc. Intl. Conf. in "Advances in Materials & Processing Technology", held in Univerisity of MINHO, Portugal, July 22 - 26, 1997.
4. "On the Numerical Verification of a Mechanistic Model for Superplastic Flow", S.S. Bhattacharya & K.A. Padmanabhan, Proceedings of the International Conference on Superplasticity in Advanced Materials - ICSAM '97, Jan. 29 - 31, 1997, Bangalore, Ed. A.H. Chokshi, Transtech Publications 1997, 59 - 64.
5. "On the Apparent Activation Energies for Superplastic Flow", S.S. Bhattacharya & K.A. Padmanabhan, Proceedings of ICSAM-'97, ibid, pp.65 - 71.
6. Sohn and S. Paldey, "Synthesis of Ultrafine Particles of Tatanium Aluminides and Nickel Aluminides by the Vapor-Phase Reduction of Chloride Mixtures", printed and presented in the proceedings of the International symposium on "Value - Addition Metallurgy", held in San Antonio, TMS Annual Meeting in Feb. 1998.
7. S.PalDey and H.Y.Sohn, "Synthesis of Ultrafine Intermetallic Particles by the Vapor-Phase Coreduction of Metal Chlorides by Hydrogen", printed and presented in the proceedings of the International symposium on "Value - Addition Metallurgy", held in San Antonio, TMS Annual Meeting in Feb. 1998.

6 Distinguished Visitors to the Department:

S.No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1.	Dr.S. Suresh Babu, Research Assistant Professor, Oak Ridge Laboratory, Materials Joining and NDE Group, USA	25-06-1997	Lecture
2.	Dr.Douglas A. Chinn, Dept. of Bio-Engineering, University of Utah, USA	25-06-1997	Lecture
3.	Dr.B. Ganesh, Materials Science and Engineering, University of Utah, USA	25-06-1997	Lecture
4.	Dr.Sriram Krishnaswami, MARC Co., USA	19-08-1997	Lecture
5.	Mr.J.D. Hair, President, K-Tech Inc., USA	13-10-1997	Lecture
6.	Prof.A. Koethe, Institute for Solid State and Materials Reserch (IFW), Dresden, Germany	25-11-1997	Lecture
7.	Dr.G. Ramanath, Norvellus Systems, Inc., San Jose, CA	16-12-1997	Lecture
8.	Prof.P.K. Datta, Head, Materials Director, Surface Engineering and Manufacturing Systems, Univ. of Northumbria, U.K.	16-12-1997	Lecture
9.	Dr.Ravi Vancheeswaran, Dept. of Materials Sci. & Engg., School of Engg. & Applied Science, University of Virginia, U.S.A.	04-02-1998	Lecture

4.12 OCEAN ENGINEERING CENTRE

1 Introduction:

Ocean Engineering Centre was established in 1977. Now, Ph.D., M.S., M.Tech. in Ocean Engineering and B.Tech. in Naval Architecture Programmes are being offered. The major areas of teaching and research at the Centre are:

- Structural analysis, Design and Testing
- Wave Hydrodynamics
- Floating and Submerged Bodies
- Marine Geotechniques
- Materials in Ocean Environment
- Ocean Energy
- Naval Architecture
- Underwater instrumentation

2 Academic programmes:

2.1 Number of applications received and number of candidates admitted:

Programme	No. selected	No. received
B.Tech	--	22
M.Tech	13	13
M.S	42	14
Ph.D	7	6
Total	62	55

2.2 Students on Roll (as on 31.08.1997):

Programme	I Year	II Year	III Year	IV Year	V Year	Total
B.Tech.	22	19	20	19	-	80
M.Tech.	13	10	-	-	-	23
M.S.	9	6	2	1	-	18
Ph.D.	4	-	4	2	6	16
Total	48	35	26	22	6	137

2.3 Number of Scholarships/Fellowship holders:

Programme	Institute Scholarship	Others	Total
B.Tech.	-	--	-
M.Tech.	10	--	10
M.S.	12	--	12
Ph.D.	6	4 (QIP)	10
Total	28	4	32

2.4 Number of Degrees Awarded in the last Convocation:

Programme	Number
B.Tech.	19
M.Tech.	8
M.S	2
Ph.D.	10
Total	39

3 Faculty and their Development:

3.1 Faculty:

Name and Qualifications

Specialization

Professors

M.R.Pranesh, Ph.D. (IISc.,)

Structure, soil-wave interaction studies, Coastline studies, Behaviour of materials in ocean environment

V.S. Raju, Dr.Ing. (Karlsruhe)
(on lien to IIT, Delhi as Director)

Marine geotechnical Engineering, Foundation design for onshore and marine structures, Ocean Engineering

M. Ravindran, Ph.D. (IIT, Madras) (on lien to NIOT, Madras as Executive Director

Turbomachines, pumps, Hydraulic turbines, Ocean Energy

S. Narasimha Rao, Ph.D. (IISc.,)

Marine Geotechnical engineering, Seabed soil characteristics under static and dynamic loads

C.P. Vendhan, Ph.D. (IIT, Kanpur)

Computer aided analysis of ocean, Civil and Aerospace structures, Dynamics of floating bodies and structures

K.Muthukrishnaiah, Ph.D. (IIT, Madras)

Marine geotechnical engineering, Analysis and civil & Aerospace structures, Dynamic of design of foundation for offshore and onshore structures

Prof..K. Ganesh Babu, Ph.D. (IIT, Madras)

Analysis and design of ocean structures, Behaviour of Material fatigue and in Ocean Environment

V. Sundar, Ph.D. (IIT, Madras)

Wave-structure interaction, Coastal Erosion and shore protection, Fluid flow problems

V.G. Idichandy, Ph.D. (IIT, Madras)

Experimental techniques, instrumentation, Analysis and testing of structural models and prototypes

SP.Subramanian, Ph.D. (Madras)

Geological oceanography, Engineering geology

Associate Professors

K. Rajagopalan, Ph.D. (IIT, Madras)	Computer aided analysis, Design of ship, underwater and offshore structures, Reinforced and prestressed concrete structures
R. Sundaravadivelu, Ph.D. (IIT, Madras)	Computer aided analysis, design and experimental studies of coastal and offshore structures
R. Natarajan, Ph.D. (IIT, Madras)	Ship Hydrodynamics, Design of small crafts, Model testing of launches, tugs, trawlers etc., Mooring analysis of floating structures
S.K. Bhattacharyya, Ph.D. (IIT, Madras)	Computer aided structural analysis, Analysis of motion floating bodies, Model studies
J.S. Mani, Ph.D. (IIT, Madras)	Hydraulic and numerical modeling of Coastal and offshore Processes

Assistant Professors

P. Sambandan, M.S. (IIT, Madras) (on lien to NSDR, Visakhapatnam as Director)	Ship design, ship structures, Computer Applications in ship design
S. Neelamani, Ph.D. (IIT, Madras)	Experimental and theoretical hydrodynamics, Wave structure interaction, Wave energy, Fluid Mechanics
Paul Mario Koola, Ph.D. (IIT, Madras)	Wave energy, Hydrodynamics, Oceanographic measurements
V. Anantha Subramanian, Ph.D. (IIT, Madras)	Naval Architecture, Ship model testing

3.2 Short-term courses/Workshops/Seminars/Symposium/Conferences organised

Sl. No	Coordinator(s)	Title of Workshop/Seminar/Symposium/Conference	Period
1	Prof.C.P. Vendhan	Analysis and Design of offshore structures	Sep. 15-17, 97
2	Prof.K. Muthukrishnaiah	Examples of foundations on problematic soil	22 and 23.5.97
3	Prof.SP. Subramanian	Geological oceanography marine mineral resources, Coastal Zone Managements sustainable process	16.9.97 to 18.9.97
4	Prof.SP. Subramanian	Nonlinear resources of the ocean	28.9.97
5	Dr.K. Rajagopalan	Analysis and design of oil storage structures	July 9-11, 1997

Sl. No	Coordinator(s)	Title of Workshop/Seminar/Symposium/Conference	Period
6	Dr.K. Rajagopalan	Oil Storage structures	Dec 18-20, 1997
7	Dr.J.S.Mani	Behaviour of waves, rear coast, wave induced currents, sediment transport and their assessment	23.9.97
8	Dr.J.S. Mani	Marine Instrumentation and data collection for various ocean parameters importance of data systems	24.9.97
9	Dr. R. Natarajan	Workshop on curriculum development for B.Tech. degree in Naval Architecture sponsored by AICTE, New Delhi	Jun 20-21, 1997
10	Dr.V.Anantha Subramanian	Course on ship hydrodynamics and design for NIOT	February, 1997
11	Dr.S. Surendran	Mooring dynamics - dynamics of floating bodies for NIOT	August, 1997

3.3 Short-term courses /Workshops/ Seminars/ Symposia/ Conferences / Training attended by the Faculty in recognised Academic Institutions and PublicSector Units:

Sl.No.	Name of Faculty	Title	Period/Duration
1	Prof.V.Sundar	San Fransisco, USA to present papers in IAHR Speciality Seminar on Multidirectional Waves and their interaction with Structures	10-15 August, 97
		Istanbul, Turkey to present papers in the 8 th Congress of International Association of Mediterranean (IMAM'97)	2-9th Nov. 97

3.4 Visits abroad by faculty:

S.No.	Name of Faculty	Country visited	Date	Purpose of visit
1.	Prof.V. Sundar	Germany	May '97 - August, '97	Visited Germany as Visiting Professor invited by German Science Foundation
2.	Dr.J.S. Mani	Japan	13.4.97 to 18.4.97	For presenting a paper in the 16th International Conference on Offshore Mechanics and Arctic Engineering
		Germany	15.5.97 to 15.7.97	Under DAAD Reinvitation Programme

3.5 Honors and Awards:

Sl.No	Name of Faculty	Honors/Awards	Purpose
1	Prof.S. Narasimha Rao	ONGC/ Indian Geotechnical Southerly Society award	Best paper published in journals of 1996 in the area of Marine Geotechnical Engg October, 1997
2.	Prof.M.R. Pranesh	Vijay Shree Award by the India International Friendship Society, New Delhi	
3	Dr.Paul Mario Koola	Humboldt., AVH Foundation Who's who in Science and Engineering, Marqui's	Research Engineering

3.6 Books/Monographs published:

Sl.No.	Name of Faculty	Title	Publisher
1	Dr.J.S. Mani	"Beach Process and Coastal Protection" Impact of Coastal Process on Environmental and Socio-Economic Aspects	Edited by Prof.Narasimhan, IIT Bombay Sent to Indira Gandhi Institute of Development Research for inclusion in a publication entitled "Coastal cities in India"

4 Design and Development Activities:

4.1 Details of patterns held in the Department with the date of filling

Patents field

DrJ.S. Mani : 1 - for suspended porous breakwater.

5 Research and Consultancy:

5.1 Sponsored Research Projects on hand :

S. No.	Title	Period	Industry	Amount (in lakhs)	Co-ordinators
1	Development of Triaxial Test (Indo-German Project)	1994 and 1997	M/s.Volkswagen Germany	17.0	Prof.S.Narasimha Rao
2	Repairing and recommissioning of Random wave maker	1996-98	National Institute of Ocean Tech. Chennai	5.00	Prof.M.R.Pranesh
3	Development of under-water 3-component 5-stage v.meter	1995-97	NIOT/DOD	18.32	Prof.C.P.Vendhan Prof.V.G. Idichandy Dr.S.K. Bhattacharyya

S. No.	Title	Period	Industry	Amount (In lakhs)	Co-ordinators
4	Hydrodynamic testing and optimization of new generation of crafts	1996-98	DST	18.00	Prof.C.P. Vendhan Dr.V.Anantha Subramanian
5	Development of a multilayer 3-axis velocity meter	1995-98	NIOT	18.32	Prof.V.G.Idichandy Prof.C.P. Vendhan Dr.S.K. Bhattacharyya
6.	Stability of Frustum concrete blocks for break-waters and coastal protection works	Two years	National Institute of Ocean Technology	1.65	Prof.V. Sundar Prof.M.R. Pranesh
7	Different types berthing structures and development of standard design	1997-2000	Ministry of Surface Transport	6.77	Dr.R. Sundaravadivelu
	Wave forces on OWC device	1995-97	DOD	2.2	Dr.S.K. Bhattacharyya
8	Coastal Defence works	Two years	Ministry of Surface Transport	2.50	Dr.J.S. Mani
9	Data collection along North Madras Coast	Two years	National Institute of Ocean Tech.	6.00	Dr.J.S. Mani
10	Analysis and design of Ship Mooring System	1997-2000	Ministry of Surface Transport	21.175	Dr.R.Natarajan
11	Hydrodynamic testing and optimi-sation of new generation craft	1995-1998	DST, New Delhi	20.00	Dr.R. Natarajan Dr.V. Anantha Subramanian Prof.C.P. Vendhan Dr.Paul Mario Koola
12	Hydrodynamic testing and Optimization	1996-99	DST	20.00	Dr.V. Anantha Subramanian Prof.C.P. Vendhan Dr.R. Natarajan Dr.Jagdeeshkumar
11	Directional wave buoy	1995-98	NIOT	17.0	Dr.V. Anantha Subramanian Dr.Jagdeeshkumar Dr.Paul Mario koola
12	Ross	1995-98	NIOT	2.5	Dr.V. Anantha Subramanian
13	Study on the dynamic analysis of cable-body systems in marine environment	Oct.97 to Sept.99	IRDF, IC & SR, IIT Madras	0.5	Dr.S. Surendran

5.2 Industrial Consultancy :

S No.	Name of the Faculty	Title of the work	Name of the client	Amount (In lakhs)
1	Prof.S. Narasimha Rao	Design of Foundations	M/s.Godavari Fertilisers, Kakinada	0.65
		Advice and Training for Dredging Engineers	M/s.Dredging Corporation of India	0.30
2	Prof.S. Narasimha Rao Prof.P.S.Rao, Civil Engg.Department	Berth design	For Vizag Port	2.00
3	Prof.M.R. Pranesh Prof.V. Sundar Dr.R. Sundaravadivelu	Analaysis of sea water intake system for Koyava, Gujarat	Larsen & Toubro, Mumbai	1.50
4	Prof.M.R. Pranesh Prof.S. Narasimha Rao Prof.V. Sundar Dr.R. Sundaravadivelu Dr.R.Natarajan	Design of hazardous cargo handling facility near Kakinada	M/s.M.K.R. Industries, Secunderabad	3.50
5	Prof.M.R. Pranesh Prof.V. Sundar	Effect of coolant water withdrawal from the sea on pulicat backwaters	TNEB, Ennore	4.25
6	Prof.M.R. Pranesh	Training course on offshore structural Engg. for the officials of L & T, Bombay	Larsen and Toubro Limited, Mumbai	0.30
7	Prof.M.R. Pranesh Dr.J.S. Mani	ETPS accretion of sand at Ennore creek	Ennore Thermal Power Station, Tamil Nadu Electricity Board, Chennai	10.00
8	Prof.M.R.Pranesh Dr.R.Sundaravadivelu Dr.R. Natarajan	DPR for Valinokkam Port	TNPD, Chennai	10.00
9	Prof.C.P. Vendhan Prof.V.G.Idichandy Dr.S.K.Bhattacharyya	Pontoon-Buoy Mooring analysis	NSTL, Vizagapattinam	1.99
10.	Prof.C.P. Vendhan Dr.S.K.Bhattacharyya	Design verification of Microwave tower	Super Telecom, Bombay	0.60
11.	Prof.K.Muthukrishnaiah	Investigation and Advice	Universal Agro Produce Exports (P) Ltd., Madras	0.10
		Investigation and Advice	Sivanandha Consultants (P) Ltd., Madras	0.10
		Investigation and Advice	Tuticorin Alkali Chemicals and Fertilisers, Madras	0.20
		Investigation and Advice	State Bank of India, MADRAS	0.10
		Investigation and Advice	Consolidated Civil Construction (I) Ltd., Madras	0.25
		Investigation and Advice	Garrison Engineer, Madras	1.00

S No.	Name of the Faculty	Title of the work	Name of the client	Amount (in lakhs)
	Prof.K.Muthukrishnah	Investigation and Advice	Tamilnadu Slum Clearance Board, Coimbatore	0.10
		Recommendations for special repairs to LIC building	Life Insurance Corporation of India	0.25
		Soil investigation	National Institute of Ocean Technology	0.50
		Advice	URC construction (P) Ltd., Erode	7.50
		Investigation and Advice	Shri M.B. Jain Higher Secondary School, Madras	0.10
12.	Prof.K. Ganesh Babu	NDT of Meltu floor	SPIC	0.20
		Assessment of leakage and remedial measures for tank (Acid)	Coromendal Prodorite	0.30
		Repair of Turbo-Generation foundation	Cethar Vessels	0.30
		Rehabilitation of old tower	BILT	0.30
13	Prof.V.G. Idichandy	Investigation on Agni oxidizer, Tank proof pressure test on Agni motor case	M/s.KCP Ltd., M/s.Ramakrishna Engg.	
14	Prof.V. Sundar Dr.R. Sundaravadivelu Prof.M.R. Pranesh	DPR for Nagapattinam Port	Chief Executive Officer, Tamil Nadu Maritime Board, Chennai	7.50
15	Prof.V. Sundar Prof.M.R. Pranesh	Review of design of Container berth at Jawaharlal Nehru Port Trust, Mumbai	Jawaharlal Nehru Port Trust, Mumbai	2.50
16	Prof.M.R. Pranesh Prof.V. Sundar	Stability analysis of composite breakwater at Mormugao Port Trust	Mormugao Port Trust, Goa	10.00
31	Prof.V. Sundar Dr.R. Sundaravadivelu	Construction of Mini Fishing Harbour at Muthalapozhi - Numerical Model Studies	Harbour Engineering Department, Thiruvananthapuram	8.00
		Amba Creek Crossing - Request for calculations for Flootation and Buoyancy	ABAN Constructions, Chennai	0.30
		Design of Diffuser Support System for Jam Nagar	ABAN Constructions, Chennai	0.50
32	Prof.V. Sundar Prof.M.R. Pranesh	DPR for Nagapattinam Port	TNPD, Chennai	7.50
33	Dr.R.Sundaravadivelu Prof.M.R. Pranesh	DPR for Cuddalore Port	TNPD, Chennai	7.50

S No.	Name of the Faculty	Title of the work	Name of the client	Amount (in lakhs)
34	Dr.K.Rajagopalan	Checking stability of oil storage tank	Ruchi Infrastructure	0.20
35	Dr.P. Sundaravadivelu Prof.V. Sundar Dr.S.R. Gandhi(CE)	Detailed Project Report for Port Facilities at Positra, Gujarat	Federic R. Harris, (I) Pvt., Ltd.,	8.00
36	Dr.R. Sundaravadivelu	Inspection of pipeline supports from Oil Jetty to VCM pipe location	DCW Limited	0.20
37	Dr.R. Sundaravadivelu Dr.S.R. Gandhi(CE)	Foundation Facilities for Kayamkulam and Cheppad	BPCL Ltd.,,	4.00
38	Dr.R. Sundaravadivelu	Model Studies on piled breakwater for Adani Port	Adani Port Ltd., Ahamed	1.0
39	Dr.R. Sundaravadivelu Dr.S.R. Gandhi(Civil Engg.Department)	Design of Submarine pipeline	Aqua Space Divising Services Ltd, Cochin	0.30
40	Dr.R. Sundaravadivelu Prof.M.R.Pranesh Prof.V. Sundar	DPR for Cuddalore Port	Tamilnadu Port Dept	8.50
41	Dr.R. Sundaravadivelu Prof.M.R. Pranesh Dr.S.R. Gandhi(CE)	Review of Design of Container Berth	Jawaharlal Nehru Port Trust, Navi Mumbai	2.50
42	Dr.R. Sundaravadivelu Dr.S.R. Gandhi, (CE) Dr.K.Anantha Narayanan	Soil Investigation and Foundation Recommendations, Pondicherry Fishing Harbour	Department of Fisheries and Fishermen Welfare, Government of Pondicherry	4.50
43	Dr.R. Sundaravadivelu Dr.S.R. Gandhi, (CE)	Design of Approach Jetty for Krishnampatnam 'B' Power station	Simplex Corporation Private Ltd.,	0.50
44	Dr.R. Sundaravadivelu Dr.R. Natarajan	Estimation of Dredging quantity at Chilka Lake	Chilika Development Authority, Orissa	11.60
45	Dr.R. Sundaravadivelu Dr.S.R. Gandhi, (CE)	Design of Container Berth at Bharathi Dock, Madras Port Trust	Madras Port Trust	10.0
46	Dr.R. Sundaravadivelu Dr.S.R. Gandhi, (CE) Dr.K. Anantha Nanarayanan Dr.K. Ambalavanan	Monitoring, Deepening of berth at Mormugao Port Trust	Mormugao Port Trust, Goa	6.0
47	Dr.R. Sundaravadivelu Dr.K.Anantha Narayanan	Dredging of Chilka Lake using Cutter Section	Chilka Development Authority, Orissa	8.40
48	Dr.S.K. Bhattacharyya	Structural design of floating shaft platform	NSDRC, Visakapattinam	25.00
49	Dr. J S. Manj	Accretion of Sand at Ennore Creek Mouth - Study of methods to prevent accretion	Ennore Thermal Power Station	10.0

S No.	Name of the Faculty	Title of the work	Name of the client	Amount (in lakhs)
	Dr.J.S. Mani	Construction of test groynes at Pondicherry	Public Works Department	0.25
		Design of porous breakwater	Finolex Industries Limited	0.30
50	Dr.R. Natarajan	Stability report on VIP launch "Aapcorva"	Jawaharlal Nehru Port Trust, New Bombay	0.40
		Technical Evaluation for the sunken fishing vessel MFV "Sethupathy"	The Oriental Insurance Company Ltd., Chennai	0.15
		Dredging of Chilka lake, using cutter suction dredger	OCDA, Bhubaneswar	2.50
51	DrV. AnanthaSubramanian	Planning craft investigation	Bristol Boats	0.50
		High speed planning boat for Customs	Bristol Boats	0.50
		Resistance power for oil skimmer	Alcock	1.00

5.3 RBIC:

S. No.	Name of the Investigator/ Co-Investigator	Organisation	Values (in lakhs)	Co-consultants, if any
1.	Design of standard vessel and performance prediction in west coast canal	IWAI NOIDA	5.70	Dr.R. Natarajan Prof.M.R.Pranesh Dr.V. Anantha Subramanian
2.	Hydrodynamic investigation HIGHEST	DRDL, Hyderabad	19.00	Prof.C.P. Vendhan
3.	Hydrodynamic investigation revised PJ08	DRDL, Hyderabad	14.25	Prof.V.G. Idichandy Prof.C.P. Vendhan
4.	Performance of Galvanized rebars in Tropical main environment	ILZRO, USA	2.20	Prof.K. Ganesh Babu
5.	Instrumentation of HSTT, NSTL Vizag	NSTL, Vizag	21.00	Prof.V.G. Idichandy Dr.S.K.Bhattacharyya
6.	Design and Development of 6.0 comp.balance	DRDL, Hyderabad	4.000	Prof.V.G. Idichandy Dr.S.K.Bhattacharyya

5.4 Retainer Consultancy:

S. No.	Name of Faculty	Title	Industry
1.	Prof.M.R. Pranesh	Technical advise from time to time regarding hydrographic survey and related offshore investigations	M/s.Consultants India, Chennai

S. No.	Name of Faculty	Title	Industry
2	Dr.R. Sundaravadivelu	Design and construction of Swimming Pool at Port Blair	Indian Navy, Port Blair, Andaman

5.5 Exchange programme with other Universities:

Five B.,Tech. (NA students) of VII Semester left for Germany during December, 1997 for six months to carry out project work at Hochschule Bremen, Germany under B.Tech. Internationalisation programme.

5.7 Publications:

(a) National Journals

1. Natarajan, Experimental investigations on drag characteristic of Kattamarams, Indian Journal of Marine Sciences, Vol.26, pp.331-334, September, 1997

(b) International Journals

1. Narasimha Rao, S., Ravi, R. and Sivaprasad "Pullout Behaviour of Suction Anchors in Soft Marine Clay", Jl.of Marine Georesources and Geotechnology, Vol.15, pp.95-114, 1997
2. Mathew, P.K., and Narasimha Rao, S., "Effect of Exchangeable cations on the geotechnical properties of a Marine clay", Jl.of Marine Georesources and geotechnology, Vol.15, pp.83-93, 1997
3. Mathew, P.K. and Narasimha Rao, S. "Influence of cations on compressibility of a Marine clay", Jl.of Geotechnical and Geoenvironmental Engg.Vol.123, pp.1071-1074, Nov.1997
4. Mathew, P.K. and Narasimha Rao, S., "Effect of Lime on cation Exchange capacity of Marine clay" Vol.123, pp.183-186, Feb.1997
5. Rajasekaran, G. and Narasimha Rao, S. "The Microstructure of Lime-stabilized Marine Clay", International Jl.of Ocean Engineering, U.S.A., Vol/.24, pp.867-878
6. Rajasekaran, G and Narasimha Rao, S "Lime stabilization Technique in the improvement of Marine clay" Soils and Foundations, Jl.of Japanese geotechnical Society, Vol.37, 1997
7. Narasimha Rao, S., Reddy K.M. and Kumar P.H., "Studies on groups of stone columns in soft clays", Jl.of Geotechnical Engineering, Bangkok, vol.28, pp.165-181
8. Vendhan C.P. and Bhattacharyya, S.K., "Stability characteristics of slender flexible cylinders in axial flow by the finite element method, journal of Sound and Vibration, Vol.208(4), pp.587-601, 1997
9. Janardanan, K. and Sundar, V. "Effect of uncertainties in Wave characteristics on shoreline Evolution" Jl.of Coastal Research, Vol.13, No.1, 1997, pp.88-95.

- 10 Sundar V. and Raghu, D. "Dynamic Pressures and Runup on Semicircular Breakwaters due to Random Waves" Ocean Engineering, Vol.25, Nos.2-3, pp.221-241, 1998
- 11 Shashikala, A.P. Sundaravadivelu, R. and Ganapathy, C. "Dynamics of Moored Barge under regular and random waves", Ocean Engineering, Vol.5, pp.401-430, 1997
12. J.S. Mani, K. Murall & K. Chitra, "Prediction of shoreline behaviour for Madras, India - A Review, Journal of Ocean Engineering Vo,20, pp.967-984, 1997
13. J.S. Mani, Coastal Zone Management, "Plans and policies in India - a Review" - Journal of Coastal Management - Vol.25, pp.93-107, 1997
- 14 K. Murall and J.S. Mani "Performance of a Cage Floating Breakwater", Journal of Waterway, Port, Coastal and Ocean Engineering, ASCE, pp.172-179, 1997
- 15 R. Natarajan and C. Ganapathy, Model experiments on moored ships, Ocean Engineering Journal, Vol.24, No.7, pp.665-676, 1997

(c) National Conferences

1. Mathew P.K. and Narasimha Rao, S., "Influence of cations on the geotechnical properties of Marine clays" Proc.of Indian Geotechnical Conf.Baroda, Dec.97, Vol.1
2. Sea-Seabed Interaction "Second Indian National Conference on Harbour and Ocean Engineering, Thiruvananthapuram, 7-10, December,1997
3. Prabavathi C, and Vendhan C.P., "Role of truncation boundary in finite element analysis of wave propagation", Third technical sessions of the Madras-India Regional Chapter of the Acoustical Society of America, September 1997, Goa
4. Ganesh Babu, "Durability Requirements of structural concrete", Structural Engineering convention-97, Feb.97, IIT, Madras, pp.396-404
5. Ganesh Babu, Performance of concrete with Mineral Admixtures structural engineering convention, 97, Feb.1997, IIT, Madras pp.252-258
6. Sundar, V. and Srinivasa Rao, Ch. "Hydrodynamic Characteristics of Accropod and Tetrapod Mound Breakwaters" Proc.National Conference on Environmental Hydraulics and Free Surface flows, (NCEH & FSF-97) 21-22 Feb.'97, Andhra University, pp.II-7 to II-12.
7. Sannasiraj, S.A. and Sundar, V. "On the Synthesis of Wave Groups" Proc.National Conference on Environmental Hydraulics and Free Surface flows, (NCEH & FSF-97) 21-22 February, 1997, Andhra University pp.II-19 to II-24
8. Sundar, V and Raghu, D. "Wave Induced Pressures on Semicircular Breakwaters", Second Indian National Conference on Harbour & ocean Engineering (Inchoe-97), Thiruvananthapuram, Dec.7-10, 1997, pp.278-287

9. Sannasiraj, S.A., Sundar, V., and Sundaravadivelu, R. "Interference Phenomenon of Interconnected Moored Floating Structures", Second Indian National Conference on Harbour & Ocean Engineering (Inchoe-97), Thiruvananthapuram, Dec.-10,1997, pp.404-413
10. Sundar, V., and Raju, P.M. "Wave Induced Sediment Transport Along Visakhapatnam Port", Second Indian National Conference on Harbour & Ocean Engineering (Inchoe-97), Thiruvananthapuram, Dec.7-10, 1997, pp.1116-1126
11. Rajagopalan, "Reliability of Aged Jacket Structures" Proc.Struct.Engg. Convention, Tata McGraw-Hill, 1997, pp.118-121
12. Surya Rao, T. and R. Sundaravadivelu , "Experimental Studies on a Seawater Intake Well", Second Indian National Conference on Harbour and Ocean Engineering (Inchoe-97), Thiruvananthapuram, pp.1255-1265, December 7-10, 1997.
13. Lakshminarayana, S., and R. Sundaravadivelu, "Measurement of Wave Pressure on Fender Beams", Second Indian National Conference on Harbour and Ocean Engineering (Inchoe-97), Thiruvananthapuram, pp.447-456, December 7-10, 1997.
14. Sannasiraj, S.A., V. Sundar and R. Sundaravadivelu, "Interference Phenomenon of Twin Moored Floating Structures", Second Indian National Conference on Harbour and Ocean Engineering (Inchoe-97) Thiruvananthapuram pp.403-413, December 7-10, 1997.
15. Saleem Ahamed, M. Natarajan, R. and R. Sundaravadivelu, "Experimental Studies of an Offshore Berthed Ship", Second Indian National Conference on Harbour and Ocean Engineering (Inchoe-97) Thiruvananthapuram pp.925-934 December 7-10, 1997.
16. Vijaya Bhaskar Rao, A., Natarajan, R. and R. Sundaravadivelu, "Effect of Speed and Heading Angle on the Response of Shuttle Tankers", Second Indian National Conference on Harbour and Ocean Engineering (Inchoe-97) Thiruvananthapuram pp.943-952 December 7-10, 1997.
17. Mani, Effect of pile sheltering on Drag and Inertia Coefficients Ship and Ocean Technology, IIT, Kharagpur, pp.196-201, 1997
18. Deepak and J.S. Mani management of Atmospheric, pollutants from Marine Industries Ship and Ocean Technology, IIT, Kharagpur, pp.309-313, 1997
19. Mani, Performance of pipe breakwater under Oblique waves , Second Indian National Conference on Harbour and Ocean Engineering, Trivandrum, pp.269-277. 1997
20. Ramanamurthy and J.S. Mani, Optimization of Approach Channel Design Second Indian National Conference on Harbour and Ocean Engineering, Trivandrum, pp.859-866, 1997.
21. Maile Madhu and R. Natarajan, Drag estimation of a fast twin hull marine vehicle, Inchoe-97, 7-10, December, 1997, Thiruvananthapuram

22. Saleem Ahamed, R. Natarajan and R. Sundaravadivelu, Experimental study on the moorings of an offshore berthed ship, Inchoe-97, 7-10, December, 1997, Thiruvananthapuram
23. Vijaya Bhaskar Rao, R. Natarajan and R. Sundaravadivelu, Effect of speed and heading angle on the response of shuttle tankers, Inchoe-97, 7-10, December, 1997, Thiruvananthapuram
24. Vinod, R. Natarajan, and Neelamni Towing experiments on a wave energy caisson, Inchoe-97, 7-10, December, 1997, Thiruvananthapuram
25. Neelamani, V.S. Vinod, and R. Natarajan, Efficiency of wave energy caisson for 3 different harbour configurations, Inchoe-97, 7-10, December, 1997, Thiruvananthapuram.
26. Natarajan and M. Surya Prakasa Raju Structural design of floating dry dock- National Seminar on recent trends in concrete and soil structures, IIT M, 25-26, 1997.
27. Anantha Subramanian, P.R. Suchithran, "B-spline Methods for Linear Fairing" Conference on Ships and Offshore Technology, pp.343-348
28. Surendran operations of concrete caissons in marine environment, Inchoe-97, Vol.1 pages 935-943, 1997
29. Surendran Design of crafts and their navigation in coastal backwaters, Inchoe-97, Vol.2, pages 393-403, 1997

(d) International Conferences

1. Narasimha Rao, S., and Ravi, R. "Behaviour of Suction Anchors in Marine Clays under TLP loading", Proc.16th Intl.Conf.on offshore Mechanics and Arctic Engg., OMAE-97, Yokohama Japan Vol.1-B, 151-155
2. Narasimha Rao, and Ramakrishna V.G.S.T. "Lateral load sharing in piles for Jacket platforms" 16th International Conference on offshore Mechanics and Arctic Engg. OMAE-97, Yokohama, Japan Vol.1
3. Narasimha Rao, S., and Ravi, R., "Pullout Behaviour of Model Suction Anchors in Marine clays", 7th International Conference on offshore and Polar Engineering Conference, ISOPE-97, Honolulu, USA, Vol.I
4. T.P. Somasundaram, C.P. Vendhan, V.G. Idichandy, "Hydrodynamic loading on a compliant cylinder" 16th International Conference on Offshore Mechanics and Arctic Engineering OMAE 97 paper No.480, Yokhama, Japan April 13-18, 1997
5. Sundarsan, K., Bhattacharyya, S.K. and Vendhan C.P "An experimental study of hydroelastic instability of flexible towed underwater cylindrical structures" Proc. OMAE '97 Conference, ASME, Offshore Technology, Vol.1-A, pp.73-80, Yokohama, Japan, April, 1997
6. Sannasiraj, S.A. Sundaravadivelu, R. and Sundar, V., "Studies on Mooring Forces in Directional Waves", Proc. XXVII I.A.H.R. Seminar on "Multidirectional Waves and their Interaction with Structures" Sanfrancisco, Aug.10-15, 1997, 413-426

7. Sundar, V. and Anandkumar, G. "Loads on Inclined Cylinders due to Directional Waves", Proc.XXVII I.A.H.R. Seminar on "Multidirectional Waves and their Interaction with Structures" Sanfrancisco, Aug.10-15, 1997, 371-383
8. Sundar, V., Anandkumar, G., Graw, K.U., and Schlenkhoff, A. "Total Forces on Inclined Cylinders Due to Regular and Random Waves", Proc.for Eighth Congress on International Maritime Association of Mediterranean IMAM'97, Istanbul, Turkey, November 2--9, 1997, 2.1-2.10
9. Sundar V., and Schlenkhoff, A "Dynamic Pressures on Submerged Moored Twin Cylinders Due to Random Waves" Proc. for Eighth Congress on International Maritime Association of Mediterranean IMMAM '97, Istanbul, Turkey, November 2-9, 1997, 2.11-2.20
10. Sanasiraj, S.A., Sundaravadivelu, R., and Sundar, V. "Studies on Mooring Forces in Directional Waves", XXVII, I.A.H.R. Seminar on "Multidirectional Waves and their Interaction with Structures", San Francisco, Aug.10-15, 1997, pp.413-426
11. J.S. Mani, "Protective measures for Ennore Creek at Madras - A Numerical Approach", International Seminar on Quaternary sea-level variation, shoreline displacement and coastal environment, Thanjavur, 1997
12. J.S. Mani, Field measurements of wave pressure distribution near a pair of piles, International Conference on Offshore Mechanics and Arctic Engineering, Yokohama, Japan, pp.371-378, 1997
13. K. Murali and J.S. Mani, Numerical analysis of a floating breakwater performance International Conference on Offshore Mechanics and Arctic Engineering, Yokohama, Japan, pp.353-359, 1997

6. Distinguished Visitors to the Centre:

S.No.	Name of the Visitor and Occupation	Date of visit	Purpose of visit (Lecture/ Discussion)
1.	German Delegation of Rectors/Presidents of TH/TU	14.11.97	Discussion
2.	Prof.Harcharan Singh, Dean, School of Applied Sciences	19.11.97	To establish links with the Institute and to recruit Indian Graduates
3.	Prof.Sathhsh Dhawan, Former Chairman, Department of Space and Former Director, IISc., Bangalore	9.12.97	Discussion
4.	Dr.Heinrich-Dietrich Dieckmann, Ambassador of Germany in India	6.2.98	Discussion
5.	Mr.Klus Von Trotha, Minister for Science Technology and Research, State of Vaden, Wultermberg, Germany	23.2.98	Discussion

4.13 DEPARTMENT OF PHYSICS

1 Introduction:

The department of physics was established in the year 1959 and now has Ph.D. and M.Sc. programmes in physics as well as an M.Tech programme in Solid state technology. In addition, the department teaches various core and elective courses in physics to B.Tech. students. The department also undertakes a large number of sponsored research and consultancy projects.

2 Academic programmes:

M.Sc., M.Tech, (Solid State Technology) and Ph.D.

2.1. New Course Introduced:

S.No.	Course No.	Title	Faculty
1.	PH 749	Physics of semiconductor devices	Dr.Srinivasan Krishnamurthy, Dr. J.Majhi and Dr.A.Subrahmanyam

2.2. Number of applications received and number of candidates admitted:

Programme	No. Received	No. Selected
M.Tech	-	6
M.Sc	273	47
Ph.D	21	6
Total	294	59

2.3. Students on Roll (as on 31.08.1997):

Programme	I Year	II Year	III Year	IV Year	V Year	Total
M.Tech	6	2	-	-	-	8
M.Sc.	33	18	-	-	-	51
Ph.D	6	3	3	5	16	33
Total	45	23	3	5	16	92

2.4. Number of Scholarship/Fellowship holders:

Programme	Institute Scholarship	Others	Total
M.Tech.	4	-	4
M.Sc.	-	Merit 6+5 (I & II yr) Free 3+3 -do-	11 6
Ph.D.	14	8	22
Total	18	25	43

2.5. Names of students/scholars who attended Conferences/Seminars and Symposia abroad/ in India:

S.No.	Name of the Student/Scholar	Programme	Name of the Conf./Seminar/Symposia	Date & venue
1.	Bhat Vishwanath Krishna	Ph.D	International Workshop on Physics of semiconductor Devices	Solid State Physics Lab., IIT Delhi 16-20 Dec. 1997
2.	S.Selvaraj	Ph.D	International Workshop on Physics of semiconductor Devices	Solid State Physics Lab., IIT Delhi 16-20 Dec. 1997
3.	P.Gopal Ganesan	Ph.D	International Workshop on Physics of semiconductor Devices	Solid State Physics Lab. IIT Delhi 16-20 Dec. 1997
4.	J.Venkatesh	Ph.D	DAE Solid State Symposium 1997	University of Science & Technology, Kochi 27-31, Dec. 1997
5.	Laxmikant Damodare	Ph.D	DAE Solid State Symposium 1997	University of Science & Techonology 27-31, Dec. 1997
6.	M.Venkatesan	Ph.D	DAE Solid State Symposium 1997	Univesity of Science & Techonology 27-31, Dec. 1997
7.	P.Nandakumar	Ph.D	DAE Solid State Symposium 1997	University of Science & Techonology 27-31, Dec. 1997
8.	B.Sanjai	Ph.D	International Symposium on Advances in Polymer Science & Technology	CLRI, Chennai 5-9 Jan. 1998
9.	D.Srinivasan	Ph.D	International Symposium on Advances in Polymer Science & Technology	CLRI, Chennai 5-9 Jan. 1998
10.	S.Seshadri	Ph.D	Non-linear Dynamics Inttegrability Chaos	Tiruchirapalli 12-16, Feb. 1998

2.6 Number of Degrees Awarded in the last convocation:

Programme	Number Awarded
M.Tech.	4
M.Sc.	19
Ph.D.	10
Total	33

3 Faculty and their Development:

3.1 Faculty

Name and Qualification

Areas of specialization

Professors

V.Balakrishnan, Ph.D (Brandels Univ., USA)	Theoretical and statistical physics
V.Damodara Das, Ph.D (SPU,Vidyanagar)	Thin film materials science and technology
P.C.Deshmukh, Ph.D (Nagpur Univ., Nagpur)	Theoretical atomic and molecular physics
B.S.V.Gopalam, Ph.D (IIT, Madras)	Semiconductor physics and semiconductor devices
M.P.Kothiyal, Ph.D (IIT, Madras)	Applied optics
(Mrs) Maha Seshasayee, Ph.D (RPI, New York, USA)	Condensed matter physics, structural studies in disordered systems
J.Majhi, Ph.D (IIT, Madras)	Semiconductor devices
V.R.K.Murthy, Ph.D (IIT, Madras)	Microwave physics and materials
T.A.Prasada Rao, Ph.D (Andhra Univ., Waltair)	Lasers, spectroscopy and nonlinear optics
V.Ramachandran, Ph.D (IIT, Madras)	Condensed matter physics & lattice dynamics
K.V.S.Rama Rao, Ph.D (Andhra Univ., Waltair)	Magnetism and magnetic materials
G.Rangarajan, Ph.D (IISc, Bangalore)	Low temperature physics, condensed matter physics
R.S.Sirohi, Ph.D (IIT, Delhi)	Optics, holography, speckle phenomenon & coherent optics
B.M.Sivaram, Ph.D (Andhra Univ., Waltair) D.Phil (Sussex, UK)	Laser physics, quantum electronics, fiber optics and photonics.
K.Srinivasan, Ph.D (IIT, Madras) [Head]	Electro optics, dielectrics
Associate Professors	
K.Hariharan, Ph.D (IIT, Madras)	Solid state ionics
T.S.Natarajan, Ph.D (IIT, Madras)	Conducting polymers, molecular electronics and electronic instrumentation
G.Sreenivasa Murthy, Ph.D (IIT, Madras)	X-ray crystallography
A.Subrahmanyam, Ph.D (IIT, Kharagpur)	Semiconductor devices, photovoltaics
B.Subrahmanyam, Ph.D (Andhra Univ., Waltair)	Elastic dielectric and piezoelectric properties of condensed matter

Assistant Professors

(Mrs) S.Lakshmi Bala, Ph.D (Madras Univ.)	High energy physics, chaos, field theory
G.Markandeyulu, Ph.D (IIT, Madras)	Magnetism and magnetic materials
(Mrs) Neelima M. Gupte, Ph.D (SUNY, Stony Brook, USA)	Nonlinear dynamics
M.S.Ramachandra Rao Ph.D (IIT, Kharagpur)	Ceramics and intermetallics
S.Ramaprabhu, Ph.D (IIT, Madras)	Hydrogen in metals, nuclear quadrupole resonance
V.Sankaranarayanan, Ph.D (IIT, Madras)	Low temperature physics, superconductivity and cryogenics
M.V.Satyanarayana, Ph.D (Madras Univ.)	Photonics, quantum optics
K.Sethupathi, Ph.D (Moscow State Univ., Russia)	Low temperature physics and superconductivity
V.Subramanya Murty, Ph.D (IIT, Madras)	Magnetic resonance
Suresh Govindarajan, Ph.D (Pennsylvania Univ., USA)	Quantum field theory and string theory
V.Venkateswara Rao, Ph.D (IIT, Madras)	Applied optics, holography and optical instrumentation
C.Vijayan, Ph.D (IIT, Madras)	Photonics and nonlinear optics
(Ms) T.M.Vimala, Ph.D (IIT, Madras)	X-ray crystallography
Prem B.Bisht, Ph.D (Kumaun Univ., Nainital)	Ultrafast laser spectroscopy
P.Murugaraj, Ph.D (IISc, Bangalore)	Material science

Chief Design Engineer

D.K.Sharma, Ph.D (IIT, Madras)	Optical instrumentation, lens design
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Senior Scientific Officer Gr.I

Mr.K.Sarangapani, M.Sc. (Madras Univ.)	Thermal expansion of materials
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3.2 Short-term Courses/Workshops/Seminars/Symposia/Conferences organised:

S.No.	Co-ordinators	Title	Period
1.	Dr.U.V.Varadaraju Dr.K.V.S.Rama Rao	9th Annual General Body Meeting of the Material Research Society of India	Feb.11-13, 1998
2.	Dr.S.Ramaprabhu Dr.Baldev Raj (IGCAR) (Convenors)	Symp. on Alternate Energy Materials	Feb. 10, 1998

**3.3 Short-Term Courses/Workshops/Seminars/symposia/Conferences/
Training attended by the Faculty in recognised Academic Institutions
and Public Sector Units:**

S.No.	Name of Faculty	Title	Institution	Period/Duration
1.	Dr.V.Damodara Das	International Conference on Metallurgical Coatings and Thin Films 1997	SanDiego, U.S.A.	21 - 25th April , 1997
2.	Dr.B.S.V.Gopalam	Intl. Conf. SPIE Photonics	San Jose, USA	24-30th Jan. 98
3.	Dr.K.V.S.Rama Rao	7th Joint MMM - Intermag	Sanfrancisco Conference	6 - 9th Jan. 98
4.	Dr.T.S.Natarajan (Resource person)	First Indian National Physics Olympiad Camp	Homi Bhabha Centre for Science Education, Bombay	20 - 27th Oct. 1997
5.	Dr.S.Lakshmi Bala	International Conference on Mathematical Physics	University of Brisbane, Australia	13 - 20th July, 1997
		Intl. Conf. on Nonlinear dynamics-integrability and chaos	Bharathidasan University, Trichy	12 - 16th Feb., 1998
6.	Dr.Neelima M.Gupte	Workshop on Computational Physics and Nonlinear Dynamics	PRL, Ahmedabad	Nov. 1997
		Workshop on Meso Dynamics in Mesoscopic systems	NCL, Pune	9 - 13th Dec. 1997
		Intl. conference on Nonlinear Dynamics and the Brain	IISc, Bangalore	7 - 15th Jan. 1998
		Intl. Conf. on chaos and Integrability	Bharathidasan Univ., Trichy	12 - 16th Feb. 1998
7.	Dr.M.S.Ramachandra Rao	Advances in condensed matter Physics	Central Univ. Pondicherry	28 Feb., 1998
		Perspectives in Solid State Materials	Osmania Univ. Hyderabad	20 March, 1998
		Sophistication in Instrumentation	RSIC, IIT Madras	16th Mar 1998
8.	Dr.S.Ramaprabhu	Alternate Energy Materials	IGCAR, Kalpakkam	Feb. 10 1998
9.	Dr.K.Sethupathi	School on Superconductivity and cryogenics in Accelerators and TOKAMAKS	CAT, Indore	27Jan - Feb. 7, 1998
10.	Dr.C.Vijayan	DAE SSP Symposium	Cochin Univ., Cochin	27-31, Dec. 1997
		National Seminar on applications of nonlinear phenomena	Cochin Univ. Cochin	16-17, Mar 1998

S.No.	Name of Faculty	Title	Institution	Period/Duration
11.	Dr.P.Murugaraj	Alternate Energy Materials	IGCAR, Kalpakkam	10thFeb.98
		IX MRSI Meeting	IIT, Chennai	11-13 Feb.98

3.4. Special Lectures Delivered by the Faculty in other Institutions:

S.No.	Name of Faculty	Topic of Lecture	Venue & Date
1.	Dr.V.Damodara Das	Surface analysis techniques (2 Lectures)	Anna Science Centre Gandhi Mandapam Road Chennai, October, 1997
2.	Dr.V.R.K.Murthy	Dielectric resonators	Kakatiya University, Warangal, June 5th 1997
		Dielectric materials for microwave application	Bharathidasan Univ. Trichy, Jan. 19th, 1998
3.	Dr.K.V.S.Rama Rao	Hydrogen absorption studies on Laves phase compounds	Max-Planck Inst. Stuttgart, Germany April 3, 1997
		Development of magnetostrictive transducers for underwater applications	Chapter meeting of Acoustical society of America Sept. 9, 1997.
4.	Dr.T.S.Natarajan	PC-Based Instrumentation (Refresher course)	S.K.Univ. Anantapur University, Anantapur March 14-15, 1997
		Interfacing microprocessors in the laboratory	Mahatma Gandhi Univ. Kottayam, Feb. 25-27, 1997
5.	Dr.G.Markandeyulu	Magnetostrictive materials and their applications	School of Physics, Pondicherry University Pondicherry, Feb. 28, 1998
6.	Dr.M.S.Ramachandra Rao	Laser Ablation : A thin film growth technique for oxide ceramics	Osmania University, Hyderabad 20th March 1998
		Laser Ablation: A New technique for the growth of oxide electronic materials	Osmania University, Hyderabad, 20th March 1998
7.	Dr.S.Ramaprabhu	Solid State Materials Synthesis, Structure, Applications	Dept. of Chemistry IITM, 11.12.1997
8.	Dr.Suresh Govindarajan	Aspects of Heterotic M(atrix) theory	CERN, Geneva, Switzerland Sept. 1997

S.No.	Name of Faculty	Topic of Lecture	Venue & Date
	Dr.Suresh Govindarajan	Aspects of Heterotic M(atrrix) theory	CEA, Saclay, France, Oct. 1997
		Introduction to M(atrrix) theory	Univ.of Munich, Germany, Dec. 1997
9.	Dr.C.Vijayan	Nonlinear optical properties of Quantum Dot materials	International School of photonics, Cochin Univ. of Science & Technology, Cochin 16th March 1998
	Science Technology, Cochin	Spectroscopy of Quantum confined structures	Dept. of Physics Cochin Univ. of & 17th March 1998
10.	Dr.Neelima M. Gupte	Fractals	National Geophysical Research Institute Hyderabad, Sept. 1997

3.5. Visits Abroad by Faculty:

S.No.	Name of Faculty	Country visited	Date	Purpose of visit
1.	Dr.V.Damodara Das	U.S.A.	21-25th April, 1997	To attend Int. conf: on Metallurgical Coatings and thin films
2.	Dr.B.S.V.Gopalam	U.S.A.	24th Jan 98	To attend Int. conf. SPIE, Photonocs
3.	Dr.K.V.S.Rama Rao	U.S.A.	20-12-97 to 12-1.98	To attend Intermag '98 at San Francisco also visited Naval Research Lab.Carnegie Mellon University
4.	Dr.R.S.Sirohi	Singapore	July '97- July'98	Visiting Professor
5.	Dr.K.Hariharan	U.S.A.	Nov. 16-21 1997	To attend the International conference on Solid State Ionics, Honolulu, Hawaii
6.	Dr.S.Lakshmi Bala	Australia	13-20th July '97	To present a paper in the intl. conf. on Mathematical Physics
7.	Dr.Neelima M.Gupte	Italy	May '97 - July'97	Visit to the Intl. Centre . for Theoretical Physics Trieste

S.No.	Name of Faculty	Country visited	Date	Purpose of visit
8.	Dr.S.Ramaprabhu	Germany	8.5.97 to 6.7.97	Under BMFT project exchange program
9.	Dr.Suresh Govindarajan	Germany	Jan-Dec. 97	Alexander von Humboldt Fellowship
10.	Dr.P.Murugaraj	Australia	19.12.98 to 31.12.98	Visit to CSIRO Labs., Melbourne, for research discussions and collaboration on rare earth substituted alkaline earth stannates

3.6 Honours and Awards obtained:

S.No.	Name of Faculty	Name of Award/Honour	Awarded by	Date
1.	Dr.V.Damodara Das	Hari Om Ashram Award for best Research during 1991-1995 in Solid State Physics	Sardar Patel University	Dec.1997

4 Design and Development Activites:

1. Development of magnetostrictive transducers.
2. Developed microwave filters based on dielectric resonators

4.1 Brief and specific details of Process/Instruments/Equipmet/Software Designed and Developed:

1. Interfaced the closed cycle refigeration system to Vibrating sample magnetometer.
2. Hydrogen absorption/desorption facility upto 100 bar for the development and study of hydrogen storage materials is designed and developed.
3. Z scan technique was developed for the measurement of the nonlinear refractive index of photonic materials.
4. Designed and fabricated a sample holder for low temperature measurements for GMR studies and high temperature dielectric studies.
5. Superconducting magnet power supply installed and coupled with ^3He evaporation cryostat. With this facility we can make measurements down to 300mK with magnetic fields up to 5 Tesla.

4.2 Details of patents held in the department with the date of filing

Patents filed : Method of manufacture of giant magnetostrictive material.

5. Research and Consultancy:

5.1 Sponsored Research Project on hand :

S.No.	Title	Period	Funding Agency	Amount (in lakhs)	Co-ordinator(s)
1.	Large area PEC solar cells using Cd-Se-Te thin films electronics	1997-2000	AICTE	7.0	Dr.V.Damodara Das
2.	Optical instrumentation	1993-2000	DAE	60.00	Dr.R.S.Sirohi Dr.M.P.Kothiyal Dr.D.K.Sharma Dr.V.V.Rao
3.	Dielectric and ultra-sonic studies on polar liquids and liquid mixtures for microwave applications	1995-98	CSIR	3.3	Dr.V.R.K.Murthy Dr.B.Subramanyam
4.	Copper clad PTFE laminates	1996-98	DRDO	12.0	Dr.V.R.K.Murthy Dr.B.Viswanathan
5.	Photoresistive materials for microwave application	1998-2000	DRDO	12.0	Dr.V.R.K.Murthy Dr.R.Damodharan
6.	Development of magneto-strictive materials	1995-99	MHRD	160	Dr.K.V.S.Rama Rao Dr.U.V.Varadaraju Dr.G.Markandeyulu
7.	Development of high density permanent magnets	1995-99	MHRD	54.70	Dr.K.V.S.Rama Rao Dr.U.V.Varadaraju Dr.S.Ramaprabhu Dr.M.S.Ramachandra Rao Dr.G.Markandeyulu Dr.K.J.L.Iyer
8.	Studies on photorefractive materials for real time holography	Jan. 1997 Dec. 1997	DST	10.37	Dr.R.S.Sirohi Dr.N.Krishna Mohan
9.	Single interferogram analysis and wavefront fitting	1995-98	ISRO	4.5	Dr.D.K.Sharma Dr.V.V.Rao
10.	Technical efforts in the development of low temperature SQUIDS	1996-98	DST	1.76	Dr.T.S.Natarajan
11.	Spatio-temporal order and chaos in systems with many degrees of freedom	Sep '97- Sep. 2000	DST	25.0	Dr.Neelima Gupte Dr.S.Lakshmi Bala Dr.Suresh Govindarajan
12.	Determination of the magnetic structure of $(Er,Pr)_2Fe_{17}xAl_xN_y$ compounds by neutron diffraction	1995-98	IUC-DAEF	0.58	Dr.G.Markandeyulu Dr.K.V.S.Rama Rao

S.No.	Title	Period	Funding Agency	Amount (in lakhs)	Co-ordinator(s)
13.	Development of a temperature sensitive magnetic switch	1997-99	IGCAR	24.73	Dr.G.Markandeyulu Dr.K.V.S.Rama Rao Dr.V.Radhakrishnan Dr.A.K.Kolar Dr.K.Prasada Rao Dr.S.Sundaresan
14.	Hydrogen solubility in Zr based alloys	1997-99	BMFT	11.00	Dr.S.Ramaprabhu Dr.K.V.S.Rama Rao
15.	Magneto transport studies on semi-conductors like MCT and some 2D electron gas systems	1996-98	DRDO	9.78	Dr.V.Sankara narayanan Dr.K.Sethupathi

5.2. Industrial Consultancy :

S.No.	Name of the Faculty	Title	Industry	Amount (in Lakhs)
1.	R.S.Sirohi M.P.Kothiyal D.K.Sharma V.V.Rao, N.Krishna Mohan	Development of Fizeau Interferometer	Prism India Ltd. (Pondicherry)	0.60
2.	K.Srinivasan	Determination of viscosity of acetic acid	E.I.D. Parry & Co.	0.1
3.	G.Rangarajan	Consultancy for cryogenic studies in biological samples	Cancer Institute Chennai	0.1
		Consultancy on low temperature measurements	Anna Univ, Chennai	0.15
		Cryogenic consultancy for FTIR	JTS Technology Chennai	0.1
		Magnetisation measurements on some magnetic materials	IIT, Bombay	0.1

5.3 RBIC:

S.No	Name of the Investigator/ Co-investigator	Title	Number	Amount (in Lakhs)
1.	Dr.V.R.K.Murthy	Microwave characterization of dielectrics	RB/97-98/Phy/002/BEL	1.0
2.	Dr.D.K.Sharma	Colour Schlieren system	RB/97-98/PHY/001/DRDL/DKSH	2.5
3.	Dr.V.Sankara-narayanan	Thermophysical properties of adhesives and foams	RB/97-98/PHY/003/LPSC/VSN	4.5

5.4 Exchange programme with other Universities:

1. Dr.S.Ramaprabhu and Prof. K.V.S.Rama Rao have a research collaboration on 'Hydrogen solvability in Zr based alloys project with Professor P.C.Schmidt, Institut fur physikallsche chemie, Darmstadt, Germany under BMFT.

5.5 Journal Editorial Boards (Editors, Secretary, Treasurer, Membership etc):

S.No.	Name of Faculty	Level	Journal
1.	Dr.V.Damodara Das	Life Member	Material Research Society of India
2.	Dr.K.V.S.Rama Rao	Senior Member	IEEE
		Life Member	MRSI
		Member	Asia Pacific Academy of Materials
		Member	Acoustical Society of America
3.	Dr.R.S.Sirohi	International Advisor	Jl. of Modern Optics
4.	Dr.S.Ramaprabhu	Member	International Journal of Hydrogen Energy

5.6 Publications:

(a) In Refereed National Journals:

1. Applicability of Lakkads relation to Mn-Zn ferrites in Mn-rich region B.Komalamba, K.V.Sivakumar and V.R.K.Murthy Journal of pure and Applied ultrasonics Vol 19, 3, (1997).
2. Recalibration of a waveguide band pass filter using dielectric resonator. J.V.S.C. Bose, E.D.Dias and V.R.K.Murthy Asian Journal of Physics Vol 6, No.1 & 2, 151-154 (1997)
3. D.C.Electrical Conduction in heat treated poly Nickel Phthalocynine B.Sanjai, T.S.Natarajan, Anasuya Raghunathan, G.Rangarajan, S.Venkatachalam, Bull.Mat.Science, 20, 1 (1997)
4. X-ray structural characterization of diocyclohexyl ammonium chloride and its conversion to bromo-, iodo- and hexafluoro phosphate derivatives, Janarthanan Gopalakrishnan, M.N.Sudheendra Rao, Janaswamy Srinivas and G.Sreenivasa Murthy, Ind. J.Chem. Sec.B 36B, 47-49 (1997)
5. Mixing and coherence in chaotic Dynamical flour, A.Sharma and Neelima M.Gupte Pramana J.Phy. 48, 231 (1997)
6. Preparation and characterization of CdS nanocrystals in nafion P.Nandakumar, A.R.Dhobale, Babu, M.D.Sastry, C.Vijayan, Y.V.G.S.Murti, K.Dhanalakshmi and G.Sundararajan, Bulletin of Materials Science, Vol 20 (4), 579-582, (1997).

(b) In Refereed International Journals:

1. Effect of surface treatment on the working of n-CdSe_{0.6}Te_{0.4} Thin Film Photoanode/ Polysulphide Electrolyte based Photoelectrochemical Solar Cell V.Damodara Das and Laxmikant Damodare, J.Appl. Physics, 81, No.3, p. 1522-1530, (1997).
2. Electrical Conduction Studies on (Bi_{0.6}Sb_{0.4})₂Te₃ Thin Films, V.Damodara Das and P.Gopal Ganesan, Semiconductor Science and Technology, 12, p. 195-202, (1997).
3. Power Conversion Efficiency Studies on Vacuum Evaporated Semiconducting n-CdSe_{0.6}Te_{0.4} Thin Film/Ferro-Ferricyanide Electrolyte Photoelectrochemical Solar Cells V.Damodara Das and Laxmikant Damodare Solid State communications, 103, No.2 p. 173-178, (1997).
4. Photoelectrochemical Investigations on Vacuum-deposited n-CdSe_{0.6}Te_{0.4} Thin Film/ Polysulphide photoelectrochemical Solar Cell using stainless Steel Substrates, V.Damodara Das and Laxmikant Damodare Surface Coatings and Technology, 94-95, p. 669-701, (1997)
5. Effect of Annealing and Surface Treatment on the Efficiency of Photoelectrochemical (PEC) Solar Cells with vacuum-deposited n-InSe Thin Film Electrode, V.Damodara Das, J.Sathyanarayanan and Laxmikant Damodare Surface Coatings and Technology, 94-95, p. 696-671, (1997)
6. Self-referencing cyclic shearing interferometer for collimation testing. J.S.Darlin, M.P.Kothiyal and R.S.Sirohi, JI.Mod.Opt., 44, 929-939 (1997).
7. Microwave studies on some low stage graphite ferric chloride intercalation compound. N.Usha, V.R.K.Murthy and J.Sobhanadri, Materials Science and Engineering B 45, 85-87 (1997).
8. Synthesis and role of Nd and Sm on the microwave dielectric properties of Ba Nd Sn_{2x} 2(1-x) Ti₅O₁₄ dielectric resonator, V.Sateesh and V.R.K.Murthy, Materials Science and Engineering B48, 202-204 (1998)
9. Temperature dependence of elastic moduli of Mn-Zn ferrites, B.Komalamba and V.R.K.Murthy, Journal of Magnetism and Magnetic Materials 173, 59-71 (1997)
10. X-ray photoelectron spectroscopic study of some pure stages of graphite-ferric chloride intercalation compounds, N.Usha, V.R.K.Murthy and J.Sobhanadri, Spectrochimica Acta A, 53, 1761-1765 (1997)
11. Sensitivity analysis of transient measurements using cavity perturbation technique, V.Subramanian, J.Sobhanadri and V.R.K.Murthy, Journal of Applied Physics 31, 17-14, (1997)
12. ⁵⁷Fe Mossbauer investigations on (Er,Pr)₂Fe_{17-x} - Al_x K.G.Suresh and K.V.S.Rama Rao, Phys. Rev. B 55, 15060-15066 (1997)
13. Magnetization studies and crystalline electric field effects in Dy_{0.73}Tb_{0.27}CO₂ S.Kishore, T.Sarkar, G.Markandeyulu, G.Rangarajan and K.V.S.Rama Rao, Solid State Commun 103. 567-572 (1997)

14. Charge Transport and Magnetic Properties of polyaniline doped with Methane Sulphonic acid and polyaniline-polyurethane blend, B.Sanjai, Anasuya Raghunathan, T.S.Natarajan, G.Rangarajan, Solomon Thomas, P.V.Prabhakaran, S.Venkatachalam, *Phy.Rev.B*, 55, pp10374 (1997).
15. Hydrogen-induced anisotropy in $Dy_{0.73}Tb_{0.27}Fe_{1.5}CO_{0.5}$, S.Kishore, G.Markandeyulu and K.V.S.Rama Rao, *J.Alloys and Compounds* 258, 17-20 (1997)
16. Design and fabrication of low frequency giant magnetostrictive transducer, K.R.Dhilsha, G.Markandeyulu, B.V.P. Subrahmanyeswara Rao and K.V.S. Rama Rao, *J.Alloys and Compounds* 258, 53-56 (1997)
17. ^{57}Fe Mossbauer investigations on the hydrogenated compounds of $Dy_{0.73}Tb_{0.27}Fe_{1.5}CO_{0.5}$ S.Kishore, G.Markandeyulu, K.V.S.Rama Rao and T.P.Das, *Solid State Commun.* 104, 735-740 (1997)
18. Fringe formation in symmetric three aperture speckle shear interferometry: An analysis, N.Krishna Mohan and R.S.Sirohi, *Optics & Laser in Engg.* 26, 437-447 (1997)
19. Ronchi to 2-D amplitude checker grating and its application to array generation, Shanti Bhattacharya and R.S.Sirohi, *Appl.Opt.*, 36, 3745-3752 (1997)
20. Phase checker grating as an array illuminator, Shanti Bhattacharya, V.V.Rao and R.S.Sirohi, *Optik*, 106, 15-18 (1997)
21. Oblique observation speckle shear interferometers for slope change contouring, T.Santhanakrishnan, N.Krishna Mohan and R.S.Sirohi, *Jl.Mod.Opt.* 44, 831-839 (1997)
22. Self-referencing cyclic shearing interferometer for collimation testing., J.S.Darlin, M.P.Kothiyal and R.S.Sirohi, *Jl.Mod.Opt.*, 44, 929-939 (1997).
23. Ion transport studies in $PbI_2-Ag_2O-V_2O_5$ glassy systems, R.Suresh Kumar and K.Hariharan. *Solid State Ionics* 104, 227-236 (1997).
24. Synthesis, spectral and X-ray structural characterisation of (ph) (DCA)(R) $P = N-S_3N_3$ [R = (i) $(C_2H_5)_2N-$; (ii) $(n-C_4H_9)_2N-$], Janarthanan Gopalakrishnan, M.N. Sudheendra Rao, Janaswamy Srinivas and G.Sreenivasa Murthy, *Polyhedron* 16(7), 1089-1094 (1997).
25. (Phenyl) (piperidino) (dicyclotexylamino) Phosphinimino cyclotriethene, Janaswamy Srinivas, G.Sreenivasa Murthy, C.J.Thomas and M.N.Sudheendra Rao, *Zeit Kristallogr. - New crystal structures* 212, 323-324 (1997)
26. AC Conductivity of Amorphous $CuInTe_2$ thin films, S.Kasi viswanathan and B.S.V. Gopalam, *Physica Status Solidi*, B 203, 397-400 (1997)
27. Enhancing Chaos using Adaptive control, R.Ramaswamy, S.Sinha and Neelima Gupte *Phys. Rev. E*. 57, R 2507 (1998)
28. Hydrogen solubility and thermodynamics of dissolved hydrogen in Palladium substitutional solid solution alloys., Al.Weiss, S.Ramaprabhu and N.Rajalakshmi, *Z.Physikalische Chemie, Neue Folge*, 199, 165-212 (1997)

29. Hydrogen solubility and thermodynamics of hydrogen dissolved in binary $Pd_{1-x}Tb_x$ solid solution alloys, Sankaranarayanan and S.Ramaprabhu, *Ber.Bunsenges Phys. Chemie.*, 101, 1896-1900 (1997)
30. Hydrogen solubility and thermodynamics of hydrogen dissolved in binary $Pd_{1-x}Ho_x$ solid solution alloys. C.V.Nirpama, Sunita and S.Ramaprabhu, *J.Alloys and Compounds*, 255, 142-148 (1997)
31. Hydrogen absorption in $Zr_{0.2}Tb_{0.8}Co_3$ alloy and the decrepitation and cyclic stability in $Zr_{0.2}Tb_{0.8}Co_3$ and $ZrMnFe$, R.Arun and S.Ramaprabhu, *J.Alloys and Compounds*, 259, 254-259 (1997)
32. Heterotic M(atrix) theory at generic points in Narain moduli space, S.Govindarajan, *Nuc. Phys. B507* 589-608 (1997)
33. Note on M(atrix) theory in seven dimensions with eight supercharges, S.Govindarajan *Phys. Rev. D* 56 5276-5278 (1997)
34. Photoacoustic response of CdS Quantum Dots in nafion, P.Nandakumar, A.R.Dhobale, Y.Babu, M.D.Sastry, C.Vijayan, Y.V.G.S.Murti, K.Dhanalakshmi and G.Sundararajan, *Solid State Communications*, 104 (6) p 193-196 (1998)
35. Specific Heat of Pure $Y_{1-x}Pr_xBa_2Cu_3O_{7-\delta}$ single crystals in magnetic fields, S.Uma, W.Schnelle, E.Gmelin, G.Rangarajan, A.Erb, *J.Appl. Phys.*81 (8), p.4227 (1997).
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1. Photorefractive two beam coupling in $BaTiO_3$ crystal using He-Cd laser, M.H.Majiles Ara, C.Vijayan, J.S.Darlin. M.P.Kothiyal and R.S.Sirohi. *Proc. National Laser Symposium, PRL, Ahmedabad, Dec. 10-12, p. 161, (1997)*
2. Thermodynamics of dissolved hydrogen in $Zr_x, Tb_{1-x}Fe_3$ system, R.Sivakumar, S.Ramaprabhu and K.V.S.Rama Rao, *Proceedings of the DAE Solid State Physics Symposium 40C, 356 (1997)*
3. Influence of carbon on the magnetic properties of $HoErFe_{15}Ga_2C_x$ compounds, M.Venkatesan, U.V.Varadaraju and K.V.S.Rama Rao, *Proceedings of the DAE Solid State Physics Symposium 40C, 150 (1997)*
4. Hydrogen induced amorphization in Zr based C 15 Laves phase alloys, T.R.Kesavan, S.Ramaprabhu and K.V.S.Rama Rao, *Proceedings of the DAE Solid State Physics Symposium 40C, 357 (1997)*
5. Effect of Variation of Intensity of illumination on the Performance of $n-CdSe_{0.6}Te_{0.4}$ Thin Film/Ferro-Ferricyanide Photoelectrochemical Solar Cells, V.Damodara Das and Laxmikant Damodare, *Proceedings of the DAE Solid State Physics Symposium, vol. 40C, p.190. (1997).*
6. Simple 1-D and 2-D optical perfect shuffle operations, S.Bhattacharya, V.V.Rao and R.S.Sirohi, *Proc. of the National Laser Symposium PRL, Ahmedabad, Dec. 10-12, (1997)*

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8. Microwave dielectric properties of $Ba(Zn_{1/3}Ta_{2/3})O_3$ system on addition of Excessive Zn_0 J.Venkatesh and V.R.K.Murthy, Proceedings of DAE Solid State Physics Symposium vol 406 , 220 (1997).
9. Measurement of complex dielectric constant using co-axial holder by Reflection method at microwave requeencies, J.Venkatesh and V.R.K.Murthy, Proc. of National symposium on Advances on Microwaves and light waves University of Delhi, March 2-4, 7 (1998)
10. Preparation and microwave characterization (BaMg) $(Zn_{1/3}Ta_{1/3})O_3$ Dielectric resonator J.Venkatesh and V.R.K.Murthy, Proc. of National Seminar on Material Science -an Indian Scene, Bharathidasan University March, 19-22, p. 9-11, (1998)
11. Magnetic properties of $Y_{1-x}Gd_xTiFe_{11}$, V.Ravikumar, G.Markandeyulu, M.S.Ramachandra Rao and K.V.S.Rama Rao, Proc. of 9th AGM of the MRSI held at Chennai, India, February 11-13, p. 59 (1998)
12. Production of fine particles of Nd-Fe-B magnets by hydrogen decrepitation process. K.V.S.Rama Rao, U.V.Varadaraju, S.Ramaprabhu, G.Markandeyulu, M.S.Ramachandra Rao and K.J.L.Iyer, Proc. of 9th AGM of the MRSI held at Chennai, India, February 11-13, p. 61 (1998)
13. Magnetic susceptibility and electrical resistivity studies of $Ti_xE_{1-x}(Co_{1-y}Fe_y)_2$ compounds, Krishna Muralidharan, M.S.Ramachandra Rao and S.Ramaprabhu, Proc. of 9th AGM of the MRSI held at Chennai, India, February 11-13, p. 63 (1998)
14. Study of magnetic and electrical properties of RMn_2Ge_2 compounds (R=Sm, Nd and Ho). V.Ravindranath, M.S.Ramachandra Rao and G.Rangarajan, Proc. of 9th AGM of the MRSI held at Chennai, India, February 11-13, p. 64 (1998)
15. Fabrication of BSCCO-2212 high J_c interconnects using melt cast process, K.N.Marimuthu Krishna Muralidharan, M.S.Ramachandra Rao and U.V.Varadaraju, Proc. of 9th AGM of the MRSI held at Chennai, India, February 11-13, p. 52 (1998)
16. Effect of ionic size variation at the La site in $La_{0.7-x}R_xCa_{0.3}MnO_3$ (R=Ce,Ho,Er and Y) compounds, V.Ravindranath, M.S.Ramachandra Rao and G.Rangarajan, Proc. of 9th AGM of the MRSI held at Chennai, India, February 11-13, p. 52 (1998)
17. Thermal hysteresis in $Pr_{0.7}Sr_{0.05}Ca_{0.25}MnO_3$ perovskite, B.V.R.Subba Rao and M.S.Ramachandra Rao, Proc. of 9th AGM of the MRSI held at Chennai, India, February 11-13, p. 53 (1998)
18. Effect of substitution at the maganese site in $La_{0.7}Sr_{0.3}MnO_3$ by Fe,Co,Al and Ga, Eswari Govindan, M.S.Ramchandra Rao and U.V.Varadaraju, Proc. of 9th AGM of the MRSI held at Chennai, India, February 11-13, p. 53 (1998)

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21. Quantum Confinement Effects in the Photoluminescence of CdS Nanocrystals in Nafion, P.Nandakumar, C.Vijayan, Y.V.G.S.Murti, K.Dhanalakshmi and G.Sundararajan, Proc. of DAE Solid State Physics Symposium, Cochin 27-31 Dec. (1998), p 198
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23. Optical Nonlinearity of Quantum Dot Materials, C.Vijayan, P.Nandakumar and Y.V.G.S. Murti, Proc. of National Seminar on applications of Nonlinear Phenomena Cochin University of Science and Technology, Cochin , p. 4 (1998).
24. On the Proton Exchange Mechanism of synthesizing CdS Quantum Dots in Nafion, P.Nandakumar, C.Vijayan, Y.V.G.S.Murti, K.Dhanalakshmi and G.Sundararajan, Proc. of Third National Conference on Solid State Ionics, NCSSI-III NERIST, Itanagar, Arunachal Pradesh March (1998).

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3. Structural and Optical Properties of Flash Evaporated $\text{Bi}_2\text{Te}_2\text{Se}$ Thin Films, V.Damodara Das and S.Selvaraj, Proc. of International workshop on Physics of Semiconductor Devices, p.1161-1164, (1997).
4. Temperature Dependence of Electrical and Optical Properties of Semiconducting $\text{Bi}_{0.5}\text{Sb}_{1.5}\text{Te}_3$ thin Films, V.Damodara Das and P.Gopal Ganesan, Proc. of International conference on Metallurgical Coatings and Thin Films, San Diego, California, USA, P. 263 (1997)
5. Variation of Thermoelectric Power Factor on $n\text{-InSe}$ Thin Films with Temperature and Thickness, V.Damodara Das, Tito Pauli and S.Selvaraj, Proc. of International Conference on Metallurgical Coatings and Thin Films, San Diego, California, USA, p.297 (1997)

6. Thermoelectric Power and Figure of Merit of Pb-Sn-Te Ternary alloy thin films, V.Damodara Das, Proc. of Sixteenth International Conference on Thermoelectrics, Dresden, Germany, p.259-262 (1997)
7. Structural and Electrical Properties of Flash Evaporated $(\text{Bi}_{0.4}\text{Sb}_{0.6})_2\text{Te}_3$ Alloy Thin Films. V.Damodara Das and P.Gopal Ganesan, Proc. of Sixteenth International Conference on Thermoelectrics, Dresden, Germany, p.147-150 (1997)
8. Transport Properties of $\text{Bi}_2\text{Te}_{2.4}\text{Se}_{0.6}$ Thin Films, V.Damodara Das and S.Selvaraj, Proc. of Sixteenth International Conference on Thermoelectrics, Dresden, Germany, p.101-104 (1997)
9. Investigation on electronic structures and associated hyperfine properties of paramagnetic centres in gamma-irradiated ortho-periodic acid, Kavita Vermurti, Ranjit Pati, T.P.Das, B.Anusuya, V.S.Murty and K.V.S.Rama Rao, AIP Conference Proceedings, Kansas City, USA (1997)
10. Electrical relaxation and tracer diffusion studies in PbI_2 doped silver vanadate glasses, R.Suresh Kumar and K.Hariharan, Proc. of International Conference on Solid State Ionics Honolulu, Hawaii, USA p.160 (1997)
11. Magnetic susceptibility, ESR and Magneto-transport studies in some polyaniline/PMMA blends, D.Srinivasan, G.Rangarajan, T.S.Natarajan, Anasuya Raghunathan, S.V.Subramaniam and S.V.Bhat, Proc. of Spring Meeting of Materials Research Society, San Francisco, USA (1997).
12. Third order dielectric susceptibility at optical frequencies A tool for characterization of low dimensional semiconductors, B.S.V.Gopalam, SPIE Int. Conf. Proceedings, Physics and simulation of optoelectronic devices 24th-30th Jan. '98, San Jose, USA
13. Construction and representation of new classes of coherent states for isospectral oscillators, S.Seshadri, S.Lakshmi Bala and V.Balakrishnan, Proceedings of IAMP '97 - Brisbane (1997)
14. Quantifiers of spatiotemporal bifurcation in coupled sine circle maps, N.Chatterjee and Neelima M.Gupte, Proceedings of ANDM '97, p.112 APS (1997)
15. Spatio-temporal Bifurcations in coupled sine circle maps, N.Chatterjee and Neelima M.Gupte, Proceedings of Conf. on non-linear chaos and Computational Dynamics. Narosa (1997)
16. Crystal structure and ^{63}Cu NQR studies of Cu(I) complexes formed between phosphine ligands and Cu(I) halides, S.Ramaprabhu, G.Bernardinelli, N.Amtutz and E.A.C.Lucken, Proc. of XIV NQR Symposium, Pisa, Italy, p. 180 (1997)
17. Modification of extreme value statistics in chaotic dynamics by external noise, S.Seshadri, S.Lakshmi Bala and V.Balakrishnan, Proc. of the Int. Conf. on Nonlinear dynamics-integrability and chaos, Bharathidasan Univ. Tiruchirappalli, Feb (1998)

6 Distinguished Visitors to the Department:

S.No.	Name of the Visitor and Designation	Date of visit	Purpose of visit
1.	Prof. Jeitschko, University of Munster, Germany	06.03.1997	To deliver a lecture
2.	Prof. Govind Swarup, NCRA, Pune	15.04.1997	To deliver a lecture
3.	Dr. K.C. Rustagi, Centre for Advanced Tech. Indore	11.04.1997	To deliver a lecture
4.	Dr. Balasubramanian Sundaram, Dept. of Chemistry, Univ. of Pennsylvania, Philadelphia	12.05.1997	To deliver a lecture
5.	Prof. P.N. Prasad, State University of New York at Buffalo, USA	05.07.1997	To deliver a lecture
6.	Dr. C.V. Tomy, Dept. of Physics, IIT Kanpur	15.07.1997	To deliver a lecture
7.	Prof. A. Ravi Prakash Rau, Dept. of Physics and Astronomy, Louisiana - state Univ., USA.	11.08.1997	To deliver a lecture
8.	Prof. M. Muthukumar, Dept of Physics, Univ. of Massachusetts Amherst, Mass, U.S.A.	20.08.1997	To deliver a lecture
9.	Dr. S. Sundaresan, TIFR Bombay	02.09.1997	To deliver a lecture
10.	Dr. T. Venkatesan, Dept. of Physics, univ. of Maryland, USA	10.09.1997	To deliver a lecture
11.	Dr. Mike Reading, Imperial Chemical Industries, UK	17.10.1997	To deliver a lecture
12.	Dr. Anuradha G. Rangamani, Melbourne Univ.	22.10.1997	To deliver a lecture
13.	Prof. Yasuo Kenenatsu, Osaka City Univ. Japan	22.10.1997	To deliver a lecture
14.	Dr. Mitaxi Mehta, Physical Research Laboratory, Ahmedabad	10.11.1997	To deliver a lecture
15.	Prof. E. Gmelin, Max-Planck Institute Stuttgart, Germany	19.11.1997	To deliver a lecture
16.	Prof. C. Heiden, Institute of Applied Physics Giessen, Germany	19.11.1997	To deliver a lecture
17.	Dr. A. Hofmann, Institut fur Technishche Karlsruhe, Germany	19.11.1997	To deliver a lecture
18.	Dr. Haberstroh, Technical University Dresden, Germany	19.11.1997	To deliver a lecture
19.	Dr. Dipl.-Ing. Thuerk, Univ. of Jena, Germany	19.11.1997	To deliver a lecture
20.	Prof. G. Klipping, Frie University, Berlin, Germany	19.11.1997	To deliver a lecture

S.No.	Name of the Visitor and Designation	Date of visit	Purpose of visit
21.	Prof.E.Gmelin, Max-Planck Institute Stuttgart, Germany	13.02.1998	Under Indo-German Project
22.	Prof.M.S.Hegde, IISc. Bangalore	16.12.1997	To deliver a lecture
23.	Prof.S.R.Shenoy, Condensed Matter Group ICTP, Trieste, Italy	17.12.1997	To deliver a lecture
24.	Prof.Michel Avignon, University of Paris, France	19.12.1997	To deliver a lecture
25.	Dr.Baliant Podor, Hungarian Academy of Science, Hungary	Dec.1997	To deliver a lecture
26.	Dr.Ferenc Riesz, Hungarian Academy of Science, Hungary	Dec. 1997	To deliver a lecture
27.	Dr.Z.J.Horwath, Hungarian Academy of Science, Hungary	Dec. 1997	To deliver a lecture
28.	Dr.P.C.Schmidt, Professor, Darmstadt Germany	19.1.98 - 22.1.98	Under BMFT exchange program
29.	Dr.Babu Chalamala, Motorola Inc, Arizona, U.S.A.	03.02.1998	To deliver a lecture
30.	Prof.F.J.P.Berry Open University, U.K.	March'98	To deliver a lecture
31.	Prof.S.Nag, Institute of Mathematical Science, Chennai	11.03.1998	To deliver a lecture

4.14 BIO-TECHNOLOGY RESEARCH CENTER

1. Introduction:

Biotechnology Research Center was established in 1982. Now Ph.D. programme is being offered but the registration of candidates is either in Chemical Engineering or in Chemistry Department depending on the background of the candidate.

2. Academic Programmes:

The Center offers Ph.D. Programme alone.

2.1 Number Of Applications Received And Number Of Candidates Admitted:

Ph.D selected - 2

2.2 Students On Roll (As On 31.08.1997):

Ph.D - 11

2.3 Number Of Scholarship/Fellowship Holders:

Ph.D - 11

2.4 Endowment Prizes Instituted:

47th Indian Pharmaceutical Congress - Endowment Prize

2.5 Names Of Student/Scholar Attended Conference/Seminar And Symposia Abroad/India:

Sl.No	Name of the Student/ Scholar	Name of the Conference/Seminar/ Symposia	Date & Venue
1	R.Srinivas	Intl. Conf. Frontiers in Biotechnol. 97	Trivandrum Nov.26-29, 1997
2	G.Lakshmi Prasanna		
3	Bijan Choudhury		
4	M.S.R.C.Murthy		
5	P.Arthur Felse	38th Ann. Conf. Asso. Microb. India	New Delhi, Dec. 1997
6	V.Venkata Dasu		

2.6 Number Of Degrees Awarded In The Last Convocation:

Ph.D - 04 (One in Chemistry and three in Chem. Engg.)

3. Faculty and Their Development:

3.1 Faculty:

Name & Qualification	Major Area of Specialisation
Prof. Megha Singh (Ph.D. Carolina)	Laser and ultra sound in medicine, Biofluid mechanics, Biomedical instrumentation
Prof. T. Panda (Ph.D. IIT Delhi)	Process development for industrial enzymes, Protoplast fusion technology and bioenergy
Prof. Chandra Sainathan (Ph.D. IISc Bangalore)	Basic and applied aspects of microbiology, Biotransformation, Fermentation of agroe-sidues for production of useful compounds
Prof. K. Lalitha (Ph.D. Mysore)	Applied microbiology, Biochemistry, Enzymology, Biomenthanation and waste treatment
Dr. T. Swaminathan Associate Professor (Ph.D. Kanpur)	Environmental biotechnology membrane technology

3.2 Short-Terms Courses/Workshops/Seminars/Symposia/Conferences/ Training Attended By the Faculty In Recognised Academic Institutions and Public Sector Units:

S.No.	Name of the Faculty	Title	Institution	Period/Duration
1	Prof Megha Singh	10th European Conference on Clinical Hemorheology	Libson, Portugal	29.07.97 to 02.08.97
2.	Prof T. Panda	Korean Soc. Applied Microb.	Kwangju, Korea	23.10.97 to 27.10.97

3.3 Special Lectures Delivered By The Faculty In Other Institutions:

Sl.No.	Name of Faculty	Topic of Lecture	Venue & Date
1	Prof T Panda	Unique enzyme-yet to know?	10.9.1997 - CLRI
	-do-	Biochemical Engg. Res. Activities at IIT Madras	March 1997 - CLRI
	-do-	Enzyme Synthesis by improved design technique	27.5.1997 - IIT Kharagpur
	-do-	Bioprocess Optimisation - a challenge	25.10.1997 - Korea

3.4 Visits Abroad By Faculty:

Sl.No	Name of Faculty	Country Visited	Date	Purpose of Visit
1	Prof Megha Singh	France	June 17 - Dec. 1, 1997	Visiting Professor
2	Prof T Panda	Korea	23.10.97 - 27.10.97	Visit to Inst. and to deliver Invited Lecture

4. Design And Development Activities:

4.1 Brief and Specific details of Process/Instruments/Equipment/ Software Designed and Developed:

1. Optical method to determine hematocrit and aggregation of erythrocytes of blood samples.
2. Specially designed air-lift bioreactor for improved enzyme production.

- Economic analysis of processes for α -1,3-glucanase, chitinase, and penicillin amidase production - reports submitted to TIFAC, New Delhi.

5 Research and Consultancy:

5.1 Sponsored Research Projects on hand (only Ongoing):

Sl.No	Title	Funding Agency	Co-ordinator(s)
1	Biological Production of chiral compounds for the optically active pharmaceuticals	Ministry of Sci & Tech. Korea	Dr Chul-Ho Kim

5.2 Exchange Programme With Other Universities:

- Material Science Research Institute, Iran.
- Korea Research Institute of Biosciences and Biotechnology.
- Institute of Technical Biochemistry, University Stuttgart.
- Technical University of Berlin.

5.3 Publications:

(a) In Referred National Journals:

- Singh, M. and Chacko, S. : Monte Carlo Simulation of laser light scattering in mammalian organs. *Current Sci.*, 73, 1015-1019, 1997.
- Singh, M., Kumaravel, M. and Namasivayam, A. : Optical characterisation of internal organs in situ by He-Ne laser light reflectometry. *IETE Tech. Rev.* 14, 195-200, 1997.

(b) In Referred International Journals:

- Shanthi, S. and Singh, M., Laser reflectance imaging of human organs and comparison with perfusion images. *Med. Biol. Eng. Comput.* 35, 253-258, 1997.
- Umarani, J., Prakash, B. and Singh, M., Computerised multiparametric analysis from images of blood flow through frog mesenteric arterial bifurcation. *Med. Biol. Eng. Comput.* 35, 373-380, 1997.
- Singh, M. and Kumaravel, M., Sequential analysis of erythrocyte aggregation in health and diseases. *Clinic. Hemorheol. Microcirc.* 17, 319-324, 1997.
- T.Panda & K.Jagannadha Rao, Fermentation stoichiometry: Some elementary but neglected considerations. *Journal of Energy, Heat & Mass Transfer*, 19, 127-131, 1997.
- S.R.Nair & T.Panda, Statistical optimization of medium components for improved synthesis of pectinase production by *A.niger*. *Bioprocess Eng.*, 16(3), 169-173, 1997.
- G.Lakshmi Prasanna & T.Panda, Transformation of intact cells of *S.cerevisiae* by square wave pulses using castellated microelectrodes. *Bioprocess Engg.*, 16(5), 265-268, 1997.

7. G.Lakshmi Prasanna & T.Panda, Electroporation - basic principle, practical considerations and applications in molecular biology. *Bioprocess Eng.*, 16(5), 261-264, 1997.
8. A.Kapat & T.Panda, pH and temperature stability of chitinase from *T.harzianum* : A thermodynamic consideration. *Bioprocess Eng.*, 16(5), 269-272, 1997.
9. T.Panda et al., Bioprocess Optimization - A Challenge. *J. Microb. Biotechnol.*, 7(6), 367-372, 1997.
10. Application of surface methodology to evaluate the optimum environmental conditions for the enhanced production of surfactants - Ramkrishna Sen and T.Swaminathan. *Applied Microbiology Biotechnology*, 47, 358-363 (1997).
11. Biodegradation of phenol and cresol isomer mixtures by *Arthobacter* - S.Kar, T.Swaminathan and A. Baradarajan. *World Journal of Microbiology and Biotechnology*, 13/6, 659-63 (1997).
12. Ester hydrolysis in reversed micelles using lipase - K.Murali Manoj and T.Swaminathan. *Bioprocess Engineering*, 17(3), 185 (1997).

(c) In Proceedings National Conference:

1. Manjunath, M. and Singh, M. : Computerised analysis of erythrocyte shape changes in health and diseases. *Proceedings National Conference on Biochemical Eng.* 1997, pp.3.7-3.10.
2. R.Srinivas & T.Panda : Studies on deactivation of carboxymethyl cellulase from intergeneric fusant of *T.reesei/S.cerevisiae*. 38th Annual Conference of AMI, Delhi, p.71, 1997.
3. J.Sinha, S.Ghosh & T.Panda : Semicontinuous fermentation of endoglucanase by *T.reesei* and intergeneric fusant of *T.reesei/S.cerevisiae* in two phase aqueous polymer system. *idib*, p.116, 1997.
4. G.Lakshmi Prasanna & T.Panda : Genetic manipulation of *S.cerevisiae* by electrofusion as a means of producing new industrial yeast strains. *ibid*, p.192, 1997.
5. Mohammed Pazouki & T.Panda : Critical analysis on citric acid fermentation. *ibid*, p.103, 1997.
6. V.Venkata Dasu & T.Panda : Studies on griseofulvin production by *Penicillium griseofulvum*. *ibid*, p.102, 1997.
7. P.Arthur Felse & T.Panda : Self-directing optimization of parameters for production of extracellular chitinase from *T.harzianum*. *ibid*, p.115, 1997.
8. G.Satyanarayana Naidu & T.Panda : Studies on stability of pectolytic enzymes. *ibid*, p.50, 1997.
9. B.Gokul & T.Panda : Role of factors affecting protoplast formation in *Nocardia orientalis*. *ibid*, p.69, 1997.

10. R.V.Muralidhar & T.Panda : Multiresponse analysis of critical factors affecting protoplasts generation in *Penicillium griseofulvum*. *ibid*, p.69, 1997.
11. K.Srividya, T.Venkatram & T.Panda : Effect of protease on chitinase of *T.harzianum* during synthesis. *ibid*, p.70, 1997.
12. Uma Sunderam, P.S.T.Sai & T.Panda : Xanthan from *Xanthomonas malvacearum* : Process development. *ibid*, p.96, 1997.
13. D.Mantha, Z.Asalam Basha & T.Panda : Optimization of medium composition by response surface methodology for production of tartaric acid by *G.suboxydans*. *ibid*, p.70, 1997.
14. Sushma R.Naid & T.Panda : Regulation of synthesis of the pectolytic enzymes of *A.niger*. *ibid*, p.115, 1997.
15. K.Balamurugan, V.Venkata Dasu & T.Panda : Propionic acid production by whole cells of *Propionibacterium freudenreichii*. *ibid*, p.116, 1997.

(d) In Proceedings International Conference:

1. Chacko, S. and Singh, M. : Analysis of inhomogeneities in human breast models by laser transillumination and computed tomography. In : Proc. World Cong. Med. Phys. & Biomed. Eng. 1997, P.117.
2. Singh, M. and Nagaprasad, V. : Sequential analysis of aggregation and deformability of erythrocytes during blood storage. In : Proceedings 10th Europ. Conf. on Clin. Hemorheol. 1997, p.47.
3. Chacko, S. and Singh, M. : Attention co-efficient imaging of in situ organs by laser reflectometry and Monte Carlo simulation. In Proc. Internat. on Biomed. Eng. 1997, pp.396-390.
4. Singh, M., Singh, S.S., Kumaravel, M., Umrani, J. and Namasivayam, A. : Analysis of erythrocyte concentration and velocity profiles in mesenteric arterial branching during cardiac cycle. Proc. 9th Internat. Conf. Biomed. Eng. 1997, pp 156-159.
5. Singh, M., Rasia, R.J.Valverde, J.R. and Stoltz, J.F. : Measurement of erythrocyte aggregation in health and diseases : Technical developments. Proc. 9th Internat. Conf. Biomed. Eng. 1997, pp.351-353.
6. R.Srinivas & T.Panda : pH and thermal stability studies of carboxy-methylcellulase from intergeneric fusants of *T.reesei/S.cerevisiae*. ICFB-97, Trivandrum, p.61, 1997.
7. J.Sinha, S.Ghosh & T.Panda : Extractive fermentation of endoglucanase of *T.reesei* and intergeneric fusants of *T.reesei/ S.cerevisiae* using aqueous two phase system. *ibid*, p.68, 1997.
8. G.Lakshmi Prasanna & T.Panda : Electrofusion of *S.cerevisiae* and *T.reesei* for single step conversion of cellulose to ethanol. *ibid*, p.73, 1997.
9. T.Panda et al. : Bioprocess optimization - A Challenge. Int. Symp. on Biotechnological Processes, Kwanju, Korea, p.63, S-8, 1997.

10. Cloning of a DNA fragment from *Pseudomonas* with lipase activity - K.Murali Manoj and T.Swaminathan. International Conference on Frontiers in Biotechnology, Trivandrum, Nov., 1997.
11. Lipolysis In AOT/Isooctane reversed micelles - K.Murali Manoj and T.Swaminathan. International Conference on Frontiers In Biotechnology, Trivandrum, Nov., 1997.
12. High cell density lactic acid fermentation with cell recycle bioreactor - B.Choudhury and T.Swaminathan. International Conference on Frontiers in Biotechnology, Trivandrum, Nov., 1997.
13. Production of 2,3-butanediol by aqueous two phase fermentation - Sanjoy Ghosh and T.Swaminathan. International Conference on Frontiers in Biotechnology, Trivandrum, Nov., 1997.

6 Distinguished Visitors to the Department:

S.No.	Name of the Visitors and Designation	Date of Visit	Purpose of Visit
1	Prof Dr M Schmid-Schonbem Dept of Physiology, RWTH Aachen, Germany	23.02.1997 - 03.03.1997	Discussion
2	Prof V Krishnan Dept of Chem. Engg., BHU, Varanasi	May 1997	Discussion
3	Dr. Vimal Kumar Director, TIFAC, DST, New Delhi	June 1997	Discussion - Home grown Technology
4	Dr Nhaomi Perowne Director, Intl. Officer, Univ. of East Angila, UK	June 1997	Probable Collaborative Programme

4.15 COMPOSITES TECHNOLOGY CENTRE

1 Introduction:

The Fibre Reinforced Plastics (FRP) Research Centre, which was established in 1974 has been renamed as Composites Technology Centre (COMPTEC) since April 1997. This change of name has been effected to highlight that the Centre is expanding its activities from FRP to all forms of composite materials including metal matrix and ceramic matrix composites, speciality composites, etc. and their technological applications. The new Centre with its enhanced activities was inaugurated on 18th April 1997 by Bharat Ratna Dr. A.P.J. Abdul Kalam, Scientific Adviser to the Defence Minister and Secretary, Defence Research and Development Organisation (DRDO), New Delhi. During the year the Centre has also started an M.Tech. specialisation in Composites Technology and is venturing into a programme for the development of strategically important composites and their raw materials.

To promote closer interaction with the industries, and to make the Centre financially self-supporting, a Patrons and Associates scheme has been introduced. Under this scheme, industries can make donations and become patrons or associates and, in turn, they receive technical support for their work.

2 Academic programmes:

The Centre continues its academic research programme admitting one student each for MS and Ph.D. degrees every year. A M.Tech. specialisation in Composites Technology was started from July 1997 admitting 9 students every year through the departments and they will undergo specialisation in Composite Materials development, Composites manufacture and composites design at the Centre. The scholarship / half time research assistantship for these students are provided for three years from the sponsored research projects and, thereafter, from the income of the corpus fund being set up under the patrons and associates scheme.

2.1 New Courses Introduced:

The following 7 courses were introduced for the M.Tech. programme:

Sl. No.	Course No.	Title	Structure	Faculty
1	CT601	Composites Materials and Manufacturing	3 0 0 3	Faculty of the Centre
2	CT610	Processing Technology of Composites raw Materials	3 0 0 3	..do..
3	CT700	Composite Materials Science	3 0 0 3	..do..
4	CT712	Modelling and Equipment Design for Composite processing	3 0 0 3	..do..
5	CT714	Test, Characterisation and Quality Assurance for Composites Production	3 0 0 3	..do..
6	CT720	Composite Product Design	3 0 0 3	..do..
7	CT722	Composites Analysis and Design Using Computers	3 0 0 3	..do..

2.2 Number of applications received and number of candidates admitted:

Programme	No. Received	No. Selected
M.Tech	7	7
M.S	6	-
Total	13	7

2.3 Students on Roll (as on 31.08.1997):

Programme	I Year	II Year	III Year	IV Year	V Year	Total
M.Tech	7	-	-	-	-	7
M.S.	1	1	-	1	-	3
Ph.D	-	-	1	2	1	4
Total	8	1	1	3	1	14

2.4 Number of scholarship/Fellowship holders:

Programme	Institute Scholarship	Others	Total
M.Tech	-	7	7
M.S.	-	2	2
Ph.D	1	1	2
Total	1	10	11

2.5 Number of Degrees Awarded in the last convocation:

M.S	-	2
Ph.D	-	1

3 Faculty and their Development:**3.1 Faculty:**

S.No.	Name and Qualification	Major Area of Specialisation
1.	Dr.N.G.Nair, Ph.D., (IIT Kanpur) [Head]	Composite Materials Research and Development (including polymer, Metal and Ceramic Matrix Composites), Composites Manufacturing, Composite Product Design and Development Testing and Quality Assurance of Composites.
2.	Dr. S.K. Malhotra, Ph.D (IIT Madras)	Composite Materials Research, Composite Product Design and Development, Quality Control of Composites.

3.2. Short-term courses / workshop / Seminars / Symposia / Conferences organised:

Sl.No.	Co-ordinators	Title	Period
1.	Dr.N.G.Nair	India-Japan Joint Seminar on Manufacturing Science of Advanced Composites	19.1.98 to 20.1.98

3.2 Short-term courses/workshops/Seminars /Symposia / Conferences / Training attended by the Faculty in recognised Academic Institutions and Public Sector Units:

Sl. No	Name of Faculty	Title	Institution	Period/ Duration
1.	Dr. N.G. Nair	Seminar and Exhibition on Composites in Building applications	R.V. TIFAC Composites Design Centre, Bangalore	8.12.97 to 9.12.97
		National Seminar on the Science and Technology of Polymers	IIT Madras	19.12.97 to 20.12.97
		IUPAC 98	CLRI, Chennai	5-1-98 to 9-1-98

3.3 Special Lectures Delivered by the faculty in other Institutions:

Sl. No.	Name of Faculty	Topic of Lecture	Venue & Date
1.	Dr. N.G. Nair	Lecture on Manufacturing and industrial applied of of composites materials in India	Tamagawa University, Tokyo, Japan - 7.3.98
		Reinforced Plastics and their applications	Institution of Engineers, Madras - 22.8.97

3.4 Visits Abroad by Faculty:

Sl. No.	Name of Faculty	Country visited	Date	Purpose of visit
1.	Dr. N.G. Nair	Japan	7.3.98 to 14.3.98	Visited as JSPS fellow under India-Japan Joint programme on Manufacturing Science of Advanced Composites
2.	Dr. S.K. Malhotra	Germany	1.7.97 to 30.7.97	Indo-German (BMBF) project

3.5 Honours and Awards obtained:

Sl. No.	Name of Faculty	Name of Award/Honour	Awarded by	Awarded for	Date
1.	Dr. N.G. Nair	MRSI Medal 97	Materials Research Society of India	Excellence in Composites Research	Feb.97

4 Design and Development Activities:

4.1. Brief and specific details of process/Instruments/Equipment/ Software Designed and Developed:

A 500 joule capacity high energy low velocity drop weight impact test facility has been designed fabricated and installed with instrumented facility.

4.2. Details of patents held in the Department with the date of filling:

Patents filed : One

5 Research and Consultancy:

5.1 Sponsored Research Projects on hand:

Sl. No	Title	Period	Funding Agency	Amount (In lakhs)	Co-ordinator(s)
1	Design and development of Mechanically depolyable composite Bridge by Pressurebag/autoclave moulding	3 years	MHRD & RDEE, Pune	68.00	Dr.N.G.Nair
2	Design, Development and Fabrication of FRP Sonar Dome employing Pressurebag Moulding Method	2 Years	MHRD & NPOL, Kochi	40.4	Dr.N.G.Nair
3	Development of Nylon Reaction Injection Pultrusion (NYRIP) for making Fibre Reinforced Nylon Structural Profiles	2 years	MHRD & FACT, Aluwa	39.44	Dr.N.G.Nair
4	Technology Project in Mission Mode on Advanced Composites CTC....Chennai	3 years	TIFAC New Delhi	115.00	Dr.N.G.Nair
5.	Studies on Machining of FRP	2 years	ISRO-IIT(M) Space Tech. Cell	4.55	Dr.S.K.Malhotra

5.2 Industrial Consultancy:

Sl.No	Name of the faculty	Title	Industry	Amount Rs.
1	Dr.N.G.Nair	Thermo Mechanical Analysis and Design of Ceramic Matrix Composites	DRDL, Hyderabad	Accounted in previous year
		Design of FRP chimney and hood over granulation pit	Steel Authority of India	25,000
		Development of FRP Veena	Productivity Promoters, Chennai	5,000
		Design of FRP gas stack 42m height	Coromandel Prodorite Ltd, Chennai	22,000
		Consultation on the design and fabrication of FRP roofing sheet	Inkas India Ltd, Jemshedpur	5,000
		Demonstration and training of filament winding and testing methods	OCF India Ltd	8,000

5.3 Exchange programme with other Universities:

A MoU has been signed with the School of Engineering, Osaka Prefecture University (OPU) Japan. Under this agreement Post graduate students of the centre can, if selected by Monbusho, Japan can carry out part of the research at OPU and submit their thesis at IIT Madras.

5.4 Publications:

(a) In Refereed International Journals:

1. R.Ramaseshan, N.G.Nair, S.K.Seshadri, "Magnetic moment studies on Nickel coated titanium powders" Journal of Material Science letters, Vol.16, 1997 pp 1441-1443.
2. R.Suresh and S.K.Malhotra, "Some studies on Static analysis of Composite thin walled box beam", Computers and Structures, V-62, n-4, pp.625, 1997.
3. M.Balasubramanian, S.K.Malhotra and C.V. Gokulrathnam, "Sintering and Mechanical Properties of sol-gel derived alumina-zirconia composites", Journal of Materials Processing Technology, V-67, pp.67-70, 1997.

(b) In proceedings of National Conferences:

1. R.Suresh and S.K.Malhotra, " Dynamic analysis of simply supported thin-walled box beam", Proc. of 48th AGM of the Aero. Soc. of India, 31st Jan, and 1st February 1997, Trivandrum, pp. 67-75, 1997.

(c) In proceedings of International Conferences:

1. R.Ramaseshan, S.K.Seshadri and N.G.Nair, "Microstructure and Properties of γ -Ti B1 Ti₂ Alc composites produced by reaction processing from elemental powders, Conference by Japanese Society for Powder and powder metallurgy, Nov. 1997

(d) Others:

1. N.G.Nair, "The Science and Technology of polymeric materials, the state of the art development", lead lecture during the national seminar on the Science and Technology of polymers IIT Madras - Dec. 19, 20, 1997.

6 Distinguished Visitors to the Department:

Sl.No	Name of the Visitor & Designation	Date of Visit	Purpose of Visit
1.	Dr. T. Machida, Professor, Japan	19.1.98 to 24.1.98	Visited under India-Japan Joint Programme on Manufacturing Science of Advanced Composites
2.	Dr.Terufumi Machida, Professor		
3.	Dr.Tatsuki Matsuo, Professor		
4.	Dr.Kenji Morii, Professor		
5.	Dr. T. Okai, Professor		
6.	Dr.Yasuo Kogo, Associate Professor		
7.	Dr.Kazunari Yoshida, Professor		
8.	Dr. Stephen Ogin, Prof. University of Surrey, England	07-01-98	Delivered a lecture on property evaluation of composites

4.16 MATERIALS SCIENCE RESEARCH CENTRE

1 Introduction:

Materials Science Research Centre (MSRC) was established in 1975 as an interdisciplinary centre for carrying out research in the frontier areas of advanced ceramic materials. The major areas of research of the Centre are :

a) Ternary Superconductors Low T_c and High T_c^1 :

Synthesis characterization and study of $T_cH_c^2$, and other parameters - Efforts to correlate T_c of copper oxides and search for non-copper oxide high T_c superconductors . Efforts to impure current densities in Bi-2212 superconductor using melt processing techniques.

b) Layered Transition Metal Dichalcogenides and Intercalation compounds:

Synthesis, crystal growth and characterization and measurement of physical properties including intercalation and application as battery cathode materials.

c) Perovskite Mixed Oxides:

Formulation, synthesis and characterization of new and novel rare earth containing perovskite mixed oxides - crystal growth by flux techniques - Study of electrical and magnetic properties - Search for magnetic and semi-conductor-to-metal transition. Application in solar energy conversion.

d) Pyrochlore Mixed Oxides:

Formulation, synthesis, characterization of new and novel rare earth-transition metal pyrochlore mixed oxides - Study of their electrical and magnetic properties correlations - Applications in solar energy conversion; thermoelectric power conversion.

e) Magnetoresistance Studies:

MR Studies on Giant Magnetoresistance (GMR) perovskites magnities and intermetallics.

GMR/CMR manganties : A new class of materials of this type $La(Sr)MnO_3$ exhibiting huge changes in resistivity as a function of applied fields. Large changes in th MR ratios of this order of $\sim 10^8$ - $10^{10}\%$ could be achieved by doping. Apart from the underlying physics which is an portant aspect to study, these materials show great promise in device application such as MR-recording heads, switching etc.

f) **PLZT Ferroelectric Ceramics:**

PLZT (x/65/35) composites were prepared (single phase) and dielectric studies carried out. It is intended to use these materials in transducer applications.

g) **Solar Energy Conversion/Storage using semiconductors In Photo-electrochemical (PEC) cells :**

Electrolyte solar cells for solar energy conversion employing chalcogenide and pnictide semiconductor electrodes (anode and cathode) - Formation and study of new electrolytes with known electrodes. Solar Energy storages as hydrogen photoassisted electrolysis of water employing pure and mixed (perovskite, pyrochlore, spinel and scheelite type) oxide anodes. Study of oxide bronze and hollandite and related materials for PEC conversion.

h) **Fast Ion Conductors:**

Fundamental studies on Ion mobility and structure property correlations in fast ion conductors (channel type oxides and phosphates) and pyrochlore structures.

i) **Nuclear Waste Disposal Materials:**

Study of crystalline mixed oxide and phosphate systems with a view to fix radioactive ions for nuclear waste disposal applications.

j) **Thermoelectric Studies:**

Thermoelectric materials are a class of compounds used for thermal to electrical energy conversion and vice versa (thermorefrigeration). They are basically semiconductors with optimum doping (both n- and p-type) to get maximum conversion efficiency in the temperature range of operation. The thermoelectric refrigerators are finding applications in space vehicles and in vibration and noise free refrigeration.

Skutterudite compounds are recently identified as thermoelectric materials. The general formula is A_2B_3 where A_2 is Co, Ir or Rh and B is As, P or Sb. In the present study thermoelectric properties of series of compounds of $CoSb_3$ family are being investigated.

2 **Academic Programmes:**

M.Tech : Solid State Technology
Ph.D. : Advanced Solid State Chemistry

2.1 **Students on Roll (as on 30.08.1997):**

Programme	I Year	II Year	III Year	IV Year	V Year	Total
Ph.D	2	--	--	3	--	5

2.2 Number of Scholarship/Fellowship holders :

Ph.D - Institute Scholarship - 5

2.3 Name of Student/scholar attended Conference/Seminar and Symposia abroad/India:

S.No.	Name of the Student	Programme	Name of the Conf./ Seminar /Symposia	Date & Venue
1.	M.Venkatesan	Ph.D.	DAE Solid State Physics Symposia, Cochin	27-31, Dec.97

2.4 Number of Degree Awarded in the last convocation:

Ph.D - 3

3 Faculty and their Development:**3.1 Faculty:**

S.No.	Name and Qualification	Major Areas of Specialization
01.	Prof. K. Gopinath Ph.D.	Materials Engineering, Powder Metallurgy, Tribology and surface Engg.
02.	Dr. U.V. Varadaraju, Ph.D. Associate Professor IISc., Bangalore	Materials Science and Solid State Chemistry. High Tc superconducting Materials. High Temperature oxide and phosphate based ceramics, R & D new Materials for nuclear waste disposal. Fast Ion conductors
03.	Dr.M.S. Ramachandra Rao, Ph.D. Assistant Professor IIT Kharagpur	Solid State Physics, Materials Science, Oxide electronic Materials, Magnetic Materials, HTSC Advanced Ceramics, Intermetallics and thin films

3.2 Short Term courses / Workshops / Seminars / Symposia / Conferences organised:

S.No.	Co-ordinators	Title	Period
1.	Dr. U.V. Varadaraju	Materials Research Society of India-Madras Chapter	Ferb 11-13, 1998

3.3 Short Term Courses/Workshops/Seminars/Symposia/Conferences / Training attended by the Faculty in recognised Academic Institutions and Public Sector Units:

S.No.	Name of Faculty	Title	Institution	Period/Duration
1.	Dr. U.V. Varadaraju	MR Spring Meet-98	California	April 13-17, 98

3.4 Special Lectures Delivered by the Faculty in other Institutions:

S.No.	Name of Faculty	Topic of Lecture	Venue & Date
1.	Dr.U.V.Varadaraju	Intercalation in	IISc, Bangalore, August 97
2.	Dr.M.S.Ramachandra Rao	Advances in Condensed Matter Physics	Pondichery Univ. Pondicherry Feb.26-18, 1998
		Perspectives in Solid State Materials	Osmania Univ. Hyderabad Mar 19-20, 1998

3.5 Visits Abroad by Faculty:

S.No.	Name of Faculty	Country Visited	Date	Purpose of Visit
1.	Dr.UV Varadaraju	California	April 10 - July 8, 1998	Present Paper and Visit Oregon Univ

4 Design and Development Activities:

Designed and fabricated a sample holder attachment for the closed cycle He refrigerator cold head with exchange gas (He) facility to facilitate magnetoresistances studies on bulk polycrystalline samples and thin films.

4.1 Brief and specific details of Process / Instruments / Equipment/ Software / Designed and Developed:

Lock in amplifier Model No. EG & G 7260 DSPP
Programmable Temperature controller 3400 (Lakeshore, USA)

4.2 Details of patents held in the Department with the date of filling:

Patents Awarded : G.V. Subba Rao, K. Krishnaiah, U.V. Varadaraju, K.D. Chandrasekaran and A. Baradarajan, " A method of, and an apparatus for, the preparation of oxygen enriched, orthorhombic, superconducting yttrium barium copper oxider powder", Indian Patent No. 173531 of 06.01.89 issued on 30.12. 1994.

5 Publications :

In referred International Journals:

S.No.	Author (s)	Title	Journal Vol. No. & Year
1.	K.N. Marimuthu M.S.Ramachandra Rao U.V. Varadaraju	Phase formation and superconductivity in $REBaSrCu_{3-x}(PO)_4O_y$ ($0 \leq x \leq 0.3$)	Physica C, 280, July 1997, 327-334
2.	M.Venkatesan U.V. Varadaraju K.V.S. Rama Rao	Structural and Magnetic Properties of $HoErFe_{17-x}Ga_x$ system	J.Magn. Magn. Mater. (182 (2)), 1998, 231-234

6 Distinguished Visitors to the Department:

S.No	Name of the Visitor & Designation	Date of Visit	Purpose of Visit
1.	Prof. K. Krishnan, IISc., Bangalore	03.04.1997	To conduct Viva-voce Exam
2.	Prof. Kishore, IISc., Bangalore	03.04.1997	To conduct Viva-voce Exam
3.	Prof. S. Sundaresan, TIFR, Bombay	02.09.1997	To deliver a talk
4.	Prof. Yasuo Kanematsu Osaka City Univ., Japan	22.10.1997	To deliver a talk
5.	Prof. M.S. Hegde, IISc., Bangalore	16.12.1997	To conduct viva voce Exam
6.	Prof. F.J. Berry, Head, Open Univerisity	20.3.1998	To deliver a talk
7.	Dr. Tata N. Rao, Tokyo Univ., Japan	03.04.1998	To deliver a talk

4.17 REGIONAL SOPHISTICATED INSTRUMENTATION CENTRE

The Regional Sophisticated Instrumentation Centre was established in 1974 to provide analytical services to Scientists/Faculties in Universities, National Laboratories, Industries and to IIT M.

1 Academic Programmes:

1.1 Students on Roll:

Programme	I Year	II Year	III Year	IV Year	V Year	Total
Ph.D	-	3	1	-	3	7

1.2 Number of Scholarship/Fellowship holders:

Ph.D - CSIR Scholarship - 10

1.3 Names of student/scholar attended Conference/Seminar and Symposia abroad/India:

S.No.	Name of the Scholar	Name of the Conference/ Seminar/ Symposia	Date and Venue
1.	R Selvan R.Resmi	Indo-Japan Conference	Jan. 16-18, JNCASR, Bangalore
2.	Ms. N Sandhyarani	Materials Research Soc. Conference	Feb. 98, IIT Madras
3.	M Venkataramanan	Materials Research Soc. Conference	Feb. 98, IIT Madras
4.	B Venkatesh	Materials Research Soc. Conference	Feb. 98, IIT Madras
5.	M Velayutham R Muthukumar Ms.Sujatha Venkataraman	1st Asia Pacific EPR/ESR Symposium	Jan 21-24, 1997, City Univ., Hong Kong

1.4 Number of Degrees Awarded in the last convocation:

Ph.D - 5

2. Faculty and their Development:

2.1 Faculty:

Name and Qualification	Major area of Specialization
P.T.Manoharan, Ph.D, FNA, FASC	Molecular Magnetism, Magnetic Resonance and Hemoglobin
T.Pradeep, Ph.D	Physical Chemistry, Spectroscopy, Monolayers, Ion Chemistry

2.2 Short-term Courses / Workshops / Seminars / Symposia / Conferences Organised:

S.No.	Co-ordinators	Title	Period
1.	Head, RSIC	Summer School on Sophistication in Scientific Instrumentation	March 13-16, 1998

3.3 Short-term Courses / Workshops / Seminars / Symposia / Conferences Training attended by the Faculty in recognised Academic Institution and Public Sector Units:

S.No.	Name of Faculty	Title	Institution	Period/Duration
1.	P.T. Manoharan	Hemichrone in Hemoglobin An EPR Study	Yokohama, Japan	July-Aug. 1997.
		EPR of Free Radical and In Vivo EPR	Yamagata, Japan	Oct. 1997
2.	T. Pradeep	Indo-Japan Conf. on Carbon Science	JNCASR, Bangalore	Jan.16-18, 1998
3.	P.T. Manoharan and T.Pradeep	Summer School on Sophistication In Sci. Instrumentation	RSIC, IIT Madras	March 13-16, 1998

3.4 Special Lectures delivered by the faculty in other Institutions:

S.No	Name of Faculty	Topic of Lecture	Venue and Date
1	T. Pradeep	Electron spectroscopy, Ion/ Surface collisions (3 lectures)	Mahatma Gandhi Univ., Kottayam, March. 97
		Chemical modification of monolayers by reactive Ion/ surface collisions	Central Leather Res. Institute, 1997
		Structure and dynamics of monolayers	Cochin Univ., Dec. 12, 1997
		Investigations of fullerene derivatives, tubulers and meters	JNCASR, Bangalore, 19, Jan. 98
		Tandem mass spectrometry, Surface enhanced Raman Spectroscopy (2 lectures)	Cochin Univ. of Sci. & Tech. 18, March 1998
2.	P.T. Manoharan	Fluxionality of chiral ligand and its consequences	Univ. of Fribourh, France, May 97
		NMR of magnetically coupled systems	Institutude France, June 97
		Columner stacking molecules and Ferromagnetism	Univ. of Neuchateel, June 97
		Hemoglobin - Free Radical Production	Univ. of Paris, June 97
		Free Radical production under Hypoxic conditions	EPR Centre, Johns Hopkinds Medical Centre, June 97
		Free Radical Production under Hypoxic conditions	Cancer REs. Institute, NIH, June 97
		Molecular Magnetism	Univ. of Pune, July 97
		Electrons In Magnetic Resonance	Calcutta Univ., Dec. 97
		Our experiences In EPR	IACS, Calcutta, Sept. 97
		Molecular Magnetism	Tokyo Univ., Oct. 97
FT-IR and EPR experiments	Inst. of Molecular Sc., Oct 97		

3.5 Visits abroad:

S.No.	Name of Faculty	Country visited	Date	Purpose of visit
1.	P.T. Manoharan	Switzerland	May 97	Lecture
		France	May-June 97	INSA Exchange visit
		U.S.A.	Jun-July 97	US-India Project
		Japan	Oct. 97	International Conference

3.6 Honours and Awards:

S.No.	Name of Faculty	Name of Award/ Honour	Awarded by	Awarded for	Date
1.	T. Pradeep	IUPAC Young Affiliate	IUPAC	Research	1997
		Fulbright Fellow	US-Educational Foundation	Research	1998
2.	P.T. Manoharan	Sadhan Basu Memorial Award	Indian National Sci. Academy	Research	1997

3.7 Books/Monographs authored or co-ordinated:

S.No	Name of author (s)	Title of Text Book/ Monograph	Publisher
1.	T. Pradeep	Frontiers in Physical Chemistry (in press)	Allied Publishers

3.8 Fellowships of Academies and Professional Societies:

Name of Faculty	Name of the Academy/Professional Society	Year of admission
P.T. Manoharan	Indian Academy of Sciences	1981
	Indian National Science Academy	1985

4 Design and Development Activities:

4.1 Brief and Specific details of Process/Instruments/Equipment/ Software Designed and Developed:

FT-EPR Spectrometer completed

4.2 Details of patents held in the department:

Patents filed

1. A Tandem Mass Spectrometer for ion/surface collision has been developed.
2. An arc/discharge evaporation cluster apparatus coupled with a mass spectrometer has been developed.

5 Research and Consultancy:

5.1 Sponsored Research Projects:

S.No	Title	Period	Funding Agency	Amount (in lakhs)	Co-ordinator
1.	Magnetic studies Resonance Liposomes	1994-98	DST	20.00	P.T. Manoharan
2.	Spectroscopic & Investigations of Transitions...	1995-9	CSIR	7.00	P.T. Manoharan
3.	Chemical modification...	1996-98	JNCASR	2.00	T. Pradeep
4.	Chemistry of metallo-carhedrenes	1996-99	DST	15.25	P.T. Manoharan, T. Pradeep
5.	Tandem Mass Spectrometer	1997-2000	DST	48.6	T. Pradeep

5.2 Industrial Consultancy:

S.No	Name of the Faculty	Title	Industry	Amount
1.	Dr.S.Subramanian	Analysis of Stronium	Chandrakant Consultants, Kerala	0.01
2.	Dr.T. Pradeep	Measure the transmittance of certain Opthalonic glasses	AI Optics Ltd., Chennai	0.01
		Neutral Density Filters-UV analysis	Sundaram Industries, Madurai	0.01
		Consultancy on Infrared Spectroscopy	Consultant Gastroenterologist, Chennai	0.15
		Analysis for milling chips of high speed steel	Addison & Co., Chennai	0.04
		Semiconducting Material analysis	Alagappa Univ, Karaikudi	0.03
		Characterization of Poly-methlonethaa crylic sample	AI Opitcals Ltd., Chennai	0.01

5.3 Journals Editorial Boards:

S.No.	Name of Faculty	Level	Professional Body
1.	P.T. Manoharan	Secretary	Indian National Science Academy

5.4 Publications:

1. Tilted orientation of molecular chains at the surface of a series of perfluoropolyether liquids: X-ray photoelectron spectroscopic investigation, V. Bindu, K. Smitha and T. Pradeep, Mol. Phys. 93 (1998) 85.
2. Characterization of alkanethiol self assembled monolayers by X-ray photoelectron spectroscopy, V. Bindu and T. Pradeep, Vacuum, 000 (1997).
3. Structural transitions of C60Br24 studied by infrared spectroscopy and differential scanning calorimetry, M.R. Resmi, L. George, S. Singh and T. Pradeep, J. Mol. Struct., 437 (1997) 11.
4. Thermal decomposition of C60Br24 and C60Br8; absence of sequential elimination, M.R. Resmi, K. Smitha and T. Pradeep, Proc. Indian Academy of Sci. Chem. Sci., 109 (1997) 221.
5. A glimpse into the fascinating world of fullerenes, T. Pradeep, Current Science, 72 (1997) 124.
6. Investigations of the depth of preferential surface ordering in liquids: a photoelectron spectroscopic investigation of liquid mixtures, V. Bindu and T. Pradeep, J.Chem. Phys. 106 (1997) 1231.
7. A nonempirical approach to the ground-state Jahn Teller distortion: Case Study of VC14, R. Bruyudonikx, C. Daul, P.T. Manoharan, E. Dreiss, Inorg. Chem. 36 4251-4256 (1997).
8. Hybrid Hemoglobins, B. Venkatesh, J.M. Rifkind and P.T. Manoharan, Progress in Inorg. Chem. (Ed. K.D. Karlin, John Wiley & Sons, Inc.) Vol.47.

9. Dynamic and Static Jahn-Teller Distortions in a Macrobicyclic Nitrogen Cage Complex of Ag(II), Chem, T.K. Kundu and P.T. Manoharan, Chem. Phys. Lett. 264 (1997), 334-338.
10. A Novel Polymer of Binuclear Nickel (II) Complex Bridged by 1,3-diaminopropane - structure and Magnetism, A. Ashokan, B. Varghese, A. Caneschi and P.T. Manoharan, Inorg. Chem. 37 (1998) 228-232.
11. Modern Applications of EPR/ESR, R. Muthukumar, B. Varghese and P.T. Manoharan, (from Biophysics to Materials Science) (1997) 287-294.
12. Magnetic and Spectroscopic Investigations of Tetra-4-t-Butylphthalocyano Complexes of -Oxo Bridged Iron(II) dimer, R. Heucher, G.V.R. Chandramouli and P.T. Manoharan, J. Porph. Phth.
13. Magnetic and Spectroscopic Investigations of Tetra-4-t-Butylphthalocyano Complexes of Cobalt(II) and Copper(II), J.Porph, Phth.
14. Self assembled monolayers of 1,4-benzenedimethanethiol on polycrystalline silver and gold films: an investigation of structure, stability, dynamics and reactivity, K.V.G.K. Murty, M. Venkataramanan and T. Pradeep, MRSI Meeting, IIT Madras, Jan 1998.
15. Alkanethiol self assembled monolayers on sputtered gold films: a surface enhanced Raman Spectroscopic investigation, N. Sandhyarani and T. Pradeep, MRSI Meeting, IIT Madras.

6 **Distinguished Visitors to the Department:**

S.No	Name of the visitor and Designation	Date of visit	Purpose of visit
1.	Dr. P. Raghunathan, All India Institute of Medical Sciences, New Delhi	27.01.98	Delivered lecture on Application of NMR Spectroscopy and Imaging in the Life Sciences
2.	Prof. Claude Daul, Institute of Inorganic Chemistry, Univ. of Fribourg, Switzerland	04.02.98	Delivered lecture on the calculation of Multiplets using DFT

4.18 COMPUTER CENTRE

1 Introduction:

The Computer Centre was established in 1973. It provides Central Computing resources – facility and support. The Centre started with IBM 370 and changed over to SIEMENS 7580-E in 1987. The mainframe was complemented with MX500 running Unix and several micro computers and PCs to support research and development in various areas. Applications for the Institute are also supported. The Siemens systems were shutdown with effect from Nov.95. The present IBM RS 6000 models 590 and 370 offer powerful numerical performance. Multiple computing units on a high speed network provide parallel (loosely coupled) and distributed computing platforms for research and development. Computer Centre also provides Campus network connecting all the departments and Internet facility using VSNL 64Kbps radio link. The facilities at the Computer Centre will enable students to learn the state-of-the-art computing techniques and methodology for problem solving in analysis and design. The installation provides new opportunities for computing for students and faculty apart from rendering the centre as one of the most modern among its peer academic institutes in the country.

The PC Maintenance cell provides services for repairs and maintenance of PCs in the institute including projects totaling to about 1200 machines. In addition Computer Centre has been serving the total computerisation of the following establishments of the IIT:

- | | |
|------------------------|-------------------------------|
| i. Administration | v. Engineering Unit |
| ii. Finance & Accounts | vi. Guest House Accommodation |
| iii. Hospital | vii. Hostels |
| iv. Library | viii. Stores & Purchase |

2 Details of Staff:

Name and Qualification	Major Area of Specialisation
Head	
Sastry V.V, Ph.D	Object oriented modeling & Simulation, Computers for real-time control, Computer Graphics, Enterprise Computing.
Senior Systems Engineer	
Dheenadayalu R, M.Sc (Engg)	Data Centre Administration. Operations, System selection. Application Software
System Engineers	
Jayaprakash S, M.S	Programming Networks, Methodology, Fault-tolerant Systems. Computer Distributed Systems.

Ramesh S.K, M.S

MIS, Data Management, Data Processing,
System Programming.

Systems Engineer Gr.I

Vatsala, M.S.

System Analysis & Design, Application
Software Development, Systems
programming, Database Management.

Systems Officer Gr.I

Sourirajan C.S, M.Sc.

System Administration, Programming
Languages, Small computers, Application
Software Development.

(Mrs) Vijayalakshmi Sirohi,
Ph.D. (on leave)

Software Engineering, Database
management Systems, Numerical
Computing, Application Software, Parallel
Computing, System Analysis & Design,
Systems Programming.

Senior Systems Officers

Ravichandran V, M.Sc.

Application Programming, Database
management systems, System Operations,
Networking, Systems Programming, System
Administration, Training industrial
Personnel on Mainframes.

Vijayaraghavan C.N, M.Sc.

Computer Applications in Industry,
Operating Systems, Systems Operation/
Administration, Networking.

Assistant System Engineer

Baman Banavath B.Tech (C.S)

System Analysis & Design, WINDOWS95,
Windows NT server Administration,
INTERNET, Database management System,
Powerbuilder, Visual Basic GUI Applications.

Junior Systems Officers

Ramalingam S, M.Sc
(Comp. Applns)

System Analysis and Design, Database
Management Systems, Software
Development (Unix)

Junior Systems Engineer

Sreekumar P.Y, B.Tech (C.S)

Computer Networks, Database
management Systems, Systems
Administration.

System Trainees on Roll: (1997-99):

- | | |
|--------------------------|--------------------|
| 1. Stanly Manual | 7. L Senthilkumar |
| 2. R Lakshmi | 8. Suresh Ganesan |
| 3. K S Vidyasankar | 9. R Vanitha |
| 4. V Surendra Kumar | 10. B Jayashree |
| 5. B Uthandaraman | 11. S Vijayakumar |
| 6. Madikonda Pavan Kumar | 12. K Punithavathi |

3 New Facilities/Equipment Added:

Additions:

Hardwares

2 Number Pentium II servers AIX version 4.0 CICS

Softwares

A number of simulators such as SABER, NISA, FLOW, MATLAB-SIMULINK, GIS, etc. are procured for an effective analysis, design and simulation of engineering systems.

Networking

The Compus network is expanded connecting more buildings. Currently about 15 buildings are connected using Remote bridges in the campus network. This network provides access to machines in Computer Centre and Internet.

3.1 Staff served in Committees:

- | | |
|-----------------|--|
| R. Dheenadayalu | a. Member in the Committee for Staff Welfare |
| | b. Selection committee for trainees in Central Electronics Centre |
| | c. Selection committee for trainees in Computer Centre |
| Banavath Baman | a. Selection committee for trainees in PC cell and Computer Centre |
| V. Ravichandran | a. Board Member for IC & SR. |

3.2 Institute Projects

S. No.	Title	Coordinators
1.	Hospital Information System	R. Dheenadayalu
2.	JEE Data Processing	C.S. Sourirajan, Ms. Vatsala Banavath Baman, C.N. Vijayaraghavan
3.	GATE Data Processing	S.K. Ramesh, V. Ravichandran
4.	M. Tech Admission	S.K. Ramesh, V. Ravichandran
5.	CARS/ARMS System Management	S.K. Ramesh, P.Y. Sreekumar
6.	Stores & Purchase Management	Dr. (Mrs.) Sirohi
7.	Library Automation	Ms. Vatsala, Mr. S. Ramalingam
8.	Hostel Mess Management	C.S. Sourirajan, V. Ravichandran
9.	Hostel Billing System	C.S. Sourirajan

S. No.	Title	Coordinators
10	Tramari Guest House Automation System	Banavath Baman
11	Employee's Database for IIT	P.Y. Sreekumar
12	Faculty Academic Profile	Banavath Baman
13	Hostel Employees Payroll	V. Ravichandran

3.3 Sponsored Projects:

S.No	Title	Period	Funding Agency	Amount (Rs.in Lakhs)	Co-ordinator(s)
1.	GIS Lab. For Engg Appl. Under Thrust Area in Tech. Education	1996-1998	AICTE	7.00	S.K. Ramesh
2.	Applications of Computer Graphics – under Modernisation	1995-1997	AICTE	8.00	Dr.M.K.Ramanujam
3.	Retainer Consultant	1996-1997	Complete Business Solutions(I) Madras	0.30	S. Jayaprakash
4.	Object oriented modeling of Power Electronics Systems	1996-1998	Volkswagen Foundation, Hannover, FRG	14.00 (DM 63.00)	Prof. V.V. Sastry
5.	Variable-speed Constant frequency generator applied to sea-wave energy extraction	1995-1998	NIOT, Delhi	16.00	Prof. V.V. Sastry

3.4 Industrial Links:

S.No.	Title & Industry	Amount (Rs.in Thousands)	Period	Co-ordinator(s)
1.	Re-engineering of PL/I for M/s INFOSYS, Bangalore	72.00	21.8.96 to 30.8.96	M.K. Ramanujam V. Ravichandran
2.	Re-engineering of PL/I for M/s TCS, Madras	80.00	30.9.96 to 11.10.96	M.K. Ramanujam V. Ravichandran
3.	System Studies for M/s Shaw Wallace madras	15.00	1.4.96 to 31.10.96	S.K. Ramesh C.N. Vijayaraghavan V. Ravichandran
4.	Re-engineering PL/I for M/s CBSI Madras	70.00	1.11.96 to 10.11.96	S. Jayaprakash V. Ravichandran
5.	Educational Consultancy for M/s Peacock Madras	200.00	1.9.96 to 31.8.97	M.K. Ramanujam
6.	Hardware Consultancy for M/s Peacock, Madras	100.00	1.1.97 to 31.12.97	R. Dheenadurai
7.	Mainframe Training for M/s BCC, Lesographics, DCELCOT	250.00	3.2.97 to 5.3.97	M.K. Ramanujam S.K. Ramesh V. Ravichandran C.S. Sourirajan
8.	Power quality issues in a substation lay out Having Power Electronic Loads SPB Projects& Consultants Ltd. Madras	50.00	Jan. 97	V.V. Sastry, R.K. Thirumala and M. Krishnamurthy
9.	Resonant link based AC-DC Power Supplies for UPS applications Tetra Controls Pvt. Ltd., Chennai 600 041.	50.00	Dec. 96	V.V. Sastry, V.R. Durgam

S.No.	Title & Industry	Amount (Rs.in Thousands)	Period	Co-ordinator(s)
10.	Shaw Wallace Co., Chennai. COBOL TO ORACLE Conversion Project	150.00	May.97 till date	S.K. Ramesh V. Ravichandran C.N.Vijayaraghavan

3.5 Research Publications:

- Jayaprakash and C.R. Muthukrishnan, "A permission based fault-tolerant distributed distributed mutual exclusion algorithm". International Journal of Computer Systems Science and Engineering
- Jayaprakash and C.R. Muthukrishnan, 'Critical Analysis of A fault-tolerant algorithm of mutual exclusion in a distributed system", The Journal of Systems and Software, Dec.96.
- Jayaprakash and C.R. Muthukrishnan, A dynamic tree based fault-tolerant distributed mutual exclusion algorithm, Fourth International Conference on Advanced Computing, Bangalore, Dec.1996.
- Sastry, "Electric Power Sector in India-Crisis & Opportunities", International Symposium, Alexander Von Humbolldt Foundation, Bad Honnef at Bonn, FR Germany, 14-17 April 1997.
- Sastry, "Object - Oriented Modeling and Design of Engineering Systems", National Seminar on Engineering Education for 21st Century, Indian National Academy of Engineering, January, 1997, pp.24-32.
- Sastry, T.M. Rangarajan & T.V. Sivakumar, "A PC Based Object - Oriented Modeling and Simulation of Power electronic Systems", National Symposium on Power System Instrumentation & Control, December 26-27, 1996, CPRI, Bangalore, pp.217-223.
- Sivakumar & V.V. Sastry, "Object-oriented Modeling Simulation and Optimisation of Power Electronic Circuits", IEEE, PESC, June 1996, Baveno, Italy, pp.581-585.

3.6 Books Published:

- Dheenadayalu, C++ and databases Vol-I, M/s Tata Mcgraw Hill Publishing Company - 1996-97.

3.7 Lectures Delivered:

The following lectures were given by the staff for various Industries/Organisation.

S.No.	Staff	Topic	Organisation
1.	S.K. Ramesh	VSAM	LASOGRAPHICS, Madras DC-ELCOT Madras
2.	S. Jayaprakash	PL/I,CICS	Lesographics
3.	C.S. Sourirajan	COBOL	Lesographics
4.	Ms. Vatsala	PL/I, MS Access	Lesographics

S.No.	Staff	Topic	Organisation
5.	Baman	MS Word-Power Point, Power Builder, Computer Awareness.	Lesographics
6.	V. Ravichandran	PL/I Cobol, C++	Lesographics
7.	C.N. Vijayaraghavan	JCL	Lesographics
8.	S. Ramalingam	DB2, Unix & C	Lesographics
9.	P.Y. Sreekumar	DB2	Lesographics

3.8 US Patent Application:

S.S. Venkata, N.R. Raju, R.A. Kagallwala and V.V. Sastry, Active power conditioner for reactive power and harmonic Compensation, US Patent Application, No.08/667, 924, June 20, 1996.

4.19 CENTRE FOR INDUSTRIAL CONSULTANCY & SPONSORED RESEARCH

1 Introduction:

The Centre for Industrial Consultancy & Sponsored Research was set up in 1973 to promote interaction with industries. It facilitates active participation of the faculty in various interactive programmes organised for the benefit of industries. The Centre also provides administrative support for carrying out consultancy and sponsored Research projects particularly for recruitment of project staff, maintenance of accounts and purchase of equipments and materials.

Some of the areas of major activities of the Centre are:

- Sponsored Research Programmes
- Plan Schemes
- Technology Development Mission Schemes
- Consultancy programmes: Project/research/retainer based
- Collaborative projects with foreign countries
- Industrial Associateship Scheme
- ISRO-IITM Cell Joint projects
- Projects sponsored by National Institute of Ocean Technology
- Entrepreneurship Development Programmes
- Technology Transfers
- Patents, etc.
- IGCAR-IITM Cell Joint Projects
- Projects

Prof S Srinivasa Murthy, Dean IC & SR, (from March 1998)

Prof K V S Rama Rao, (former Dean IC & SR), (till Feb 1998)

2 Staff:

Name	Specialisation
Dr D Balakrishnan	Chief Techno Economic Officer
Mr Y G Narasimha (till June 1997)	Senior Techno Economic Officer
Mr R Sundaram	Senior Tech Economic Officer
Mr V Suresh (from September 1997)	Senior Tech Economic Officer
Mr M Rajasekaran (till Aug 1997)	Assistant Registrar
Mr K Sekar (from Aug 1997)	Assistant Registrar

Mr B Ramaswamy (from Sep 1997)	Assistant Registrar (Project Purchase)
Mr M S Krishnamurthy (till March 98)	Special Officer (Project Purchase)
Mr P Ramachandran (till Aug 97)	Asst Registrar i/c (Finance & Accounts)
Mr P Bharathamani (from Aug 97)	Asst Registrar(F & A)

3 Sponsored Research:

58 Projects of value totalling to Rs 675 lakhs were taken up by the Institute during 1997-98.

3.1 Plan Schemes:

Plan Schemes of Ministry of Human Resources Development sanctioned to the Institute in the emerging areas such as CAD-CAM, VLSI, Telematics, Fibre Optic Communication, Environmental Engg, etc. have continued.

3.2 Consultancy Programmes:

732 consultancy assignments of value totalling to Rs 499 lakhs were taken up during 1997-98. Research Based Industrial Consultancy activity contributes nearly Rs 165 lakhs of the total value of the assignments. Also 17 faculty were retained as consultants of various industries. Interdisciplinary programmes for providing consultancy to Tamilnadu Pollution Control Board continued.

3.3 Collaborative Research Projects:

Ten joint research projects have been taken up through BMBF, Germany apart from the earlier six GTZ ongoing projects for development of facilities in Catalysis, Material Science, Electronics, Production Engineering, Metallurgy and Ocean Engineering Centre, which have continued. Also several projects under Indo-US and Indo EEC, Indo-French, etc., have continued.

3.4 Industrial Associateship Scheme:

The response from the industry towards this scheme has been highly encouraging. More than 265 industries are members of this Scheme. (Large scale - 26, Medium scale - 133 & small - 110). The following Technology Appreciation Programmes were organised.

- Refrigeration under Cryogenic conditions
- Recent Trends in Fuzzy Logic Control
- Mechanics of Engg. Systems
- Environmental Pollution Control

Abstracts of M.Tech theses were published for the benefit of the Associates.

3.5 Other Programmes:

IGCAR Cell:

Three projects for a total value of Rs.38 lakhs was sanctioned during the year.

ISRO-IITM Cell Joint Projects:

This is an ongoing research activity sponsored by the Indian Space Research Organisation where research projects of interest to ISRO are being taken. One project for a value of Rs6.88 lakhs was sanctioned during the year.

3.6 Patents:

During the year, applications have been made for taking 6 patents in the name of the Institute and 2 have been sanctioned.

3.7 Visitors:

The following visited the Institute during the year:

1. Ford delegation
2. Delegates from Swiss Federal Institute of Technology
3. Experts from the Centre for Strategic International Studies (CSIS)
4. Prof Harcharan Singh, Dean School of Applied Science, Nanyang Technological University.
5. German delegation of Rectors/Presidents of Tehnical Universities
6. Delegates from Bahrain Training Institute
7. Dow Chemicals & Co., Michigan
8. Delegates from Aachen University of Technology
9. Dr Ashok Dhingra of Dupont, USA.
10. Prof K R Dronamraju, President, Foundation for Genetic Research, Houston, USA.

3.8 Technology Development Missions:

The projects taken up under the following two Missions were continued during the year and are expected to be completed by March 1999.

- * New Materials
- * Energy Efficient Technologies & Devices

3.9 MoUs Signed by IIT Madras with other Organisations/Institutions during 1997-98:

1. April 1997 DRDL, Hyderabad for study of welds and stress corrosion of maraging Steel.

2. April 1997 Small Industries Development Bank of India, Madras for institutionalising programmes of relevance to them.
3. July 1997 The Southern India Regional Council of the Institute of Costs & Works Accountants of India (SIRC of ICWAI) to organise research and training programmes.
4. October 97 DRDL, Hyderabad to conduct basic and advanced research and tackle multi-disciplinary problems of mutual interest December 97.
5. Shinshu University, Japan for student Exchange Programme.
6. December 97 IOWA State University, USA for promoting research, exchange of faculty & students.
7. December 97 ERICSSON for a consultancy project.
8. January 98 Swiss Federal Institute of Technology, Switzerland for exchange of faculty, students and technical publications and collaboration in organising seminar, conferences and other academic meetings.

4.20 CENTRAL ELECTRONICS CENTRE

1 Introduction:

The Central Electronics Centre (CEC) was established in 1971. It offers various technical services like maintenance, servicing, manpower development and calibration of electronic instrumentation.

1.1 Training Programme:

Training Programme of one year duration was started on 6.3.98. Thirteen candidates joined the programme.

Three training programmes of two weeks duration for System Designers and nine programmes of one week duration, in the area of Solar Photo Voltaics have been conducted in collaboration with Siemens Solar Industries, USA.

1.2 New facilities added and major equipment procured:

Mixed Signal Functional Test System - Rs.3.0 Lakhs

1.3 Important Consultancy assignments completed:

S. No	Title of Assignment	Organisation	No. of Assign	Amount (in lakhs)	Co-ordinator
1	Special function modules for CNC Machines	HAPP, Min. of Defence, Trichy	26	4.77	Dr.M.Kumaravel
2	CNC M/C Modules	Heavy Vehicles Factory, Min. of Defence, Avadi	15	2.47	
3	PLC Modules AC Drives	Engine Factory, Min of Defence, Avadi	2	0.46	
4	Servicing of controllers for Textile Machinaries	Euro Tech, Madras	2	0.28	
5	Servicing of Computing Voltmeter	FCRI, Palghat	1	0.16	
6	Servicing of CNC M/C modules	GEC Alsthom, Pondichery	2	0.56	
7	Servicing of Power Analyser	BHEL, Ranipet	1	0.22	
8	Servicing of Mass Flow Meter	ANSALDO, West Bengal	1	0.28	
9	Servicing of CNC Machine Module	Ashok Leyland, Madras	1	0.175	
10	Servicing of Strain Indicator	Shardlow Industries, Hosur	1	0.21	
11	Servicing of Ultrasonic Test & Measuring System	SPIC Electronics, Madras			

Under RBIC assignment scheme, for Electrodynamc Industries Ltd., Madras the high speed portable electric drill (with built in inverter) was developed and it is undergoing field trials.

1.4 Staff strength:

The centre has 10 technical, 4 administrative and 5 project staff.

5 CENTRAL SERVICES

5.1 Central Library:

The Central Library is well equipped with all modern facilities and rich resources in the form of CD-ROM, On-line databases, printed and non printed documents on Applied Science, Engineering , Technology, Humanities, Social Sciences and other new emerging areas.

CD-ROM Literature Search Service:

CD-ROM literature search service is now available on a Local Area Network (LAN) with 6 user terminals. The service is available from 9.00 am to 8.00 pm on working days and 9.00 a.m. to 5.00 p.m. on Saturdays, Sundays and other holidays. The databases available are INSPEC, Ei COMPENDEX PLUS, GRANTS DATABASE, CURRENT RESEARCH WORLDWIDE, FINDEX and ESPACE WORLD.

Internet Service:

Internet service with three terminals is now available to library members. It is extensively used by our students, faculty and industrial associates.

On-Line Information Retrieval Service:

The Central Library also provides on-line information access to more than 400 databases including industrial databases through DIALOG information service. The service has been used by the members of Industrial Associate Scheme (IAS) besides IIT faculty, students and staff of the Institute.

Library Orientation:

The Central Library has made arrangements for providing continuous training to the users including industrial associates to familiarize with search techniques to search CD-ROM databases.

Library Automation:

The Central Library has automated Circulation Control which is working satisfactorily. A&P Module is in the operation for ordering new publications and printing catalogue cards. CDS/ISIS package is used to generate various in-house reports. Periodicals holdings have been automated. Databases on Ph.D theses submitted to IIT Madras, directory of e-mail addresses of Libraries and Information Centres in India and abroad, database of faculty publications and Annotated Guide to reference sources available at IIT Madras Library have also been created.

Staff Training:

Training programme on WINDOWS 95 was conducted for the benefit of library staff during 8.12.97 to 11.12.97.

In addition to the above, the following staff members have attended the following programme.

1. Mr. T. Ramakrishnan, SPA and Mrs. Zahida Basha, SPA attended one day Seminar on **Computer Network Awareness for Librarians** organised by INSDOC, Madras on September 13, 1997.
2. Mr. P.N. Swamy, SPA (SG) attended Workshop on **Corporate Publishing and Presentation** organised by Computer Society of India, Madras Chapter during 20-21 February 1998.

Special Presentation:

The Central Library had arranged the following presentation for the benefit of faculty and students.

1. Presentation on "Sciencetech Databases and Citation Searching" by Mr. N.V. Sathyanarayana, Chariman & Managing Director, Informatics India (Pvt) Ltd., Bangalore on 17th September 1997.
2. Presentation on "An overview of STN Databases on Chemistry and Patents" by Dr. T. Hoyos and Dr. B. Matz, FIZ Karlsruhe, Germany on 27th October 1997.

New Services Started:

Contents Page Service for the selected journals received in the library has been started. The departments of Mathematics, Electrical Engineering and Metallurgical Engineering are already utilising this service.

Image Scanning:

Hewlett Packard Scanjet 4C flatbed, single-pass colour scanner is used to create professional documents with 600 dpi superior results. Scans are automatically optimised for printing, display or electronic filing. It has text conversion facility with OCR software and accuPage technology. It has added advantage of scanning pictures directly into application using TWIN or OLE. This service is extensively utilised by students, faculty and industrial associates.

Staff User Meet:

Recently the Central Library has started organising staff user meet to enable the library staff and user to interact with each other. Distinguished professionals from other institutes as well as from our library delivered lectures on various topics. The following six staff user meets were conducted during the period under report.

NAME OF THE SPEAKER	TOPIC	DATE
Dr. Harish Chandra Librarian, IIT, Madras	Resource Sharing in S&T Libraries & Information Centres	16.10.97
Mrs. Manorama Srinath Head in-charge Dept. of Library & Information Science, University of Madras	Expert Systems for Librarians	11.11.97

Dr. Ramesh Babu Reader Dept. of Library & Information Science, University of Madras	Preservation of Information Materials in Libraries	05.12.97
Mr. M. Koteswara Rao Deputy Librarian IIT Madras	Total Quality Management in Libraries	21.01.98
Dr. Abbas Ibrahim Cairman & MD Rilisar, Chennai	Total preplanning for Information Management	17.02.98
Mr. T. Murugesan British Council Library, Madras	Information support services: The British Council Experience	31.03.98

Publication of Brochures/Catalogue:

The Central Library brought out the following brochures and catalogue giving important information for the benefit of library users.

CD-ROM Information Service
Printing, Reprography and Publication Services
Catalogue of Current Periodicals.

OPAC System:

The Central Library has provided 4 terminals exclusively for searching the books available in the library. The particulars of a book can be obtained by keying in either author, call no., acc. no. and also how many books borrowed by a particular member and when these are due can be searched.

Upgradation of Hardware & Software:

The Central Library imported a high-end dEC Alpha A 1000 server with 330 MHZ processor, 128 MB RAM, 4 GB HDD, 12X CD drive and Min CTD to be used as library file server. New library software based on ORCALE is under compilation OPAC CD-ROM workstations etc. have been replaced with new Pentium Pcs with 120 MHZ, 8 MB RAM, 1.2 G.B. HDD preloaded with windows '95 operating system. Also, 15 Pentium Pcs were installed in various Sections/Divisions including Reprography & Printing and Office of the JMPS to speed up the activities. One pentium PC was installed as a Multimedia workstation and 2 Pentium Pcs with 17" colour monitors for internet workstations. In addition, 3 HP laserjet printes and a colour laser scanner were also installed for high quality printing jobs in various sections. An Ethernet bridge has been installed between the libray and the Computer Centre to enable the users to access internet and library's OPAC through campus LAN.

Upgradation of Reporgraphic Facility:

Two latest model Xerox machines were acquired under buy-back scheme for the benefit of users.

Library and Information Services Statistics:

a. Membership:

Institute Members:

Staff	...	1200
Students	...	2528
Alumni Members	...	42
Corporate Members	...	4
Industrial Associateship Members	...	249
Consultation Permits	...	1850

b. Collection Development Acquisition of Publications:

Books/Monographs	...	1531
Theses	...	203
Pamphlets and Reports	...	50
Microfilms/Fische	...	12
Book-Bank (General)	...	3
Book-Bank (Weaker Section)	...	16
Current Periodicals by subscription	...	700
Current Periodicals by Exchange/Gift	...	86
Back Volumes of periodicals	...	2322
Total Accessions at the end of March 98	...	3853

c. Library and Information Services:

Circulation:

Number of Readers visited	...	1,82,030
Number of volumes issued	...	1,38,780
Number of Volumes issued through Book Bank (General)	...	4,850
Number of Volumes issued through Book-Bank (Weaker Section)	...	3,450
Overdue & other charges collected	...	2,48,863
Xerox charges collected	...	3,32,269

Reservation of Books:

Registered	...	13,632
Fulfilled	...	10,200

Loans:

Department Loan (under issue)	...	5,431
Permanent Loan issued	...	741

Inter Library Loans:

Borrowed from other Libraries	...	250
Loaned to other Libraries	...	30

Literature Search:

CD-ROM search by users ... 3900

Reprint service:

From International Sources i.e. British Library 975 pages
INSDOC etc

Supply of reprints to other libraries 2300 pages

d. Audio-Visual Service:

Number of Video Cassettes acquired 5
Number of Video Programmes screened 17
Number of persons attended 178

e. Reprographic Service:

Number of Xerox copies supplied 956551
DTP output 4100
Number of copies printed on Rotoprinter 258590

f. Binding:

Number of Books and journals bound (internal) 1200
Number of Miscellaneous publications bound (internal) 500
Number of Books & journals bound through external binders 3329
Departments works (Miscellaneous) 2000

g. Visitors to the Library:

Student Groups and other visitors 28

Participation of Library Officers in Conference/Workshops/Lecture delivered

Dr. Harish Chandra, Librarian

1. Gave a presentation about library facilities to the participants of NBA training workshop on 22.09.1997 in IC & SR, IIT, Madras.
2. Participated in a Seminar on recent trends in information technology, organised by IGCAR, Kalpakkam on 23.04.1997.
3. Participated as an expert in the workshop on curriculum development in the area of Library and Information Science, organised by Makhanlai Chaturvedi National University of Journalism, Bhopal on 28.02.1998 to 01.03.1998.
4. Participated in the Aerospace Information Panel meeting held at IIT, Kharagpur between 08.09.1997 to 12.09.1997.
5. Participated in the Aerospace Information Panel Meeting at Bangalore and presented the project proposal on 26.03.1998.
6. Participated in patents awareness workshop organised by DST & Meenakshi College, Madras on 24.01.1998.

7. Delivered two lecture on role of Information technology in resource sharing and information resource management, Academic Staff College, Osmania University, Hyderabad on 06.11.1997 to 07.11.1997.
8. Delivered lecture on resource sharing for In S&T libraries and information centres at IIT, Madras on 16.10.1997.
9. Organised a half a day seminar on scientech database and citation searching in association with Informatics India Ltd, Bangalore on 17.09.1997.
10. Organised special presentation of Dr.T. Hoyos and Dr.B. Matz of FIZ, Kartsruhe, Germany on STN database on chemistry and patents on 27.10.1997.
11. Published a paper on continuous quality improvement in library and information science teaching through distance education in India: Approaches and Experiences. Information and Society a Festschrift volume edited by L.S. Ramaiah etal, ESS ESS Publication, 1997 p 121-131.
12. Published paper on impact of Prof. S.M. Tripathi on Indian Library Science research scholars: some personal reminiscences, Indian Journal of Information, Library and Society, Vol. 10 No.3-4 1997.

M. Koteswara Rao, Deputy Librarian

1. Delivered an invited lecture on CD-ROM Database and Networking at National Institute of Port Management, Madras for the participants attending the "Workshop on Library & Information Services - latest trends in modern library systems" held during 31st July and 1st August 1997.
2. Participated in the Training workshop on Internal Quality Audit (ISO 9000) organised by the Institute during 19-21 September 1997.
3. Conducted an in-house training programme on WINDOWS 95 for all the professional library staff at the Central Library during 8th & 9th December 1997.
4. Delivered a Lecture on "Total Quality Management in Libraries" as part of the monthly Staff-User Meeting held in the Central Library, IIT, Madras on 12th January 1998.
5. Delivered an invited lecture on "Information Resources on the INTERNET at the "State level conference on Internet" organised by Erode Arts College, Erode, held during 27-28th March 1998.

5.2 Central Workshop:

The various units of Central Workshop are Carpentry and Pattern Making, Fitter's and Tool Maker's Shop, Machine Shop, Gear Shop, Gear Testing, Instrument Shop, Electrical Shop, Foundry and Heat Treatment, Welding Shop, Automobile Repair, Planning Office and Stores. Some of the special facilities available are gear cutting, gear grinding and testing (spur and bevel gears) Jig grinding, copy milling, manufacture of precision scales, precision instrument repairing, calibration of pressure gauges and dynamic balancing of rotors etc. Central Workshop undertook fabrication of components, gadgets, apparatus etc. required by the various Departments for research and development projects in addition to the regular training programme for the B.Tech students (700 students). For giving training in advanced machines like CNC machines, Central Workshop procured 3 CNC Lathes (Training) and 1 CNC Milling Machine. New laboratory for Pneumatics is being set up. An advanced Workshop course was conducted during (May-June 1997) for B.Tech. students.

465 number of Work Orders were received during the period under report. During the above period many works of industrial consultancy and sponsored research nature were undertaken and completed. In addition to the above, Institute buses and vehicles were maintained by Central Workshop.

5.3 Central Glass Blowing Section:

The Central Glass Blowing Section (CGBS) is one of the important infrastructural facilities of the Institute since its inception in 1972. Being a central facility, this section is engaged in the design and fabrication of sophisticated scientific glass apparatus for research and development in the various departments. Besides, meeting the in-house needs, this section also frequently undertakes jobs for the industrial consultancy programme.

220 work orders were received and completed during April 97 to March 98. Amount earned in terms of service charges during the above period is Rs.23,394/-.

5.4 Central Photographic Section:

The centre caters to the various photographic needs of the Departments and Centres of the Institute as well as various sponsored and consultancy projects. The jobs include photographic coverage of various important functions such as Convocation, Conferences held in the Institute. Besides this we render assistance to various departments for the technical photography. The inhouse processing and printing work is confined to black and white photography. This centre the requirements of research students/faculty. We extend facility for colour photography, however, the processing and printing is done from outside as the volumes handled are not commercially viable. The Central Photographic section handled 675 job orders during 1997-98 to a value of Rs.70,000/-. The prices charged for the various services are only for materials and chemicals.

Academic : Assistance in Technical Photography for various Projects,
Departments.

- Administration : *
- * Coverage of important Institute functions such as Convocation, Institute day, Independence day, Sports day etc.
 - * Photographic coverage of the farewell function, for retiring staff of the Institute.

5.5 Central Gas Supplies Unit:

The Central Gas supplies unit is administered by a Project. The unit procures industrial gases and special gases from various manufacturers/suppliers and issues to various departments/laboratories of the Institute for research and practical classes.

Industrial gases : Oxygen, Nitrogen, Dissolved Acetylene, Argon & Hydrogen.

Special gases : High purity Argon, high purity Oxygen and high purity Nitrogen.

5.6 Centre for Continuing Education:

The Centre for Continuing Education (CCE) at IIT, Madras was established in June 1986, by merging together the different units connected with Quality Improvement Programmes, Continuing Education and Curriculum Development activities at the Institute.

Quality Improvement Programme (QIP):

Since inception 265 faculty members from other institutions have obtained Ph D Degrees and 368 faculty members have obtained M Tech degrees under this Programme.

During 1997-98, 8 Ph D scholars and 8 M Tech students were admitted to the above programme. 18 Ph D scholars and 14 M Tech students were on rolls during 1997-98.

Short Term Training Programme (STTP):

Under QIP, 5 courses were conducted during 1997-98, mainly for teachers of Engineering Colleges, but also involving a few participants from industries.

To date, about 168 Short-Term Courses have been conducted under the QIP, and about 3757 teachers from various engineering colleges have participated and benefited from these Courses.

Curriculum Development Cell (CDC):

A more comprehensive Overall Curriculum Development Cell is now functioning in order to cater to the needs of all the Departments. The course materials in the form of modules are developed. On request, these materials will be sent to various engineering colleges / industries.

Model Curriculum Development (MCD):

AICTE has entrusted with our institute the development of Model Curricula in the following areas:

1. Metallurgical Engineering
2. Naval Architecture

The main objective of this programme is to evolve a common curriculum for a particular discipline throughout the country. The complete curriculum book is available in the CCE Office for the above two areas.

Book Writing Scheme (BWS):

Recently, norms have been changed to the advantage of authors to help and encourage writing of text books suitable for adoption not only in this Institute, but also in the other engineering colleges. So far 26 books have been published and 9 books are under preparation by the various faculty members.

Continuing Education Programmes (CEP):

Our Institute faculty members organise several short-term courses for professionals from industry and R&D establishments on need-basis. About 25 to 35 such programmes are organised every year. A total of 25 courses were conducted and about 625 participants have attended these programmes during 1997-98.

Educational Consultancy Programme (ECP):

Recently many industries have felt that there is an urgent requirement of imparting training to their employees at different levels. Even though, Continuing Education Programmes (CEP) meets their requirement to some extent, it may be noted that CEP programmes are course / instruction oriented. Hence, it was decided to start Educational Consultancy Programme (ECP) for industries. On the specific request of industries, a programme is floated. The course contents and syllabus are drawn with mutual consultation. The programme may run extending from several days to several weeks. Practical training is also imparted. 4 proposals have been approved so far.

5.7 Educational Technology Cell:

The Educational Technology Cell at IIT, Madras was established in 1987 with the principal objective of producing resource materials, mainly employing the media of video, audio-visual and computer assisted learning. A fully equipped studio has been set up for the production of these resource materials. Also a multi-media system with 3D graphics/animation facility was installed. A video lesson production workshop was conducted for IIT-Madras faculty members. As on 31.3.98, 35 video programmes were completed, and a few more are under process. A sum of Rs.7 lakhs were earned through the sale of video programmes.

6. STUDENT AMENITIES AND ACTIVITIES

6.1 Hostel:

All students admitted to IIT Madras are required to reside in the hostels in the campus. There are 11 men's hostel and 1 ladies hostel with a total of 2396 single rooms and 60 double seated accommodation. During the period under report, there were 2048 men and 245 women students in residence.

Each hostel is administered by a Warden and Assistant Warden. The Warden is assisted by a Hostel Council consisting of Student Secretaries and the Assistant Warden in day-to-day functioning of the hostel. The Hostel Management is a centrally administered body and is in overall charge of the functioning of all the Hostels and the Central Supplies Unit. There are 278 hostel employees and they are responsible to the Hostel Management through the respective Wardens of the hostels. The Chairman, Council of Wardens, is the Chairman of the Hostel Management. He is assisted by an Assistant Registrar and other supporting staff. During the period under report, the following officers were in position.

Chairman, Council of Wardens and
Hostel Management

Dr.B.Viswanathan
Professor of Chemistry, upto 28.2.98
Dr.K.Ramar
Professor of Electrical Engg, from 1.3.98

Assistant Registrar

Sri K. Sekar, upto 12.8.97
Sri. P.Paramanandam, from 13.08.97

Name of the Hostel/Unit

Warden

Alakananda

Dr.R.P. Viswanath, Asso. Professor of
Chemistry

Brahmaputra

Dr. D.V.S. Murthy
Professor of Chem. Engg. (upto 31.1.98)
Dr.N.Ramesh Babu
Asso. Professor of Mech. Engg.
(from 09.02.98)

Cauvery

Dr. S. Radhakrishnan
Professor of Applied Mechanics

C.S.U.

Dr.B. Viswanathan
Professor of Chemistry (upto 28.2.98)
Dr.K.Ramar,
Professor of Elect Engg. (from 01.03.98)

Ganga

Dr.Shreesh Chaudhary
Professor of Hum. & Soc. Sciences

Godavari	Dr. M.N. Sudheendra Rao Asso. Professor of Chemistry (upto 30.4.97) Dr.L.Vijayaraghavan Asso. Professor of Mech. Engg. (from 01.05.97)
Jamuna	Dr. K. Ramar Professor of Elec. Eng. (upto 12.06.97) Dr.Job Kurian, Asso. Professor of Aero. Engg. (from 13.6.97)
Krishna	Dr. S. Santhankumar Professor of Aerospace Eng.
Mandakini	Dr. U.S. Premananda Shet Professor of Mechanical Eng.
Narmada	Dr. T. Swaminathan Asso. Professor of Chem. Eng.
Saraswathi	Dr.P.C. Deshmukh Professor of Physics
Sarayu	Dr. Nandita Das Gupta Asst. Professor of Elec. Eng.
Tapti	Dr. R. Palaninathan Professor of Applied Mechanics

6.2 Central Supplies Unit:

The Central Supplies Unit is administered by a warden. It procures milk under the Milk Supply Scheme from the nearby villages and from Tamilnadu Co-operative Milk Producers' Federation Ltd. and distributes it to the student hostels, the residents of the campus and the staff of the Institute residing around the campus.

Under the Provision Supply Scheme, the unit procures the items of major consumption from the wholesale suppliers and distributes them to the hostels, thus economising on the mess expenditure in the hostel messes.

6.3 Medical Facilities:

Medical facilities are provided to the students in the well equipped Institute Hospital. Advice is given to the students on a wide range of health problems. The details of medical facilities available are given in Chapter 10 - Campus Amenities.

A sum of Rs.79,975/- was reimbursed to students/scholars for the treatment undertaken by them from the Medical Emergency Fund during the year 1997-98.

6.4 4 (TN) Air SQN (TECH) NCC:

This Senior Division Airwing (Tech) NCC unit is functioning at IIT Madras from 16th September 1965. It provides NCC training exclusively to the students of the Institute. Regular Air Force Officers and Airmen as PI Staff are posted to this unit to impart the training. Unit strength is augmented by two Associate NCC Officers and other supporting civilian staff drawn from the Institute. NCC syllabus includes Drill, Civil Defence, Weapon Training, Leadership Course, Health and Hygiene, History of Indian Air Force, Principles of Flight, Radio/Radar Navigational Aids, Air Armaments, Avionics and Instrumentation.

Highlights of the Training for year 1997-98:

- Range firing practice on Revolver and 12 Bore gun.
- Blood donation camp organised at NCC Building through the Red Cross Society, Chennai on 28th March 1998 in which 66 cadets donated blood.
- Under the social service activities, the cadets have collected around 150 plants and planted them in front of the NCC building during Nov. 97.
- The NCC unit helps to a sense of discipline, comradeship, a spirit of adventure and quality of leadership in the mind of the Cadets of the Institute.

Offg Commanding Officer	:	Lt Col P Sangili
Associate NCC Officers	:	Fg. Offr. A Mani Plt. Offr. S Neelamani

6.5 Gymkhana:

1

Sports Activities:

Inter Collegiate Invitation Tournament (Sportfest) :

The Institute Gymkhana organised the above tournament from 9th to 12th October 1997 and for the first time since its inception, outstation teams also took part in this competition. This year being the Golden Jubilee of our Independence, this Tournament was a big success both in terms of participation and quality.

Our teams performed creditably well in all the events. Our Foot ball, Badminton and Table tennis teams reached the semi-finals, while Basket ball, Tennis, Volley ball and Hockey teams entered the quarter finals before narrowly losing to the top seeds.

The experience gained was the launching pad for our contingent for spirited performance at the Inter IIT Sports Meet.

IIT Sportstar Cricket Tournament :

The most prestigious Cricket tournament in the city for college students sponsored by "Sportstar" conducted between 30.8.97 and 27.9.97 with sixteen teams with each other for top honours witnessed a high level competition.

In one of the severely contested and closest contests our IIT A team lost to Anna University (semi finalists) very narrowly by a margin of only one run in the second round. Gurunanak college retained the championship defeating Pachalappah's College.

Inter IIT Aquatic Meet:

This meet was held from 3rd to 5th of October 1997 at IIT Kharagpur. Five IITs excluding IIT Guwahati participated in the above meet in which our contingent was placed overall second in the Aquatics events and third in Water polo event.

Inter IIT Sports Meet:

This year, the meet was held at IIT Kharagpur from 15th to 20th December 1997. Coaching for various games were started in right earnest from the beginning of October '97 and the rigorous conditioning camp from 2nd to 11th December, suffered severe set back due to heavy downpour resulting in physical conditioning only to our outdoor events like Foot ball, Cricket, Hockey and Tennis.

The General Championship was won by IIT Kharagpur with a tally of 88 points and our contingent came second with 48 points. Our boys won Gold Medal in Basket ball, Volley ball and Hockey; Silver Medal in Cricket; and Bronze Medal in Tennis and Weightlifting. Our girls team won Gold Medal in Basket ball.

All India Inter Collegiate Invitation Basket ball Tournament:

This much coveted sports events attracting outstation teams from Kerala, Karnataka, Andhra Pradesh and Tamilnadu conducted from 14th to 18th January '98, witnessed nail biting and exciting finish right through (from the inauguration to the finals).

Our boys went down to PSG College from Coimbatore (semi-finalists and one of the top seeds) in close but keenly contested 2nd round encounter.

Institute Open Bridge Tournament:

The Institute Open Bridge Tournament was conducted from 20th to 22nd March 1998. This being a prestigious one - with participation from top professionals in the city and students and faculty contesting on an equal footing - witnessed close competitions.

Inter Hostel Tournament :

The tournaments staggered through - out the academic year were keenly contested and Mandakini Hostel wrested the Schroeter Trophy from the General Championship from Jamuna Hostel, with 117 points and a close second was Ganga with 115 points.

Non Media Tournaments:

3-a-side Basket ball and Volley ball, 9-a-side Cricket and 6-a-side Foot ball events has as usual attracted large participation with students spectators egging their teams for the 'kill' were also held.

2 All the Gymkhana facilities like Fitness club, Badminton club and Tennis club functioned well during the period under report.

3 Swimming Pool:

The swimming pool is functioning very well and it was maintained on good standards. Yearly 'Learn to Swim' summer coaching camps for children of the city commenced from 6th April '98 onwards. The users were highly satisfied with the perfectly maintained Swimming Pool.

The 5th March 1998 was red letter day in the history of Gymkhana. Mr. Neil Harvey, Australian Cricketer of yester years dedicated the Cricket Pavillion. This function was attended by all India Cricket stars like, Anil Kumble, Javagal Srinath, Debashish Mohanty, Rahul Dravid, Robin Singh and Harvinder Singh.

Deepak Devegowda who had participated in an amateur Motor cross event held by Madras Motor Sports Club. He had also participated in Marlboro Asia Pacific Road Racing Championship which is an International event. He is currently the Institute cycling captain.

National Sports Organisation (NSO):

As per the Government of India's decision for improving the sports with special reference to keep fit, our Institute is taking students for 11 games and events.

This year nearly 90 first year undergraduate students were registered. Officials from various Games Federations were engaged in giving vigorous coaching.

The noteworthy performance of sizeable first year NSO students at the various tournaments viz. Inter IIT Sports Meet and All India Inter Collegiate Invitation Basket ball tournaments is worth special mention here.

6.6 Cultural Activities:

Independence Day Celebrations:

The academic year 1997-98 was very eventful on the cultural front. The Golden Jubilee Celebrations of Indian Independence were held on the 14th and 15th August 1997. The entire campus community participated in large numbers in the events. A special formation of thousands of children was organized in co-operation with "**Banyan**" (a social service organization) and several schools in the city, to reflect the theme of independence.

Gandhi Jayanthi was celebrated on 02 October 1997 with Bhajans and invited talks.

Bharat Utsav' 97, the festival of India's rich traditions and culture, was organized on 03, 04, and 05 October 1997 on a larger scale than in earlier years. Several new events and activities were introduced in the festival in which some of the competitions were opened up for participation by senior school students and also by the citizens of Chennai.

The Inter-Hostel cultural competitions were a closely contested affair with Saraswati Hostel claiming the Lit-Soc trophy. Dramatics, photography and choreography were introduced in the competitions. The Board of Students adopted a policy to avoid giving money as prizes in all the Gymkhana - sponsored events and competitions.

Saarang '98, the annual national -level cultural festival, was organized from 22 to 27 January 1998. A record number of outstation and local teams participated in the festival. Financial support by sponsors also touched a new high. The festival received unprecedented publicity and coverage in the national and local press and media both before and after it. Several major changes were introduced in the organization and conduct of the festival. The judges for the events, that were either introduced for the first time in any cultural festival in India or were significantly modified in their conduct, were full of praise about the pioneering initiatives made in the festival. The highlights of the festival included:

1. Workshop on Pranic Healing, Transactional Analysis, Pottery, Cotton spinning and Handloom weaving, Stone carving, Wax art, and Martial arts.
2. A Personality Assessment Cell
3. Screening of a movie premiere.
4. A festival of dresses presented by professional models.
5. An expert lecture by national award winner, Srimathi Suhasini Manirathnam, of Indian films.
6. New competitions in Case Analysis, Story Telling, Mime and Scrabble.
7. Significantly modified competitions in Debate and Classical Music.
8. Professional performances by some of India's finest musicians including a classical fusion concert by the Violin maestro Kunnakudi Vaidyanathan, the Tabla exponent Ustad Zakir Hussain, the renowned drums player Sivamani; an Indian light music concert by A.V. Ramanan and Musiano featuring film music hits since India's Independence; and a Western Music concert by Parikrama.

Our students won top prizes and cornered glory in most of the events held in national - level cultural festivals organised by other institutions and contributed significantly to the reputation of the Institute as one committed to fostering allround personality development among its students.

The cultural activities and achievements of the academic year 1997-98 had set a new benchmark of excellence that should prove to be challenging and motivate superior levels of organization and performance by our students.

This year's cultural activities took off with the Independence day celebrations. The Director of the Institute, Prof. R. Natarajan hoisted the National Tricolour. The songs on various languages were rendered by our students. Both faculty and students attended the function in large numbers.

6.7 Placement of Students:

During the year 1997-98, 473 students/scholars were placed, as detailed below:

Sl.No.	Branch	Number OC	Placed SC/ST	Total	No. placed more than one job
I. B.Tech					
1.	Aerospace Eng.	14	-	14	-
2.	Chemical Eng.	39	3	42	4
3.	Civil Eng.	30	1	31	-
4.	Computer Science	15	3	18	1
5.	Electrical Eng.	50	8	58	10
6.	Mechanical Eng.	51	13	64	7
7.	Metallurgical Eng.	26	-	26	2
8.	Naval Architecture	14	-	14	3
Total I		239	28	267	27
II. M.Tech.					
1.	Aerospace Eng.	1	-	1	-
2.	Applied Mechanics	4	-	4	1
3.	Chemical Eng.	10	-	10	1
4.	Civil Eng.	10	3	13	-
5.	Computer Science	18	2	20	1
6.	Electrical Eng.	20	2	22	2
7.	Ind. Management	10	1	11	-
8.	Mechanical Eng.	34	3	37	6
9.	Metallurgical Eng.	2	-	2	-
10.	Ocean Eng.	1	-	1	-
11.	Solid State Tech.	1	-	1	1
Total II		111	11	122	12
III. Ph.D, M.S. and M.Sc.					
Sl.No.	Branch	Numbers Placed			
		Ph.D.	M.S.	M.Sc.	
1.	Aerospace Engineering	-	3	-	
2.	Applied Mechanics	1	4	-	
3.	Chemical Engineering	1	4	-	
4.	Chemistry	-	-	-	
5.	Civil Engineering	-	8	-	
6.	Computer Science	2	13	-	
7.	Electrical Engineering	3	9	-	
8.	Industrial Management	-	2	-	
9.	Mathematics	-	-	9	
10.	Mechanical Engineering	2	12	-	
11.	Ocean Engineering	-	4	-	
12.	Metallurgical Engineering	-	2	-	
13.	Physics	4	-	1	
Total III		13	61	10	

7. FINANCIAL ASSISTANCE TO STUDENTS

Financial Assistance in the form of Scholarships and Fellowships is extended to meritorious students who are pursuing Engineering, Technology and Science education at this Institute. The details of Scholarships and Fellowships sanctioned to the students of different programmes during 1997-98 are as follows:

7.1 B.Tech:

Merit-cum-means scholarships of Rs.300/- p.m. were sanctioned to the students admitted to the B.Tech. programme besides the exemption from payment of tuition fees. During the period under report 35 students benefitted. The year-wise details of such students are given in Table 7.1.

SC/ST students admitted to the B.Tech. programme upto the academic year 1997-98 were sanctioned the concession of free messing plus Rs.70/- p.m. out of pocket expenses, exemption from payment of tuition fees and hostel seat rent as per Govt. of India post-matric scholarship rules. As on 31.3.98, 21 students have benefitted. The year-wise details of such students are also given in Table 7.1.

Table 7.1

Year of the B.Tech Programme	Merit-cum-means Scholarship	Free messing (basic menu) and pocket allowance concession to SC/ST students
1	7	9
2	9	3
3	9	2
4	9	7
Total	34	21

In addition to the above, the Institute sanctioned notional prize of Rs.1000 to the top ranking (in the JEE) 27 first B.Tech. students.

7.2 M.Tech:

Students who joined the M.Tech. programme through GATE were awarded Half-time Assistantship (HTTA) at Rs.2500/- per month. During the period under report 255 fresh assistantships and 196 renewed assistantships were given. The department-wise details are given below:

Table - 7.2
No. of M.Tech. assistantships awarded

Sl.No.	Discipline	Fresh	Renewal
1.	Aerospace Engineering	7	5
2.	Applied Mechanics	13	6
3.	Chemical Engineering	30	18
4.	Civil Engineering	24	28
5.	Computer Science and Eng.	32	21
6.	Electrical Engineering	50	26
7.	Industrial Management	10	16
8.	Mechanical Engineering	65	59
9.	Metallurgical Engineering	16	10
10.	Ocean Engineering Centre	4	5
11.	Solid State Technology	4	2
Total		255	196

7.3 M.Sc:

Students admitted to the M.Sc. programme were sanctioned Rs.300/- p.m. merit scholarship. Exemption from payment of tuition fee was also given to certain students. During the period under report 51 students benefitted. The department-wise details of such awards are given below:

Table 7.3

Course	Year	No.of merit scholarships awarded	No. of freeships (tuition fees waiver) granted
Chemistry	I	6	2
	II	6	2
Mathematics	I	6	2
	II	8	2
Physics	I	6	3
	II	5	3
Total		37	14

7.4 M.S:

The scholars admitted to the M.S. programme through GATE or equivalent examinations are given Half-time Teaching Research Assistantship (HTRA) of Rs.2500/- p.m. for three years. During the period under report 237 scholars received this assistantship of whom 100 were fresh scholars. The department-wise details of the assistantships awarded and renewed are given below:

Table 7.4
Number of M.S.Scholarships awarded

Sl.No.	Department	Fresh	Renewal
1.	Aerospace Engineering	6	8
2.	Applied Mechanics	11	15
3.	Chemical Engineering	4	6
4.	Civil Engineering	12	15
5.	Computer Science & Eng.	10	11
6.	Electrical Engineering	22	35
7.	Humanities & Social Sciences	5	5
8.	Mechanical Engineering	21	32
9.	Metallurgical Engineering	1	3
10.	Ocean Engineering	8	12
Total		100	137

7.5 Ph.D.

The scholars admitted to the Ph.D full time programme in Engineering are sanctioned Half-time Teaching/Research Assistantship (HTRA) of Rs.3000/- per month. Scholars admitted to the Ph.D fulltime programme in the Science subjects are sanctioned Rs.2500/- p.m. During the period under report 132 students obtained assistantships of whom 34 were fresh scholars. The department-wise details of the assistantships awarded and renewed are given below:

Table - 7.5

Number of Ph.D. HTRA awarded

Sl.No.	Department	Fresh	Renewal
1.	Aerospace Engineering	-	3
2.	Applied Mechanicals	2	5
3.	Chemical Engineering	1	18
4.	Chemistry	7	40
5.	Civil Engineering	1	11
6.	Computer Science & Engineering	2	1
7.	Electrical Engineering	1	5
8.	Humanities & Social Sciences	3	6
9.	Mathematics	3	8
10.	Mechanical Engineering	5	18
11.	Metallurgical Engineering	1	5
12.	Ocean Engineering	1	3
13.	Physics	7	5
Total		34	132

8. WEAKER SECTION AND FOREIGN STUDENTS

8.1 B.Tech:

As per the GOI orders 22.5% of the seats are reserved for SC and ST students in the B.Tech. programme. These students are admitted through the Joint Entrance Examination with a relaxation: These students have to get only 60% of the marks obtained by the last student of the general category to get qualified for admission. 49 SC/ST students joined the B.Tech programme during the academic year 1997-98. During counselling prior to admission, the Adviser explained to each student the requirements of different branches. This helped the students in choosing a suitable branch based upon the capability and interest of each student. When a student finds the chosen branch is tough, he is allowed to switch over to lower JEE cut-off branch.

Students admitted against reservation are given the following benefits:

- * Travelling allowance (IInd Class train fare/ordinary bus fare) from the place of residence to Madras to join the B.Tech. programme.
- * Free tuition.
- * Free lodging and messing (basic menu) and pocket allowance of Rs.70/- p.m. provided their parents' income is Rs.24000/- net per annum or less (as per Government of India revised order).
- * A Book Bank as part of Central Library is maintained for the benefit of the SC/ST students. The students are issued 12 tickets for taking books from the Book Bank. Books are issued for a semester.
- * Drawing instrument (Mini-drafter) free of cost.
- * Help in getting placement. Wherever possible, industries are requested to conduct separate interviews for SC/ST students and the requirements for these students are lower than those for the general category.

8.2 Preparatory Course for B.Tech:

A preparatory course of one academic year was initiated by the Ministry of Human Resource Development, Government of India, during the year 1983-84 exclusively for SC/ST students. Selection for this course is made from the SC/ST students' Joint Entrance Examination list who did not get admission through the Joint Entrance Examination. After successfully completing the preparatory course at the IIT, they would be eligible to join the B.Tech programme and they were not required to write the JEE again. This Institute conducted preparatory course during 1997-98. 36 students joined.

8.3 M.Tech./M.Sc:

22.5% of the seats are reserved for the students of SC and ST communities as per the Government of India orders. They are admitted through GATE with a relaxation. These students have to get only 60% of the GATE percentile obtained by the last student in the general category. 64 SC/ST students were admitted to the M.Tech programme during the academic year 1997-98.

Admission was made for the M.Sc. programme through entrance examinations only.

Students admitted against reservation are given following benefits:

- * Book Bank facility is given with 12 library tickets. Books are issued for a semester.
- * Both Public Sector and Private Sector industries were requested to recruit SC and ST students. Other special steps were also taken to enhance the recruitment of this category of students.
- * Scholarship is given to all the students.

8.4 Foreign Students:

During the academic year 1997-98, 32 self-financing foreign students joined the B.Tech programme from the following countries:

Bahrain	3
Kenya	1
Kuwait	4
Muskat	1
Saudi Arabia	2
U A E	21

Foreign students are also permitted to use the Book Bank. 4 Book Bank library tickets are issued to each student. Books are issued for a semester.

9. FINANCE AND ACCOUNTS

The financial year of the Institute corresponds with that of Government of India i.e. 1st April to 31st March of the following year. The accounts of the Institute are annually audited by the Accountant General, Tamil Nadu & Pondicherry, Madras on behalf of the Comptroller and Auditor General of India.

The Finance Committee of the Institute in its meeting held on 16.12.97 recommended the Non-plan revised estimates 1997-98 (Gross) for Rs.5921.55 lakhs and the Budget Estimates 1998-99, Rs.5961.25 lakhs. The committee also recommended the Plan Revised Estimates and Budget Estimates of Rs.725 and 1092.50 lakhs respectively for 1997-98 and 1998-99 respectively subject to review at a later date.

The following are the details of financial estimates for 1997-98 and 1998-99:

Rs. in Lakhs			
	<u>Budget Estimates for 1997-98</u>		
Head	(as proposed and allocated by Board of Governors)	Revised Estimates 1997-98 as per Board of Governor's approval	Budget Estimates 1998-99 (as proposed)
I Non-Plan:			
<u>Expenditure</u>			
1. Recurring	4229.50	5778.85	5861.25
2. Non-Recurring	50.00	142.70	100.00
Total	4279.95	5921.55	5961.25
<u>Income</u>			
Income Generated	557.78	782.32	877.83
Opening Balance as on 1.4.97	--	42.74*	--
Grant demanded from MHRD	3721.72	5096.49	5083.42
Total	4279.50	5921.55	5961.25
II Plan:			
<u>Expenditure</u>			
Opening Balance fully committed	259.48**	259.48**	--
Recurring	20.00	7.00	27.00
Non Recurring	705.40	718.40	1065.50
Total	984.88	984.88	1092.50
<u>Income</u>			
Grant demanded from MHRD	725.40	725.40	1092.50
Opening Balance	259.48	259.48	--
Total	984.88	984.88	1092.50

* - carry over from 1996-97 account

** - includes carry over of Rs.259.48 lakhs representing irrevocable commitment of 1996-97.

9.1 Audit:

The accounts of the Institute for the year 1996-97 was audited by the Accountant General between April 1997 to June 1997. The audited report (both English and Hindi versions) on the accounts of the Institute for the year 1996-97 was sent to the Ministry of Human Resource Development, GOI for placing the same on the table of the parliament.

The following are details of the 1996-97 accounts:

S.No.	Item	Rs. in Lakhs
I. Receipt :		
1.	Opening Balance	1820.81
2.	Grant from GOI for 1996-97 for 1995-96	3198.00
3.	Institute Receipt:	331.00
	Fees, etc	
	Application Fees	111.34
	Income from Vehicles	129.14
	Income from Buildings	9.63
	Other receipts	58.20
4.	Recovery of Advances	377.22
5.	Deposits	685.33
		49.99
	Total	687.38
		6772.71
II. Payments :		
a. Capital Account		
1.	Buildings and Constructions	162.03
2.	Furniture/equipment and fittings	19.48
	Research Centres & Central Services	113.22
3.	Library Books and Journals	132.70
4.	Others	105.82
		84.66
	Total (a)	485.21
b. Revenue Account:		
1.	Academic Departments/Centres:	
	Pay & Allowances of Teaching Staff	587.90
	Pay & Allowances of Non-Teaching Staff	341.57
	Department running expenses	48.77
	Library staff salary and running expenses	50.75
	Central Workshop staff salary and running expenses	65.35
	Indo-German Projects including Pay & Allowances	0.11
	Research Centres Pay & Allowances including CEC & AC Unit running expenses	
	Centres; Central Services working expenses	
	Rural Development Research Activities	97.76
	Institute Scholarship/HTTA	205.81
	Other items	0.77
	NCC; NSS and NSO: Pay & allowances & running expenses	3.29
	Total (b-1)	1402.08

2. Central Administration:

Pay & Allowances	280.55
Hostel	92.86
Stores Pay & Allowances	17.40
Security & Fire fighting	1.66
Lawns & Garden	1.24
Service & Maintenance (Telephone, Power, Water, Furniture repair & Maintenance, Oil, Petrol, etc.)	272.57
Dispensary including staff salary	38.28
Atheletics and Gymkhana	15.31
Vanavani Matriculation Hr. Sec. School	2.50
Amenities	0.65
SC/ST Special coaching/Preparatory course	0.12
Guidance and Counselling	0.01
Director Discretionary Fund (DDF)	0.04
Total (b-2)	721.95

3. Works & Maintenance :

Pay & allowances and other expenses	244.95
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4. General Expenses :

Postage; Liveries; Stationery; Printing; etc.	
TA to authorities & Institutes selection	
Committee members, Candidates called for Interview, Reimbursement of stamp duty, sundries; etc.	65.42
PF/Gratuity/Pension	542.10
Advances paid	41.51
Deposits refunded	716.66
Investment of corpus fund	4.72
Total (4)	1370.41

Total a + b	2609.24
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5. Closing Balance :

2548.11

Total**6772.71**

10. CAMPUS AMENITIES

10.1 Introduction:

IIT Madras is a residential institution. It is housing about 2500 students and 950 staff members in the Campus. It provides various amenities in the campus for students and staff.

10.2 Engineering Unit

Construction Work:

The Engineering Unit of this Institute is responsible for the construction of new buildings and the maintenance of the campus.

The following major works were completed during the year 1997-98.

S.No.	Name of Work	Rs. in Lakhs
1.	Construction of New Library Building (partly completed) Phase I, Ground Floor, Basement and Mezanine	200.00
2.	Construction of an Annexe to Administration Block for Record room and Lunch room	20.00
3.	Construction of Lift and machine room at IC & SR building	2.93
4.	Construction of Residential Block for Centre for Continuing Education	75.00
5.	Renovation of Toilets in Institute Zone	11.70
	Total	309.63

10.3 Housing Facilities:

As on 31.3.1998, there were quarters in the campus. In addition to this there were 140 servant quarters also in the campus. In the year 1997-98, another C2 & E1 type quarters (block of 12 flats, each) are under construction/process.

10.4 Telephone Facilities:

A telephone exchange with 128 P & T lines are functioning. It supports 1350 lines. Telephone facility had been given upto Assistant Professor level in the department and upto Associate Professor level in the quarters.

10.5 Guest House:

There are two Guest Houses in the Campus viz. the Main Guest House and Taramani Guest House which have six suites and 30 rooms respectively.

10.6 Hospital

The Institute Hospital consisting of 36 beds, extends medical facilities to students, staff members and their dependents. The hospital offers out-patient and in-patient services for medical, surgical, obstetric, gynecological, pediatric, ENT and ophthalmic treatments. The following are the Officers in the Hospital:

Dr. A. Ganesan, M.D.	Chief Medical Officer
Dr. N.A. Jayavelan, MBBS, (MD)	Chief Medical Officer
Dr. C.Sridevi, MD, DCH, M.Sc.	Medical Officer-Paediatrician
Dr. S.Aruna, MBBS	Medical Officer
Dr. A. Mahalakshmi M Ravi, MBBS	Medical Officer
Dr. Arunkumar, MBBS	Junior Medical Officer
Dr. A. Selvam, MBBS	Junior Medical Officer

Part-Time Consultants

Dr. S.Kameswaran, MS, PhD, FRCS(ED), FRCS(GL), FRCS(DLO), DSc.	ENT Surgeon
Dr. S.Devaji Rao, MS, MNAMS, FICS	General Surgeon
Dr. S.Rathanamala, MBBS, DO	Ophthalmologist
Dr. R.Rajkumar, MD, DPM	Psychiatrist

Pramedical Staff

Lay Secretary	:	1
Staff Nurses	:	8
Pharmacists	:	4
Lab. Technician	:	2
Male & Female Helpers	:	8
Others	:	7

Out-Patient Service:

The O.P. card registration system was computerised for all the entitled. In the year 1997-98 72,847 out-patients were treated in the hospital

In-Patient Service:

The hospital is having 35 beds for treating inpatients. 646 patients were treated as inpatients in 1997-98.

Emergency Service:

Hospital service is available round the clock for all the 24 hours of the day with a duty doctor and supportive staff. 3300 emergency cases were attended during non-OP hours. About 111 cases had been referred to outside hospital due to lack of treatment facilities at our hospital. An ambulance service is available on call.

Clinical Laboratory Service:

Well equipped clinical laboratory services are available with two laboratory technicians. In 1997-98 about 13,965 clinical lab. tests were conducted. About 4,718 biochemical tests (blood sugar and urea) were done during the period under report. The Hospital has recently acquired a modern computerised ECG recorder and the facility is available round the clock and 1,067 ECGs were recorded during 1997-98.

Operation Theatre:

A well equipped operation theatre is available with sophisticated operating microscopes, endoscope, instruments for IOL surgery, cardiac monitor etc., along with regular equipment. In 1997-98, 69 general and 103 minor surgeries, 35 ENT and 27 Eye surgeries (including 17 Intra-Ocular-Lens operations) were done at our hospital.

Immunization Programme:

Parents of young children are educated on the proper immunization schedule. Complete immunization is given at our hospital for all the children. All vaccines are stored properly in the refrigerator as per the norms.

Treatment for Nonentitled:

Nonentitled guests of a staff member when accompanied by the staff member or his authorized dependent, can avail emergency treatment on payment basis subject to the Institute rules.

Stores and Dispensary:

A medical cum surgical stores manned by a qualified pharmacist is available. All activities, enquiry, comparative statement, indenting, issues, etc., are computerized. It had dealt with the purchase worth more than Rs.11.00 Lakhs in 1997-98.

All the drugs purchased at our hospital are decided by the hospital drug committee. To ensure that the drugs are of superior quality, quotations are called for from the recognized drug companies only.

Continuing Medical Education Programme (CME):

CME Programmes are being conducted regularly to update our medical knowledge. In 1997-98 three such CME programmes were conducted.

In-House Training Program for Para Medical Staff:

An in-house education programme on AIDS for staff nurses and other paramedical staff was conducted during the year under report.

Hospital Office:

Apart from dealing with the administration of the hospital, the office staff processes medical reimbursement claims. It had dealt with the processing of more than Rs.20.0 lakhs by way of reimbursement in the year 1997-98.

10.6 Bank:

State Bank of India IIT Branch is functioning on the campus. An extension counter of Canara Bank is also functioning on the campus.

10.7 Post Office:

There is a post office on the campus opposite to the State Bank of India to cater to the needs of the staff, students and residents of the campus.

10.8 Schools:

Vanavani Matriculation Higher Secondary School (V.V.M.H.S.S.) administered by IIT Employees' Educational Society is functioning on the campus besides a Kendriya Vidyalaya (K.V.). VVMHSS school is offering courses from L.K.G. to XII Standards and the K.V. is offering courses from I standard to XII standard.

10.9 Open Air Theatre:

An Open-Air Theatre is available for screening films by the Film Club during week ends and for use for other functions of the Institute and the Schools.

10.10 Student Activities Centre:

This building is used for indoor games of the students as well as for the conduct of important functions such as the Convocation etc.

10.11 Cafeteria:

Two Canteens, viz. IIT Staff Canteen and RPG Restaurant are available on the campus to cater to the needs of the staff and students. Transport facilities are also available for the official work.

10.12 Transport Services:

The Institute has buses which provide transport facility within the campus to the staff, students and residents of the campus.

10.13 Campus News:

The Campus News is published every Friday highlighting the important events of the Institute.

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