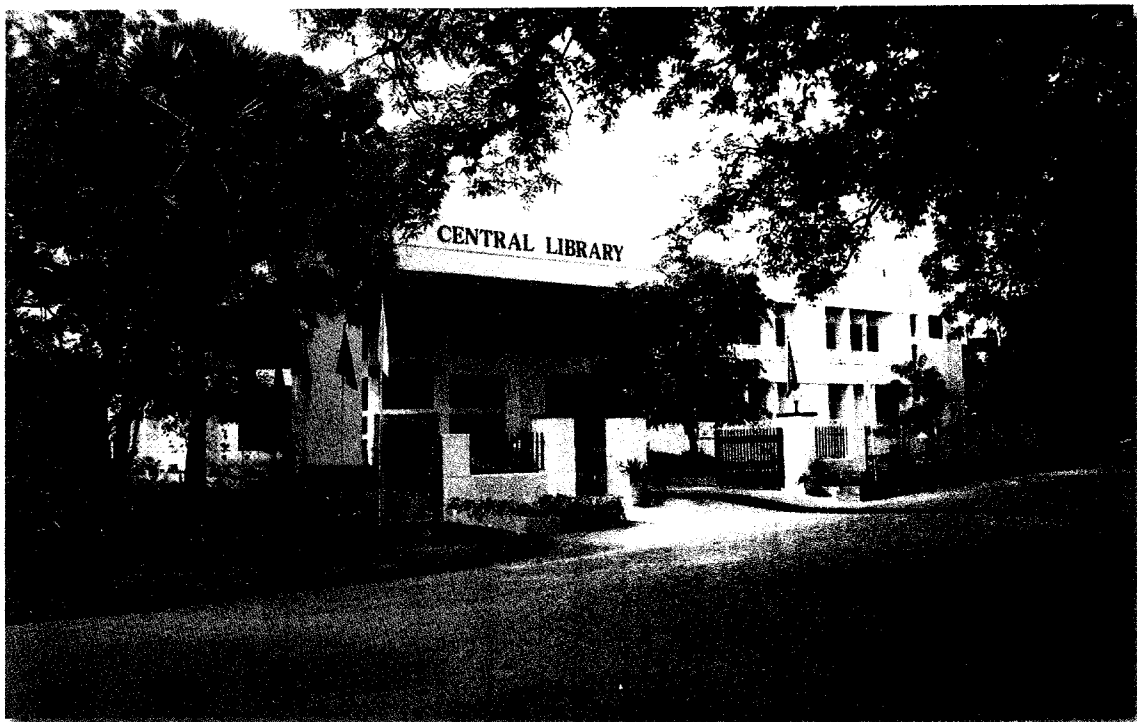




WTUV

ANNUAL REPORT 1999-2000



**INDIAN INSTITUTE OF TECHNOLOGY MADRAS
CHENNAI - 600 036**

**FORTY FIRST
ANNUAL REPORT
1999 - 2000**



**INDIAN INSTITUTE OF TECHNOLOGY MADRAS
CHENNAI - 600 036**

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New Delhi 110 001

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Dept of Mechanical Engineering

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Dept of Civil Engineering

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Prof R. C. Janakarajan

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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.

The brief Report provides a summary of our activities, achievements and accomplishments in the different spheres of our activity during the year 1999-2000.

INTERNATIONAL AND NATIONAL RECOGNITION

In the latest Survey of Universities and Technical Institutions in the Asia-Pacific Region by the *Asiaweek* magazine, our



Institute has retained its position at No.V. The parameters considered for this assessment were : Academic Reputation, Student Selectivity, Faculty Resources, Research, Financial Resources, Students per Academic Staff, Graduate Students as percentage of Total Students, Citations in International Journals per Teacher / Researcher and Internet Bandwidth per Student.

In the latest *India Today* Survey, IIT-Madras has been ranked II among the Engineering Institutions in the country. This is an improvement over our performance during the past two years when we were ranked IV. The parameters considered for this assessment were : Academic Input, Reputation, Curriculum, Infrastructure, Student Care, Admission Procedure and Job Placements. It is also stated in the Survey that on the two most important factors, viz., Academic Input and Reputation, IITM gets the top billing.

ACADEMIC DISTINCTIONS SECURED BY OUR FACULTY MEMBERS AND STUDENTS

In Recognition and acknowledgment of the Excellence and Expertise of our Faculty Members, several Academic Distinctions have been bestowed on them. These include the following (names listed alphabetically) :

AWARDS

- Dr. K. K. Balasubramanian, Chemistry Department : INSA Award : "Prof. S. Swaminathan 60th Birthday Commemoration Lecture"
- Ms. G. Deepa, B.Tech. (1995-99), Metallurgical Engineering Department : "INAE Award for Student Innovative Potential Project" (Guides : Prof. C. V. Gokularathnam and Dr. M. S. Ramachandra Rao).
- Dr. Ashok Jhunjhunwala, Professor and Head, Electrical Engineering Department : "Millennium Medal" at the Indian Science Congress 2000.
- Dr. A. Kannan, Chemical Engineering Department : "INAE Young Engineer Award".
- Prof. C. S. Krishnamoorthy, Civil Engineering Department : "The 1999 Maharashtra State National Award for Outstanding Research Work in Engineering and Technology".
- Dr. A. K. Mishra, Chemistry Department : "Chemical Research Society of India Medal".
- Prof. C. Pandu Rangan (Coach), Mr. Mitikiri Jujendra, Mr. A. Srinath Reddy and Mr. K. I. Karthik. (III B.Tech. students) : "Certificate of Achievement and Cash Prize", ACM International Collegiate Programming Contests at IIT-Kanpur.
- Prof. P. R. Parthasarathy, Mathematics Department : Senior Associateship of The Abdus Salam International Centre for Theoretical Physics, Trieste, Italy.
- Dr. S. Pushpavanam, Chemical Engineering Department : "Rajarambabu Patil National Award for Promising Engineering Teacher – Engineering Colleges" by ISTE.
- Dr. Megha Singh, Applied Mechanics Department : "The Shri Shyam Lal Saxena Memorial Award of the National Academy of Medical Sciences".
- Prof. R. S. Sirohi, Physics Department : "Khwarizmi International Award" by the Iranian Organisation of Science and Technology ; and "Albert Einstein Silver Medal" of UNESCO.
- Ms. K. Yamuna Rani, M. Tech., Chemical Engineering : "CSIR Young Scientist Award 1999 in Engineering Sciences".

FELLOWSHIPS

- Prof. Ashok Jhunjunwala, : Fellow of The Indian National Science
Professor and Head, Academy.
Electrical Engineering Department
- Prof. Ashok Jhunjunwala, : Fellow of The National Academy of
Professor and Head, Sciences.
Electrical Engineering Department,
- Dr. V. R. Muraleedharan, : C. R. Parekh / Nirmal Visiting Fellow under
Humanities and Social Sciences the South Asian Visiting Scholars
Department Programme, University of Oxford.
- Dr. M. S. Ramachandra Rao, : The Humboldt Fellowship
Physics Department
- Dr. Bhaskar Ramamurthi, : Fellow of The Indian National Academy of
Electrical Engineering Department Engineering.
- Prof. S. Srinivasa Murthy, : Fellow of The Indian National Academy of
Mechanical Engineering Department Engineering.
- Dr. R. I. Sujith, : The Humboldt Fellowship.
Aerospace Engineering Department

MEMBERSHIP OF EDITORIAL BOARDS

- Dr. Neelima Gupta, : Pramana, Bangalore
Physics Department
- Prof. P. T. Manoharan, RSIC : Journal of Chemical Education
- Dr. T. Pradeep, RSIC : Asian Journal of Spectroscopy
- Prof. V. Ramakrishna Murthy, : Bulletin of Pure and Applied Sciences
Physics Department
- Dr. T. S. Sampath Kumar, RSIC : Trends in Biomaterials and Artificial Organs
– India.
- Prof. R. S. Sirohi, : ❖ Journal of Modern Optics,
Physics Department ❖ Optik,
❖ Indian Journal of Pure and Applied
Physics
❖ Journal of Optics.

BEST PAPER AWARDS AND PRIZES

- Dr. R. Balachandran Pillai *et al*
Chemistry Department
- Mr. S. Balaji, B.Tech. Student,
Dr. G. Manimaran and
Dr. C. Siva Ram Murthy,
Computer Science and Engineering
Department
- Mr. V. Balamurugan,
M.S. External Research Scholar and
Prof. S. Narayanan,
Applied Mechanics Department
- Ms. Mangalaraj Chitra,
Ph.D. Research Scholar,
Physics Department
- Dr. S. Jayachandran and
Mr. Sunil Sahadeve,
Humanities and Social Sciences
Department
- Dr. S. Mohan, Associate Professor, and
Mr. V. Jothiprakash, Research Scholar,
Civil Engineering Department
- Prof. R. Natarajan
Mechanical Engineering Department
- : The First Prize for Best Oral Presentation in the National Workshop on Catalysis, Hyderabad, for their paper entitled *Beta Zeolite Catalyst for Aniline*.
- : "Best Paper Award : Plaque and Cash Prize" for their paper entitled *Unit-oriented Communication in Realtime Multihop Networks* at the 6th IEEE International Conference on High Performance Computing, Calcutta.
- : Dr. A. P. J. Abdul Kalam Best Paper Award for their paper entitled *Vibration Control of Shells Using Distributed Piezoelectric Sensors and Actuators* at the 51st Annual General Meeting of the Aeronautical Society of India, Hyderabad.
- : "Eric O. Forster Memorial Award" for The Best Paper by a Young Researcher at the 13th International Conference on Dielectric Liquids, Nara, Japan.
- : Best Paper Award for their paper entitled *A Behaviour Based Model for Managing Marketing Channels for High-Tech Products* at the Academy of Marketing Science Multicultural International Conference to be held in Kowloon, Hong Kong.
- : *The Surendranath Mukherjee Memorial Medal* by the Institute of Engineers (India) for their Paper entitled *Crop Water Requirements in a Command Area - A Comparative Analysis*.
- : ISTE Baroda Chapter Award for the Best Paper in the Indian Journal of Technical Education in 1999, for the paper "Technology, Technical Education and Technology-Enhanced Technical Education".

- Dr. S. B. Pattnaik, Associate Professor, : “Sir Arthur Cotton Memorial Prize” for the
Civil Engineering Department paper *Introduction to Integrated Public
Transit System Management*.
- Prof. Prasada Rao, : Panthaki Award-2000 for their paper
Metallurgical Engineering Department, *Weldability Aspects of Aeronautical Grade
Dr. G. Madhusudhan Reddy and Aluminium-Lithium* presented at the
Dr. Amol A. Gokhale International Welding Conference-IWC '99,
New Delhi.
- Mr. H. R. Sahu and : Second Prize for Best Oral Presentation in
Dr. G. Ranga Rao, the National Workshop on Catalysis for their
Chemistry Department paper entitled *Preparation of Zirconia by
Combustion Method for Catalytic Use*.
- Mr. G. L. Samuel, Ph.D. Scholar and : Best Research Paper Award for their paper
Dr. M. S. Shunmugam, Professor, entitled *Evaluation of Form Errors Using
Mechanical Engineering Department Computational Geometric Techniques* at the
International Conference on Intelligent
Flexible Autonomous Manufacturing
Systems, Coimbatore.
- Mr. R. Saravanane, QIP PhD Scholar, : “Plaque of Appreciation” for their paper
entitled *Bioaugmentation and Treatment of
Antibiotic Drug-based Pharmaceutical
Prof. DVS Murthy and Effluent in an up flow Anaerobic Fluidized
Prof. K. Krishnaiah, Bed System* presented in the III Annual
Chemical Engineering Department Conference of Indian Environment
Association.
- Prof. S. Srinivasan and : Best Design Entry titled “Design and Imple-
Mr. S. Ramachandran, mentation of an FPHS Based Encoder”, at
Electrical Engineering Department the 13th International Conference on VLSI
Design, Calcutta.
- Mr. Jitendra A. Vadhera (M.Tech.), : Hari Ohm Ashram Perit Bhaikaka Inter-
Mr. S. Kumanan (Research Scholar) and University Smarak Trust Award for their
Prof. O. V. Krishnaiah Chetty, paper *Application of Petrinets to Project
Mechanical Engineering Department Management*.

BOOKS

- Prof. V. Ganesan,
Mechanical Engineering Department
- : ✦ “Gas Turbines”, Tata McGraw-Hill.
- ✦ “Computer Simulation of Compression Ignition Engine Processes”, University Press (Orient Longman).
- Dr. Shankar Narasimhan,
Chemical Engineering and
Dr. C. Iordache,
Simulation Sciences Inc., USA
- : “Data Reconciliation and Gross Error Detection : An Intelligent Use of Process Data”, Gulf Hemisphere.
- Dr. C. Siva Ram Murthy,
Computer Science and Engg.
Department
and Prof. V. Rajaraman, IISc, Bangalore
- : “Parallel Computers : Architecture and Programming”, Prentice-Hall, India.
- Prof. T. K. Varadan, and
Dr. K. Bhaskar,
Aerospace Engineering Department
- : “Analysis of Plates” : Narosa Publishers

OTHER DISTINCTIONS

- Prof. Ashok Jhunjunwala,
Electrical Engineering Department
- : Distinguished Alumnus of IIT-Kanpur for the year 2000.
- Prof. S. Srinivasa Murthy,
Mechanical Engineering Department
- : Country Representative and Member of Commission E2 (Heat Pumps & Energy Recovery) of International Institute of Refrigeration for the period, January 2000-December 2003
- Dr. M. N. Sudheendra Rao,
Chemistry Department
- : Leader of the Indian Delegation to International Chemistry Olympiad held in Denmark.
- Mr. A. Sundararaman,
Mr. R. Venkitesh. Mr. P. Sridhar and
Mr. Satyaseela Reddy,
I M.Tech. Students, Humanities &
Social Sciences Department
- : The First Prize in the Supply Chain Management Game at *Conference 99*, at The Inter-University Management Meet, Ahmedabad.

OUR CONTRIBUTIONS TO MANPOWER DEVELOPMENT

In August 1999 Convocation, a total of 949 degrees were awarded: 106 Ph.D., 76 M.S., 352 M.Tech., 82 M.Sc. and 333 B.Tech. These degrees cover a wide range of disciplines and specializations offered by the nine Engineering Departments, three Science Departments, and the Department of Humanities and Social Sciences. Among the Graduands are : 15 QIP candidates (teachers from other colleges), and 61 sponsored candidates (sponsored by Industry and Government Agencies). The graduates include : 107 ladies, comprising 20 Ph.D., 11 M.S., 21 M.Tech., 42 M.Sc., and 13 B.Tech. degrees.

At a Special Convocation held on November 16, 1999, the degree of Doctor of Philosophy, *Honoris Causa*, was conferred on Prof. Dr. rer. Nat. Reimar Lust, President, Alexander von Humboldt Foundation, Germany.

During the period under this report M.Tech programme in Industrial Mathematics and Scientific Computing by the Mathematics Department and an M.Tech programme in Computer Science and Engineering in collaboration with Complete Business Solutions (India) Ltd. were started.

Our Preparatory Course Programme for Weaker Section Students offers intensive coaching to eligible candidates 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 ninth year of implementation.

Efforts are under way to promote technological innovation by deliberately nurturing it through curriculum, research projects, technology incubation centres and entrepreneurship development programmes.

OUR CONTRIBUTIONS IN ACADEMIC RESEARCH

During the year under review, apart from the Ph.D. and M. S. theses, our faculty and research scholars have published 401 research papers in refereed international and national journals, and have presented 496 research papers at international and national conferences. Many of our research papers have secured high citation rating, and our faculty and research scholars have been 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 them have also served as Reviewers of papers for publication in journals and presentation in Conferences.

INDUSTRIAL CONSULTANCY AND SPONSORED RESEARCH

IIT-Madras was one of the first higher technological institutions to recognize the importance of Industry-Institute Interaction. Since 1973, we have maintained a steady and sustained growth in our interaction with Industry and other sponsored agencies, both in terms of number and value of sponsored research and consultancy projects.

The number of active sponsored projects during the year is 220 ; the number of faculty members involved in these projects as Principal Investigators and Co-principal Investigators is 200; the value of the sponsored projects sanctioned during the year is Rs.65.3 million.

The number of active consultancy projects during the year is 1,018, for a total value of Rs.76.1 million. The number of faculty members involved in these consultancy projects is 148.

The ISRO-IIT Madras Cell and the IGCAR-IIT Madras Cell have been functioning effectively through periodic monitoring and review. In addition to Projects for Industry, National Agencies and Central Government Departments, several assignments have been undertaken for the Tamil Nadu Government over the years.

IIT-Madras was 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 required 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. In view of the excellent results obtained through the TDMs, the Planning Commission has initiated action for a new set of TDM Projects to be taken up in a second phase. The proposals from the IITs and the IISc are being finalized for presentation to the Planning Commission.

The All India Council for Technical Education has approved a Project under Industry-Institute Partnership Programme for promoting Industry-Institute Interaction.

The Industrial Associateship Scheme has now more than 250 members, and enables formal arrangements for interaction with industry. The Centre for IC & SR organized six Technology Appreciation Programmes for the benefit of these Industrial Associates during the current year.

The Centre for IC & SR publishes Quarterly Reports of the activities of the Institute in a new attractive format under the banner of *IIT-Madras News*, in addition to the release of regular Newsletters.

As India readies itself for facing global competition in R & D, IPR issues and Patents assume tremendous significance ; this year, we have filed 4 patent applications, of which 2 have been registered. To date, IIT-Madras has filed 144 patent applications out of which 70 have been registered.

We have signed 13 Memoranda of Understanding with the following Industries:

- ❖ WL/DELFT Hydraulics
- ❖ The Netherlands & AP Hazard Mitigation & Emergency Cyclone Recovery Project
- ❖ TIFAC, DST, New Delhi (two MoUs)
- ❖ Ecotech Marketing, Navi Mumbai
- ❖ Yuken India Limited, Bangalore
- ❖ Central Vehicle Research and Development Establishment, Avadi
- ❖ Shabari Fotoproducts Limited, Chennai
- ❖ Banyan Networks, Chennai & HTL Limited, Chennai (for Technology Transfer)
- ❖ Kerala State Cooperative Coir Marketing Federation Ltd., Alleppey
- ❖ PRAXAIR Inc., USA
- ❖ GE India Technology Centre Private Ltd., Bangalore
- ❖ Deluge Corporation, USA.

An agreement for cooperation is being signed with the SPIC Science Foundation, Chennai, for cooperative and collaborative R & D.

CONTINUING EDUCATION AND EDUCATIONAL TECHNOLOGY ACTIVITIES

The Centre for Continuing Education (CEC) has been very active in promoting professional development activities for the benefit of working professionals in industries and faculty members of other technical institutions. During the year, our faculty members organized 6 Short-Term Courses under QIP, and 26 Short-Term Courses under Continuing Education Programme (CEP). The Educational Technology Cell has produced a number of video films, which include modules for 7 semester courses and 1 short course. During the year under review, our faculty members have published 5 books. The Centre for Continuing Education has generated continuing education activities, during the year, to the tune of Rs.3.1 million.

Our Institute has assisted the Academy of Maritime Education and Training (AMET) in conducting the third 12-week programme for the benefit of Marine Radio Officers of the Merchant Navy. The Central Electronics Centre has conducted three programmes for the benefit of 107 candidates in Renewable Energy Technologies under a project sponsored by IREDA.

In order to exploit the potential of contemporary developments in Information Technology (IT) and Educational Technology (ET), IIT-Madras has become a partner in a Consortium with other IITs and IIMs for interaction with the Carnegie Mellon University, USA, for promoting Technology Enhanced Learning.

OUR CONTRIBUTIONS TO THE NATIONAL S & T EDUCATION SYSTEM

Over the years, the IITs, in general, and IIT-Madras in particular, have been playing a lead role 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 towards Ph.D. and M.S. Currently we have 58 QIP Scholars in the Institute. Our faculty members have conducted 6 Short-Term Courses under the QIP during the current year for the benefit of Engineering College Teachers.

The All India Council for Technical Education, including the National Board of Accreditation, has been utilizing 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.

For the third year in succession, our Institute has shouldered the responsibility of coordinating a Programme for Gifted Youth, in which faculty of our Institute, along with faculty of Anna University, Central Leather Research Institute, Indira Gandhi Centre for Atomic Research, Institute of Mathematical Sciences and M. S. Swaminathan Research Foundation, interact with a selected group of gifted children from schools across the country, for about three weeks.

The Summer Assistantship Scheme, which was initiated a few years ago, provides opportunities for summer training to third year B.E. students of other Engineering

Colleges ; 19 students participated in the programme this year.

The Regional Sophisticated Instrumentation Centre (RSIC) has been conducting Open Houses for the benefit of college and school students over the years ; one such open house was conducted this year also.

NEW CENTRES

The following New Centres have been established during the year for promoting R & D, Consultancy and Continuing Education activities :

- ❖ Centre for Computational Fluid Dynamics
- ❖ Centre for Non-Destructive Evaluation.
- ❖ The Ushamartin Academy of Communication Technologies, as a finishing school for Telecom and IT Professionals.
- ❖ A Solar Photovoltaics Park, to demonstrate SPV applications and as a test-bed for SPV products.
- ❖ The following Centres are in the process of being set up :
- ❖ DSP Training Centre in the Electrical Engineering Department, sponsored by Analog Devices, USA.
- ❖ Centre for Intelligent Optical Networking in the Electrical Engineering Department, sponsored by Dr. Gururaj Deshpande, our Distinguished Alumnus.
- ❖ Centre for Micro-Electro-Mechanical Systems
- ❖ Centre for Precision Engineering.

CHAIRS INSTITUTED

Dr. Tom Alexander, an Alumnus, has instituted a Chair in the area of Telecom and Computer Networking in the Electrical Engineering Department.

Analog Devices, USA, has offered to set up a Chair in the area of Telecommunications and VLSI Design in the Electrical Engineering Department.

Mr. T. T. Jagannathan, an Alumnus, has instituted the T. T. K. Chair for Marketing Management.

Prof. K. V. Gopalakrishnan has been appointed as Henry Ford Chair Professor in the Mechanical Engineering Department.

INTERNATIONAL COLLABORATION

In the emerging scenario of globalisation and internationalisation of higher and professional education, we have been interacting with several International Organizations for collaborative research, exchange of faculty and students, etc. During the year, we have signed MoUs with the following 7 international universities :

- ❖ The Friedrich-Alexander University, Austria.
- ❖ University of Kaiserslautern, Germany.
- ❖ Nagaoka University, Japan.
- ❖ University Sains Malaysia, Penang, Malaysia.
- ❖ Christelijke Hogeschool Windesheim, The Netherlands.
- ❖ Georgia State University, USA.
- ❖ Montana Tech. of the University of Montana, USA.

With these, the total number of MoUs signed by IIT-Madras with international universities amounts to 36.

We have also signed MoUs with International Companies and Research Laboratories for collaborative R & D ; to-date, a total of 21 such MoUs has been signed.

The corDECT Wireless Local Loop System, jointly developed by IIT-Madras and Midas Communications Technology (P) Limited, Chennai, in collaboration with leading semiconductor manufacturer Analog Devices, USA, has been approved by DoT, and has been put into service in Mumbai and Delhi. Twenty-four cities in India will have corDECT systems by the end of this year. It is a matter of national pride that this state-of-the-art telecom system designed and manufactured in India is also operational in Argentina, Fiji, Iran, Kenya, Madagascar, and Nigeria. Substantial expansion is expected this year in these and some new countries as well. A total of a hundred thousand lines will be shipped by this financial year.

The corDECT system continues to set new benchmarks in wireless access technology. Today, it is the only WLL technology that provides telephony and Internet service at 35/70 kbps simultaneously to a subscriber, and at a cost that is by far the lowest achieved hitherto. New subsystems have been developed to extend the coverage to 25 km, enabling the system to be deployed in rural areas. It is fervently hoped that corDECT will enable rural India leapfrog to reliable high-speed Internet access and at an affordable cost. Work is in progress to extend Internet access speed to 384 kbps and eventually to 1 Mbps. Cost reduction is also an ever-present focus.

The joint research projects sponsored by BMBF and GTZ, Germany, are under

progress. Volkswagen Foundation, Germany, has sanctioned one project during the year.

EPFL, Lausanne, Switzerland and IIT-Madras will be jointly organizing, next year, an International Course on "Technology and Sustainable Development : Innovative and Integrated Approaches in Emerging Countries". The participants will be drawn from Switzerland, rest of Europe, India and other developing countries.

During the summer, about 100 faculty members from the Institute visited universities and research laboratories abroad for collaborative research, participation in conferences, visiting assignment, lectures, consultancy, etc.

ORGANIZATION OF INTERNATIONAL AND NATIONAL CONFERENCES

Our Institute possesses an excellent Conference Complex comprising Auditoria, Conference Rooms, Exhibition Hall and a Dining Hall. This Complex has been the venue for eight national conferences and four international conferences during the year in addition to numerous Workshops, Professional Society Meetings, Technical Seminars and Training Programmes.

INTERNATIONAL STUDENT EXCHANGE PROGRAMMES

Over the past few years, the Institute has created several opportunities for International Student Exchange. One of the major initiatives in this regard is the Indo-German Agreement between the five IITs and the top six Technical Universities in Germany. Under this Programme, we have deputed 20 M. Tech. students and 5 M. S. scholars to undertake their project / thesis work in these German Universities last year. We have also

received a few Ph.D. and Dipl.-Ing. scholars from Germany to undertake their projects in our research laboratories.

Three students of Journalism and one student of Industrial Engineering from the Hochschule Bremen carried out their course and project work in the Humanities and Social Sciences Department. Under the MoU with EPFL, four students from the Rural Engineering Department of EPFL will be studying in IIT-Madras for one semester, beginning July 2000. An M.Tech. student in Industrial Mathematics was deputed to the University of Kaiserslautern for training.

CAREER DEVELOPMENT AND WELFARE SCHEMES FOR THE EMPLOYEES

A Professor-in-charge for HRD was nominated a few years ago, 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, 25 training programmes (55 programme-days) 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 was organized during the year, in which 640 employees participated.

Special Programmes for the children of faculty and staff members in the age group of 15-17 and 12-14 were conducted on Communication Skills, Memory Skills, Speed-Reading, Teamwork and Career Guidance.

The feedback received from the participants in the different programmes is extremely favourable and encouraging. The staff members have now come forward to identify

their HRD needs, and are making specific requests for more programmes in identified areas.

OUR QUALITY INITIATIVES

IIT-Madras is the first Higher Technological Institution to have secured ISO-9001 Certification (for six units). The first and second Surveillance Audits were conducted by TUV India recently, and the Auditors were fully satisfied with the compliance requirements of ISO 9001. Efforts are under way to secure ISO certification for more units in the Institute. We are also intending to obtain NABL Certification for our Laboratories.

Continuous improvement being the hallmark of a learning organization, several 5-S Programmes have been conducted. We have also initiated Programmes on Quality Circles in three of our Administrative Units ; gradually, they will cover the entire Institute.

INFRASTRUCTURE DEVELOPMENT

A Campus-wide high speed fiber optic ATM / Ethernet back-bone network which was put in operation last year, is presently being expanded into the hostel zone and up to the main gate. When the expansion is completed, the campus network will spread through all of campus, from Adyar to Velachery and Taramani. We will be one of the first in the country to support dial-up network connectivity to all faculty and staff in their homes.

IIT-Madras was selected last year for the commissioning of a level-III ICOSER Centre by TIFAC and the Department of Science and Technology. The Centre was commissioned last year. It houses a number of high-end compute and file servers and high and mid-

range graphics access stations. The facilities of the Centre will be made available to regional institutions this year.

The Department of Electronics announced a programme last year under which IITs and a few other institutions were to receive Parallel Computer Systems (PARAM). Our PARAM system is in the process of installation.

The Computer Centre has launched a web-based system for collecting feedback on courses and teachers. This is one of the first major paper-less operations on Campus. A similar system for on-line enrollment is being tested and is expected to be operational next semester. The student election has been an on-line operation over the past couple of years. In a major upgradation of facilities, the Computer Centre is phasing out all dumb terminals and replacing them with workstations and the latest technology graphics thin clients.

Sun Microsystems has donated equipment / software, and has set up the Java Laboratory in the Computer Science and Engineering Department. Under a collaboration between the Computer Science and Engineering Department and the Electrical Engineering Department, and Cisco, an Advanced Network Laboratory is being set up. Intel has sponsored a Speech Laboratory in the Computer Science and Engineering Department, and an Internet Technologies Laboratory in the Electrical Engineering Department. Sun Microsystems is assisting IIT-Madras in setting up browsing centres for students in the hostel zone, with 50 Sun thin clients. Complete Business Solutions of India has set up a laboratory in the Computer Science and Engineering Department. The Computer Centre has set up an Electronic Class Room. The PCs support Windows and Linux environments and are equipped with full multi-media and network capability. A new Computer Aided Engineering Laboratory

is being inaugurated in the Department of Mechanical Engineering for providing instruction in Computer-Aided Drafting to our students.

Our New Library Building was inaugurated recently and provides excellent facilities for the users. We are also in the process of establishing a Digital Library. A Heritage Centre will be established in the old library building with the objective of collecting and showcasing archival materials relating to the several phases of growth of our Institute.

Our Telephone Exchange has been modernized and provides user-friendly service to all the users.

We have added several rooms in all the Hostels in order to cater to the enhanced intake. We have started the construction of a new Ladies' Hostel with a capacity of 400 rooms. Plans have been drawn up for building a very large dining facility to centralize the messes, for better convenience, hygiene and effectiveness. A new Guest House for international students and faculty is being contemplated as an adjunct to the existing Guest House facilities.

Several new initiatives have been taken up for campus beautification. These include international standard road signs, tree planting, well-lit sign boards for each Institute building, landscaping and lawns in several places, etc.

STUDENT CO-CURRICULAR AND EXTRA-CURRICULAR ACTIVITIES

As part of the Cultural activities, the Institute Gymkhana organised *Bharath Utsav* and *Saarang* during October 1999 and January 2000, respectively.

On the Sports side, our Institute hosted the Inter-IIT Sports Meet during December 1999. I am happy to report that our boys won the General Championship this year.

Following the success of the earlier two *Pragya* events, a more comprehensive Student Technical Festival was organized for a week during March 2000 under the new banner of *Shaastra*. The programmes included Design Contests, Paper Presentation Contests, Entrepreneurship Contests and Lectures by eminent personalities.

ALUMNI MATTERS

During the 40 years of its existence, our Institute has so far awarded 22,074 degrees, ranging from Ph.D. to B.Tech. The education and training they have received at the Institute have enabled our alumni to launch themselves into professionally satisfying and successful careers. Many of 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, and valuable inputs to Technology Innovation and National Development.

In addition to the parent Alumni Association on Campus, we have several Chapters within the country and abroad. The 1975 batch is celebrating its Silver Reunion this year. Over the past four years, we are honouring our alumni for their accomplishments through the Distinguished Alumnus Awards. I am happy to announce that this year we have selected four Alumni for this honour : Dr. Rajiv Ramaswami, Mr. S. Shankar, Mr. M. S. Srinivasan and Dr. Sankaran Sundaresan.

It has been recognized world-wide that the alumni represent one of the important stakeholders for the Institute and a potential source of resource inputs. We have identified

a group of influential alumni to help us to mobilize resources from the alumni for Institute activities. We have also established an Office of Alumni Affairs to coordinate the interaction between the Institute and the Alumni.

As a part of the efforts to reconnect with alumni and establish a sustained interactive relationship with them, a high-level delegation of the Institute visited the US recently, and had meetings and workshops with the alumni in seven different cities in the US. As a result of this visit, Chapters will be established in six cities, in addition to the IIT Madras Alumni Association of North America (IITMAANA) in Houston. During these meetings and workshops, the alumni made a number of suggestions covering academic issues, organizational issues and resource mobilization issues. In addition, the Director and the Deputy Director also addressed the alumni in Cochin and Chennai.

Several alumni have made substantial donations to the Institute during the year : Dr. Tom Alexander, USA ; Dr. Gururaj Deshpande, Ms. Jaishree Deshpande, USA ; Mr. T. T. Jagannathan, T. T. K. Group Companies; and Mr. S. Gopalakrishnan, Infosys, Bangalore.

The 1972 Batch Scholarship Trust has instituted 11 Scholarships for the first B.Tech. students, including 3 new Scholarships to be awarded this year.

LOOKING INTO THE FUTURE

We have just crossed 40 ; over the past 40 years, our focus has evolved through different stages : During the first decade, the thrust was on Manpower Development. During the second decade, the Research dimension was added during this period, the slogan world-wide was "Publish or Perish".

During the third decade, we added two new dimensions, viz., Sponsored Research and Consultancy ; during this period, the slogan was "Consult and Publish or Perish". During the fourth decade, with the advent of the concept of globalization and internationalisation, we began to appreciate the significance of Innovation, Intellectual Capital and Competitiveness. During this period, the slogan coined nationally was "Patent, Publish and Prosper". During the current decade wherein we are being overwhelmed by rapid changes in almost all spheres of human activity, it has been pointed out that the slogan will be "Adapt or Perish". As far as our Institute is concerned, I believe, we should strive to be the "Preferred Destination for all our Stakeholders".

ACKNOWLEDGMENTS

For all the achievements and accomplishments enumerated in this Report, several people and agencies are responsible -- our faculty, students and staff ; agencies and industries sponsoring R&D and consultancy projects ; faculty and professionals from other organizations who have assisted our Institute in several of our Committees and endeavours; and our alumni. The Institute is very grateful to the Ministry of Human Resource Development, Government of India, for its continued and sustained support. We would like to place on record our sincere acknowledgment of the invaluable guidance and wise counsel provided by our Board of Governors headed by Dr. K. Kasturirangan.

2. ADMINISTRATION

2.1 General

Indian Institute of Technology, 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 Mumbai, Kanpur, Kharagpur, Delhi and Guwahati) are administered centrally by the Council of IITs, an apex body established by the Govt. of India to coordinate the activities of these Institutes. The Minister for Human Resource Development of the Govt. 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 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. The Buildings and Works Committee advises the Institute on matters relating to buildings and works activity. The Compositions of these Committees are 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 constituted by the Senate to help in the efficient administration of academic and research activities of the Institute. The composition of these Boards together with a list of other officers is also given in Appendix.

2.2 IITM rank in Asia-Pacific region

A Survey of Universities and Technical Institutions in the Asia-Pacific region, conducted by the Asiaweek Magazine, ranked this Institute in the fifth place in 1999 above many institutions in Japan, Australia and other countries in the region.

2.3 ISO 9000 Certification

RWTUV, Germany conferred the ISO-9001 Certification to this Institute valid until March 2002 since it has established and applies a Quality system for

Design of academic and User-Oriented Programmes
Support Services, Library, Computer Centre, Workshop
Industrial Consultancy and Sponsored Research.

This is the first Higher Educational Institution to receive this Certificate. Two Surveillance Audit had also so far been conducted by the TUV India Pvt Ltd auditors and they were fully satisfied with the compliance requirement regarding ISO 9001 certification.

2.4 Staff Position

As on 31.03.2000, 1669 staff were in position comprising 333 Faculty (Professors 142, Associate Professors 70, Assistant Professors 119, Lecturers 2) , 16 Scientific Staff, 7 Design Staff, 429 Technical Staff and 884 Administrative staff. During the period under report 1 Assoc. Professor, 1 Asst. Professor and 18 other staff were appointed and all of them joined . 66 Faculty, Officers and Staff retired from their positions, 5 Staff members took voluntary retirement, 3 resigned and 10 expired.

2.4.1 Faculty / Officers/ Staff who were on Long Leave

Sl. No.	Name & Department	Duration	Nature of Leave
1.	Prof.M.Ravindran, OEC	09.11.93 to 04.05.2000	EOL
2.	Prof.V.S.Raju, OEC	09.01.95 to 03.07.2000	EOL
3.	P.Sambandam, Asst.Prof., OEC	25.03.96 to 24.03.2001	EOL
4.	Prof.C.Eswaran, Elec.Engg.	31.07.97 to 30.07.99	EOL
5.	Dr.K.A.Padmanabhan, Metl.Engg.	29.09.97 to 28.09.2002	EOL
6.	Prof.M.R.Pranesh, OEC	18.01.98 to 31.07.99	EOL
7.	Dr.J.T.Sanjeevamurthy, SO-I, CSE	02.03.98 to 01.09.99	EOL
8.	Dr.S.Sankara Raman, Associate Professor, Chemistry	05.05.98 to 23.04.99	Sab.Leave
9.	Prof.M.V.C.Rao, Elec.Engg.	01.06.98 to 31.05.2000	EOL
10.	Prof.(Ms.) Maha Seshasayee, Phy.	22.06.98 to 21.06.99	Sab.Leave
11.	Sri G. Jayakumar , Accountant	22.06.98 to 21.03.2000	EOL
12.	Dr.S.S.Bhattacharya, Asst.Prof., Metl. Engg.	03.08.98 to 31.07.2000	EL/HPL/ EOL
13.	Prof.K.Ramar, Elec.Engg.	03.08.98 to 02.08.2000	EOL
14.	Prof.V.V.Sastry, Elec.Engg.	17.08.98 to 16.05.99	EOL
15.	Prof.S.Srinivasan, Elec.Engg.	17.08.98 to 20.06.99	Sab.Leave
16.	Sri V.S. Subramanian, T.O(SG), MSRC	16.09.98 to 15.09.2000	EOL
17.	Smt. Zahida Basha, Sr. Prof. Asst., Central Library	21.09.98 to 20.09.2000	EOL
18.	Dr.T.J.Kamalanabhan, Asst.Prof., Humanities & Soc Sci.	09.10.98 to 21.01.2000	EOL

Sl. No.	Name & Department	Duration	Nature of Leave
19.	Prof.V.Ramamurti, Applied Mech.	02.12.98 to 31.05.99	Vacation + EL
20.	Dr.S.B.Pattnaik, ASP, Civil Engg.	21.12.98 to 20.10.99	Sab.Leave
21.	Prof.K.N.Bhat, Elec.Engg.	28.12.98 to 28.12.99	Sab.Leave + EL
22.	Smt.Ranjana Shukla, SDE, EED	25.01.99 to 25.07.99	HPL
23.	Dr.M.S.Ramachandra Rao, Asst.Prof., Physics	03.01.99 to 31.07.1999	EL / Vacation / EOL
24.	Dr.M.S.Moni, S.O.Gr.I, RSIC	15.03.99 to 14.07.2000	EOL
25.	Dr.P.Bhattacharyya, Professor, Maths	14.06.99 to 30.04.2003	EOL
26.	Sri G. Palaniswamy, Scientific Officer Gr.I, R.S.I.C.	19.07.99 to 18.07.2000	EOL
27.	Dr.T.A.Gonsalves, Professor, Computer Science & Engg.	02.08.99 to 01.08.2001	EOL
28.	Dr. K.Lalitha, Professor, Chemistry	02.08.99 to 01.08.2000	Sab. Leave
29.	Ms.Ramadevi N.S., L.D.C.	12.08.99 to 18.02.2000	EOL
30.	Dr.K.M.M.Prabhu, Professor, Electrical Engg.	17.08.99 to 14.12.2000	Sab. Leave + EL
31.	Sri V. Prabhakar Rao, T.O, EED	06.09.99 to 05.09.2001	EOL
32.	Dr.T.Panda, Professor, Chem. Engg.	21.09.99 to 20.09.2000	EOL
33.	Dr.S.Krishnan, Professor, Aerospace Engg.	01.11.99 to 30.06.2000	EOL
34.	Dr.P.C.Deshmukh, Professor, Physics	01.01.2000 to 31.12.2000	Sab. Leave
35.	Imagaran M., Assistant	1.3.2000 to 28.02.2002	EOL

2.4.2 Faculty / Staff appointed during the period 01.04.99 to 31.03.2000

Sl. No.	Name	Designation & Department		Date of Joining
1.	Sri Shashidhar T.Koppad	J.E.Gr.II (Civil)	Engg. Unit	21.04.99
2.	Dr.T.S.Prasanna Kumar	Associate Professor, Metl. Engg.		04.05.99
3.	Ms. Nirmala Jeyalakshmi D.	L.D.C.		19.05.99
4.	Prabakar G.	L.D.C.		19.05.99
5.	Sri N.T.Sasikumar	Mechanic(Carp.)	C.W.S.	21.05.99
6.	Sri J.Senthilnathan	Tech. Asst.	Civil Engg.	26.05.99
7.	Sri S.Ravi Subramanian	Tech. Asst.	Mech. Engg.	28.05.99
8.	Ms.Nirmala M.R.	L.D.C.		09.06.99
9.	Sri R.Thiruppathi	Mechanic(Elec.)	C.W.S.	18.06.99
10.	Sri M.Gajendran	Mechanic(Carp.)	C.W.S.	23.07.99
11.	Dr.S.Jayaprakash	Sr. Sys.Engr., Computer Centre		05.08.99
12.	Sri K.Kumar	Mechanic(Carp.)	C.W.S.	13.08.99
13.	Dr.K.Sundarrajan	Jr. Medical Officer, Institute Hospital		20.08.99
14.	Dr.G.Vezha Venthan	Jr. Medical Officer, Institute Hospital		20.08.99
15.	Dr. (Mrs.) Jayasree Murthy	Consultant Obstetrician and Gynaecologist, Institute Hospital		25.08.99
16.	Sri. S. Kumaraswamy	Jr. Consultant (Estt.)		16.09.99
17.	Sri. V. Sadasivam	Sr. Consultant (Estt.)		16.09.99
18.	Sri. C.S. Venkatesan	Asst. Sys. Engr., Computer Centre		13.10.99

19.	Dr. (Ms.) R. Mala	Jr. Medical Officer, Institute Hospital	29.10.99
20.	Dr.Srinivasa V. Chakravarthy	Asst. Professor, Electrical Engg.	3.1.2000

2.4.3 Faculty / Staff who have Retired during the period 01.04.99 to 31.03.2000 Super Annuation:

Sl. No	Name	Designation & Department	Date
1.	Smt. D.Ambujam	Sweeper Gr.I, Engg. Unit	30.04.99
2.	Sri A.Ganesan	Jr. Engineer Gr.I, Engg. Unit	31.05.99
3.	Sri K.Raghavan; Pillai	Sr. Mali(SG), Engg. Unit	31.05.99
4.	Sri V.Srinivasan	Sr. Mech.(SG)(Carp.), Engg. Unit	31.05.99
5.	Sri R.M. Parameswaran	Asst. Executive Engr., Engg. Unit	31.05.99
6.	Sri A.Mariadoss	Daftry Gr.I (SG), Gate Off.	31.05.99
7.	Sri P.Veeraraghavan	Sr.Lab.Asst., Chemical	31.05.99
8.	Sri N.Thankachan	Sr.Lab.Asst., Civil Engg.	31.05.99
9.	Sri L. Palaniappan	Lay Sec. (SG), Hospital	31.05.99
10.	Sri A.Aslam Syeed	Sr. Mechanic(SG), Physics	30.06.99
11.	Sri P.Elumalai	Maistry Gr.I(SG), Engg. Unit	30.06.99
12.	Sri M.Gopal	Cane Worker Gr.I(SG), Engg. Unit	30.06.99
13.	Sri W.Ibrahim	Supervisor(SG), Civil Engg.	30.06.99
14.	Sri G.Kuppuswamy	Supervisor(SG);(Elec.), Engg. Unit	30.06.99
15.	Sri D.S.Paramanandam	Supervisor(SG), C.W.S.	30.06.99
16.	Sri K.Selvaraj	Jr. Mechanic, C.W.S.	30.06.99
17.	Sri B.Sivanesan	Sr. Mechanic, Mech. Engg.	30.06.99
18.	Sri A. Balaraman	H.S.G.(SG), Security	31.07.99
19.	Sri M. Basha	H.S.G., Security	31.07.99
20.	Sri M.Govindaswamy	Sr. Mali(SG), Engg. Unit	31.07.99
21.	Sri D.Kumaraswamy	Sr. Mechanic, Mech. Engg.	31.07.99
22.	Sri V.Madhanagopalan	Draughtsman Gr.I(SG), O.E.C.	31.07.99
23.	Sri R.Malakondaiah	Sr. Sweeper, Engg. Unit	31.07.99
24.	Sri N.Subbaiah	Sr. Mech(SG)(Painter), Engg. Unit	31.07.99

Sl. No	Name	Designation & Department	Date
25.	Sri N. Malayalam	Institute Engineer, Engg. Unit	31.08.99
26.	Sri T.Krishnamurthy	Secretary, Admn.I Sec.	31.08.99
27.	Sri K.Rajagopalan	Assistant (SG), Civil Engg.	31.08.99
28.	Sri P.V. Radhakrishnan	Store Attdt. Gr.I (SG), Mech. Engg	31.08.99
29.	Sri V. Sankaranarayanan	Sr.Lab.Asst., Elec.Engg.	31.08.99
30.	Sri S. Devasagayam	St.Attdt.Gr.I (SG), Elec.Engg.	31.08.99
31.	Sri E. Perumal	Supervisor (SG)	30.09.99
32.	Dr.Vijayalaxmi Sirohi	Sys.Officer Gr.I, Computer Centre	30.09.99
33.	Sri P. Duraisawamy	Jr. Mech, Central Library	30.09.99
34.	Sri E. Perumal	Supervisor (SG), Aerospace Engg.	30.09.99
35.	Ms. Rajam Baskar	Assistant (SG), Chemical Engg.	31.10.99
36.	Sri G. Balasundaram	Sr. Mech., Chemistry	31.10.99
37.	Sri P.Narayanaswamy	O.A.(SG), Chemistry	31.10.99
38.	Sri T.R.Balasubramanian	Assistant (SG), Academic	30.11.99
39.	Sri K. Somasundaram	Supervisor (SG), Elec. Engg.	30.11.99
40.	Sri B. Sankaran	Technical Officer, Elec. Engg.	30.11.99
41.	Sri K. Ramanujam	Supervisor, Civil Engg.	30.11.99
42.	Sri E. Balaraman	O.A.(SG), Appl.Mech.	31.12.99
43.	Sri M. Kuppan	H.S.G., Security	31.12.99
44.	Smt. G.Kannammal	Sweeper Gr.I(SG) Engg. Unit	31.12.99
45.	Sri A.Ponnuswamy	Jr. Mechanic C.W.S.	31.12.99
46.	Sri K.S.Ravindranath	Supervisor(SG) C.W.S.	31.12.99
47.	Sri V.Varadha Rao	D'man Gr.I(SG) Chem. Engg.	31.12.99
48.	Sri P.Kumaran	Supervisor(SG) C.W.S.	31.01.2000
49.	Sri A.Rajaiah	Sr. Sweeper Engg. Unit	31.01.2000
50.	Sri D.N.Rajasekharan	Sr. Mechanic C.W.S.	31.01.2000
51.	Sri O.R. Krishnan Nair	Sr.Lab.Asst., Civil Engg.	31.01.2000
52.	Sri T. Mani	Lib.Attdt.Gr.I (SG), Library	31.01.2000
53.	Sri M. Raju	Driver (SG), T.Cell	29.02.2000
54.	Sri D.Justian	Supervisor C.W.S.	29.02.2000
55.	Sri M.Julians	Supervisor(SG) Civil Engg.	29.02.2000

Sl. No	Name	Designation & Department	Date
56.	Sri A.Y.Prakasam	Sr. Sweeper Engg. Unit	29.02.2000
57.	Sri Arumugam	Sr. Helper, Engg. Unit	31.03.2000
58.	Sri M.Raju	Sr. Mech(SG) (Carp.), Engg. Unit	31.03.2000
59.	Sri P.Ramachandran	Jr. Engineer Gr.I, Engg. Unit	31.03.2000
60.	Sri T.Thayuman	Draughtsman Gr.I(SG), Engg. Unit	31.03.2000
61.	Sri M.Vedagiri	Sr. Mech(SG)(Painter), Engg. Unit	31.03.2000
62.	Sri R.S.Arumugam	O.A.(SG), C.S.&E.	31.03.2000
63.	Sri R. Kuppuswamy	H.S.G., Security	31.03.2000
64.	Sri P.K.Velu	H.S.G., Security	31.03.2000
65.	Sri A. Selvaraj	Sr.Lab.Asst., Civil Engg.	31.03.2000
66.	Sri T. Kanakaraj	Sr. Helper, Civil Engg.	31.03.2000

2.4.4 Voluntary Retirement:

1.	Dr.V.V.Sastry	Professor, Electrical Engg.	17.05.99
2.	Sri S.Joseph Antony	Supervisor(SG), CTC	07.07.99
3.	Rajeswari Roopsingh	Sr.Tele.Operator, Engg.Unit.	11.08.99
4.	Sri C.J. Santhinathan	Supdt. Stores	11.08.99
5.	Mrs. Ranjana Shukla	Sr. Design.Engr, Elec. Engg.	15.02.2000

2.4.5 Resignation :

1.	Dr.N.Kumar Pitchumani	Asst. Professor, Civil Engg.	13.08.99
2.	Sri.J.T.Sanjeeva Murthy	Scientific Officer Gr.I, CSE	27.10.99
3.	Sri Shashidhar T. Koppad	Jr. Engr. Gr.II, Engg. Unit	08.03.2000

2.4.6 Expired :

1.	Vaithyanathan R.	Tele.Operator Gr.I, Engg.Unit.	17.04.99
2.	Sri V.Bhoopathy	Sr.Mech(SG)(Carp.), Engg. Unit	9-5-1999
3.	Sri K.Venkatarathinam	Sw.Gr.I(SG), Engg. Unit	11.05.99
4.	Sri S.Sabhapathy	Sr. Mechanic(SG), Mech. Engg.	26.06.99
5.	Sri V.Jayaraman	Supervisor(SG), C.E.C.	27.08.99

6.	Smt. M. Govindammal	Sweeper Gr.I (SG)	08.12.99
7.	Dr.B.M.Sivaram	Professor, Physics	25.12.99
8.	Ramu S.	Helper Gr.I, Gymkhana	24.01.2000
9.	Vedachalam G.	Sr.Lab.Asst., Civil Engg.	06.01.2000
10.	Sri Q.Abdulla Khan	Supervisor (SG)	23.02.2000

2.4.7 Completion of Tenure and relieved:

S.No	Name	Designation & Department	Date
1.	Dr.V.B. Athreya	Professor, Hum.& Soc. Sciences	01.07.99
2.	Dr.P.Murugaraj	Asst. Professor, Physics	19.08.99
3.	Dr.A.Selvam	Jr. Medical Officer, Institute Hospital	29.09.99

2.5 Staff Welfare:

Review Promotion Scheme:

Consequent on the advancement of the date of implementation of Recruitment and Career Development Scheme (RCDS) w.e.f. 13.09.1986 to the eligible B,C and D employees, a total of 716 employees were benefited including 135 retired staff.

Human Resource Development:

As part of human resource development activities, the Institute plans and implements programmes for providing opportunities to technical and administrative staff to update and upgrade their knowledge and skills in order that they may perform their duties effectively. In addition, the programmes are also aimed to enhance the pride and satisfaction they feel in their work. The overall feeling of happiness engendered by these programmes also overflow to their home lives and contribute to a sense of well-being for the entire family. These activities also form a part of the training requirements under the ISO 9000 programme.

While the major thrust of the HRD activities at the Institute is aimed at the non-teaching staff, courses have also been organized for senior functionaries of the Institute, for young faculty, for students of the Institute and for the children of the employees. For senior functionaries, a 3-day programme on "Leadership and Team building" was conducted. For the young faculty, a one-day programme on managing success and stress was held. Classes were held for interested employees to upgrade their programming skills. These classes were also open to students, mainly post-graduates, outside their curriculum.

For children of employees in the age-group 15-17 and 12-14, special programmes are conducted on communication skills, memory skills, speed -reading, teamwork, career

guidance, etc. They were 5-day and 2-day programmes respectively. A session was set apart for the parents of these children.

The HRD activities were initiated at the Institute in 1997 under the charge of a Professor. In the period of reporting, 15 programs were conducted. The total number of program days was 34. The total number of participants was 466. Taking all the programs conducted so far from its inception, a total of 43 programs have been held, involving a total participation of 1263 persons.

The impact of the various programmes, as seen from the feedback at the end of each program, appears to be very favourable. A more decisive index of the impact is that, in the beginning, staff had to be nominated for participation in these programmes, while at the present time, they are volunteering to attend. Those who have not attended a particular programme demand to be included. Staff themselves are identifying their HRD needs and asking for more programmes, such as time management, conflict management, etc.

Future Plans

Programmes lined up for the next year include bringing all administrative staff, technical staff and security personnel of the Institute under the "Attitude Management" umbrella. Plans are also afoot to generate a psychological profile of our employees that would help in designing suitable further programmes. Other plans on the anvil are:

More programmes for the children of our employees in their summer and winter vacations, including basic training in computer skills.

Advanced skills training for the mechanics of our Central Workshop at the A.T.I.

Programmes in Tamil to help the "C" and "D" groups of employees.

Programmes in Office Efficiency: this will also involve using computers to aid in their everyday work.

Our Computer Centre has facilities for hands-on training where a tutor at a master computer will provide guidance for a group of people at some 12 terminals. It is proposed to use this facility extensively to impart skills in the use of various software, for example, Autocad for our Draftsmen.

The details of the HRD programmes conducted between April 1999 and March 2000 are given in the following table:

Sl.No.	Training Programme	Date(s)	No. Attended
1	Enthusiasm for happiness in life and at work	24.4.99	40
2		29.4.99	25
3	Success sans stress	1.5.99	45
4	Growing Big	4,5,6,12&19.6.99	40
5	Maintenance Management	12.6.99	22
6	Computer languages	3.6. & 9.7.99	50
7	Growing better	10.7 & 11.7.99	32
8	Computer languages	19.7. & 20.8	40
9	Leadership & team building	23.7. & 25.7.99	30
10	Maintenance Management	30.10.99	22
11	Transactional analysis	17.12 & 18.12.99	20
12	5-S in Office Management	19.2.2000	23
13	5-S in Office Management	24.2.2000	23
14	Attitude Management	24.3 & 25.3.2000	24
15	Transactional analysis	31.3.2000	27
16	For guest house staff	8.12.97	24
17	In-service training for LDCs	14.2 & 14.3.98	49
18	For malis of horticultural section	21.2.98	32
19	Fluid power systems for workshop staff	27.2.-17.3.98	9
20	Hostel Office Managers	28.2.98	11
21	Enhancing administrative performance	28.3.98	31
22	Maintenance of electric/electronic equipment	11 & 12.4.98	12
23	Engg Unit water supply division staff	18.4.98	20
24	Engg Unit electrical sub-division staff	16.5.98	48
25	CNC machining for technical staff	6.6-13.6.98	15
26	Creation of bibliographical records for library	11.6.98	25
27	Advanced training for CWS at ATI,Guindy	29.6.-21.8.98	9
28	Team work, motivation and quality assurance	30.8.98	60
29	Family stress management	3.6&10.6.98	30
30	Stress management in modern day life	June,July,Aug & Sep 1998	208
31	Organiational effectiveness	21.11.&28.11.98 and 12,13.2.99	80
32	Enthusiasm for happiness in life & at work	24.4. & 29.4.99	65
33	Success sans stress	1.5.99	45
34	Growing big	4,5,6,12&19.6.99	32
35	Maintenance Management	12.6.99	22
36	Computer language	3.6.-9.7.99	50

Computer Allowance:

To encourage the use of modern computing facilities, IIT Employees were granted Special Allowance of Rs.40/- p.m. for using Personal Computers during the period under report.

Hindi Coaching:

In accordance with the directions of the Govt. of India, Hindi classes were conducted regularly to both technical and administrative staff members to improve their knowledge in Hindi. As on 31.03.2000, 781 staff members were offered this course. In 1999-2000 47 staff members were offered this course.

Supply of Liveries:

All Class D, Security and certain categories of C & B staff were provided with uniforms once in two years.

Footwear were provided for those who work in Laboratory / Workshop and also to those who perform hazardous duties besides Security staff. This year 473 staff were provided with shoes and chappals.

School Fee Concession:

Institute had reimbursed the fees paid by staff members for their child's education as per Govt. of India norms. During the period under report 45 staff members were given this facility.

Transport Facilities to Children of the staff:

Institute provide concessional fare to the children of the staff members to attend schools in the Campus. In the year 1999-2000, 53 Children got benefited.

ADVANCES :

During the period of report an amount of Rs.1,02,24,582/- has been sanctioned as House Building Advance and an amount of Rs.37,18,843/- has been sanctioned as Conveyance Advance as given below:

Advance	:	No. Sanctioned
House Building Advance	:	32
Car Advance	:	09
Two Wheeler Advance	:	90
Personal Computer Advance	:	10
Cycle Advance	:	14

Employees Welfare Scheme:

Employee's Welfare Scheme was implemented in this Institute from 1976. It helps the employees family in the event of untimely demise. In the year 1999-2000, 3 families were benefited.

(i) Academic Administration

DIRECTOR

R.Natarajan

Deputy Director

C.R.Muthukrishnan

DEANS

Academic Courses	M.S.Ananth
Academic Research	V.Ganesan
Administration	G.Subramanian
Industrial Consultancy & Sponsored Research	S.Srinivasamurthy
Students	B.Viswanathan

Heads of Departments

Aerospace Engineering	S.S.Gokhale	
Applied Mechanics	Megha Singh	
Chemical Engineering	K.Krishnaiah	
Chemistry	M.S.Gopinathan	
Civil Engineering	V.Kalyanaraman	
Computer Science & Engg.	C.Pandurangan	
Electrical Engineering	A.Jhunjhunwala	
Humanities & Social Sciences	L.V.L.N.Sarma	(upto 22.02.2000)
	T.T. Narendran	(w.e.f. 23.02.2000)
Mathematics	P.R.Parthasarathy	(upto 01.12.99)
	A.Avudainayagam	(w.e.f.02.12.99)
Mechanical Engineering	V.Sriramulu	
Metallurgical Engineering	S.K.Seshadri	
Ocean Engineering Centre	C.P.Vendhan	
Physics	B.M.Sivaram	(deceased on 25.12.99)
	V.Ramakrishna Murthy	
		Head i/c (25.12.99 - 01.02.2000)
		Head (w.e.f. 02.02.2000)

Heads of Research Centres

Biotechnology Research Centre	K. Krishnaiah
Centre for Systems & Devices	Ashok Jhunjunwala
Composites Technology Centre	N.G.Nair
Materials Sciences Research Centre	K.Gopinath
Regional Sophisticated Research Centre	S.P.Venkateshan

Head of Special Facilities for Interaction with Other Institutions

Centre for Industrial Consultancy & Sponsored Research	S. Srinivasa Murthy
Centre for Continuing Education	P.A. Aswathanarayana (upto 21.2.2000) V G Idichandy (w.e.f.21.2.2000)
Central Electronics Centre Computer Centre	M Kumaravel P. Sriram

(ii) 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
Intenal Audit Officer	R.Esakkimuthu
Assistant Registrars	
	P.Bharathamani
	K.Chidambaram
	V.Ganesan
	M.Manickam

S.Mahalingam
P.Paramanandam
M.Rajasekaran
P.Ramachandran
B.Ramasamy
K.Sekar
U.J.Suresh

Chief Security Officer Lt.Col.K.Rajendran (Retd.)
Security Officer (SS) G.Selvamani
Secretary (SG) to Director G.Natarajan

Head of Central Services, Facilities and Section

Central Library	Harish Chandra
Chairman, Council of Wardens	S Kumaraswamy
Chief Medical Officer(Incharge)	N A Jayavelan
Air-Conditioning Unit	R Raman
Central Gas Supplies Unit	K K Balasubramanian (upto 30.5.99) N Balasubramanian (w.e.f.31.5.99)
Central Glass Blowing Section	M. Chidambaram (upto 31.10.99) T A Prasada Rao (w.e.f.1.11.99)
Central Photographic Section	D K Sharma
Central Workshop	N L N N Kumar
National Service Scheme	T T Narendran
Adviser, Sports	B Ramamoorthy
Adviser, Cultural	L S Ganesh (upto 8.8.99) M N Sudheendra Rao (w.e.f.9.8.99)
Foreign & Weaker Section	V R Rengaraju (upto 8.6.99)
Students	M M Mayuram (w.e.f. 9.6.99)
Vigilance	V G Idichandy
Placement & Training	A R Balakrishnan
Guidance & Counselling Unit	DVS Murthy (upto 2.9.99) M Govardhan (w.e.f. 3.9.99)

Engineering Unit

**Chairman, Estate & Works
Committee**

**P.K.Aravindan
V.R.Rengaraju**

**(upto 11.04.99)
(w.e.f.12.04.99)**

Institute Engineer

N.Malayalam

(upto 31.08.99)

Executive Engineer

C.Ganesan

Asst.Executive Engineers

**S.K.Pati
S.Swaminathan
R.M.Parameswaran
F.John De Britto
V.Seenivasan
K.Dharmaraj**

(upto 31.05.99)

3. ACADEMIC PROGRAMMES AND AWARD OF DEGREES

The Institute offered Ph.D. programme in 13 departments, M.S. programme in 10 departments, M.Tech programme in 15 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 1999-2000

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 1999-2000 are given below:

Sl. No	Department	B.Tech.	M.Tech. Dual Degree	M.Tech	M.Sc	M.S.	Ph.D.	Total
1.	Aerospace Engg.	27	6	14	-	11	2	60
2.	Applied Mechanics	-	-	20	-	10	7	37
3.	Chemical Engineering	53	12	41	-	13	13	132
4.	Chemistry	-	-	-	25	-	22	47
5.	Civil Engineering	45	11	88	-	7	12	163
6.	Computer Science & Eng	27	6	39	-	19	5	96
7.	Electrical Engineering	87	20	54	-	16	3	180
8.	Humanities & Social Sci.	-	-	26	-	7	4	37
9.	Mathematics	-	-	9	34	-	7	50
10.	Mechanical Engg.	92	20	104	-	18	23	257
11.	Metallurgical Engg	29	5	17	-	4	5	60
12.	Ocean Engineering	20	5	6	-	10	4	45
13.	Physics	-	-	7	34	-	8	49
	Total	380	85	425	93	115	115	1213

The discipline-wise details of students joined in M.Tech dual degree and M.Tech programmes are given below:

M.Tech Dual Degree

Sl.No.	Branch	No.of students
1.	Aerospace Engineering	6
2.	Chemical Engineering	12
3.	Infrastructure Civil Engineering	11
4.	Computer Science	6
5.	Micro Electronics & VLSI Design - EE	10
6.	Communication Systems - EE	10
7.	Energy Technology - ME	7
8.	Intelligent Manufacturing - ME	7
9.	Product Design - ME	6
10.	Metallurgy & Materials Engineering	5
11.	Ocean Engineering & Naval Architecture	5
	Total	85

M.Tech

Sl.No.	Department \ Discipline	No.of students
1.	Aerospace Engineering	14
2.	Applied Mechanics: AM 1- Engg Mechanics 6 AM 2 -Industrial Tribology 7 AM 3 - Maintenance Engg & Management 1 AM 4 - Bio-medical Engg. 6	20
3.	Chemical Engineering	41
4.	Civil Engineering: CE 1- Building Technology 12 CE 2 - Geotechnical Engg 13 CE 3 - Hydraulic & Water Resource Engineering 7 CE 4 - Structural Engg. 18 CE 5 - Transportation Engg. 9 CE 6 - Environmental Engg. 9 CE 7 - Construction Technology & Management -UoP 20	88
5.	Computer Science & Engineering	39
6.	Electrical Engineering: EE 1 - Communication Systems 11 EE 2 - Energy Systems Engg 12 EE 3 - Micro Electronics 19 EE 4 - Control Guidance & Instrumentation Systems 12	54
7.	Humanities & Social Sciences Engg.: Industrial Management	26
8.	Mathematics: Industrial Mathematics & Scientific Computing	9
9.	Mechanical Engineering: ME 1 - Thermal Engg 36 ME 2 - Design 28 ME 3 - Manufacturing Engg. 27 ME 4- Automotive Engine Technology (UoP) 13	104
10.	Metallurgical Engineering:.	17
11.	Ocean Engineering	6
12.	Physics: PH-I Solid State Technology	7
Total		425

The total no. of students (1213) admitted during the year includes the following :

Foreign Nationals	4	QIP Scholars (Ph.D. & M.Tech)	32
DASA (Indian Origin)	26	Sponsored (M.Tech&MS)	21
Scheduled Castes	98	Project Staff (MS & Ph.D.)	42
Scheduled Tribes	30	External Registration	10
Women Students	86	User-oriented Programme (M.Tech)	31
Defence Officers	32	Physically Handicapped	Nil

In addition to the above, 14 SC and 7 ST students joined Preparatory Course.

3.2 Students/Scholars Enrolment

The total number of students on roll in various programmes of the Institute in the academic year 1999-2000 are given in Table-2.

TABLE - 2

Sl. No	Department	B.Tech.	M.Tech. Dual Degree	M.Tech	M.Sc	M.S.	Ph.D.	Total
1.	Aerospace Engg.	100	10	18		23	18	169
2.	Applied Mechanics	-	-	34		34	29	97
3.	Chemical Engineering	197	22	66		20	44	349
4.	Chemistry	-	-	-	50	-	102	152
5.	Civil Engineering	179	21	153		37	35	425
6.	Computer Science & Engineering	125	13	71		53	18	280
7.	Electrical Engineering	344	37	92		73	17	563
8.	Humanities & Social Sciences	-	-	50		13	19	82
9.	Mathematics	-	-	9	66	-	25	100
10.	Mechanical Engg.	359	34	190		67	73	723
11.	Metallurgical Engg	107	9	30		6	25	177
12.	Ocean Engineering	75	9	19		26	12	141
13.	Physics	-	-	12	75	-	25	112
Total		1486	155	744	191	352	442	3370

The branch/ discipline-wise and year-wise details of students enrolled in B.Tech, M.Tech dual degree and M.Tech programmes are given below:

B.Tech

Sl No	Branch	1999	1998	1997	1996	Total
1.	Aerospace Engg	27	24	26	23	100
2.	Chemical Engg	53	45	50	49	197
3.	Civil Engg	45	47	43	44	179
4.	Computer Science & Engg	27	34	32	32	125
5.	Electrical Engg	87	82	94	81	344
6.	Mechanical Engg	92	84	95	88	359
7.	Metallurgical Engg.	29	22	28	28	107
8.	Ocean Engineering	20	17	19	19	75
Total		380	355	387	364	1486

M.Tech Dual Degree

Sl.No.	Branch	No. of Students		
		1998	1999	Total
1.	Aerospace Engineering	4	6	10
2.	Chemical Engineering	10	12	22
3.	Infrastructure Civil Engineering	10	11	21
4.	Computer Science	7	6	13
5.	Micro Electronics & VLSI Design	7	10	17
6.	Communication Systems	10	10	20
7.	Energy Technology	6	7	13
8.	Intelligent Manufacturing	4	7	11
9.	Product Design	4	6	10
10.	Metallurgy & Materials Engineering	4	5	9
11.	Ocean Engineering & Naval Architecture	4	5	9
Total		70	85	155

M.Sc

Sl.No.	Discipline	1998	1999	Total
1.	Chemistry	25	25	50
2.	Mathematics	32	34	66
3.	Physics	40	35	75
Total				191

M.Tech

Sl No.	Department/ Discipline	1998	1999	Total
1.	Aerospace Engineering	4	14	18
2.	Applied Mechanics: AM 1 - Engg Mechanics AM 2 - Industrial Tribology AM 3 - Maintenance Engg & Management AM 4 - Bio-medical Engg.	4 2 3 5	6 7 1 6	10 9 4 11
3.	Chemical Engineering	25	41	66
4.	Civil Engineering: CE 1 - Building Technology CE 2 - Geotechnical Engg CE 3 - Hydraulic & Water Resource Engg. CE 4 - Structural Engg. CE 5 - Transportation Engg. CE 6 - Environmental Engg. CE 7 - Construction Technology & Management	10 4 1 12 10 8 20	12 13 7 18 9 9 20	22 17 8 30 19 17 40
5.	Computer Science & Engineering	32	39	71
6.	Electrical Engineering: EE 1 - Communication Systems EE 2 - Energy Systems Engg EE 3 - Micro Electronics EE 4 - Control Guidance & Instrumentation Systems	13 4 9 12	11 12 19 12	24 16 28 24
7.	Humanities & Social Sciences Engg.: Industrial Management	24	26	50
8.	Mathematics: Industrial Mathematics & Scientific Computing	-	9	9
9.	Mechanical Engineering: ME 1 - Thermal Engg ME 2 - Design ME 3 - Manufacturing Engg. ME 4 - Automotive Engine Technology (UoP)	24 33 16 13	36 28 27 13	60 61 43 26
10.	Metallurgical Engineering:.	13	17	30
11.	Ocean Engineering	13	6	19
12.	Physics: PH-I Solid State Technology	5	7	12
Total		319	425	744

The above total of 3370 includes the following:

Foreign Nationals	8	Project Staff (M.S & Ph.D)	93
DASA (Indian Origin)	106	Physically Handicapped	-
Scheduled Castes	208	Institute staff(M.S. & Ph.D.)	2
Scheduled Tribes	52	External Registration (M.S. & Ph.D.)	49
Women Students	238		
QIP Scholars (Ph.D. & M.Tech)	84		
Sponsoed Candidates (M.Tech & M.S.)	39		

Besides the above 3370 students, 9 CSIR Research Associates and 21 Preparatory Course students were on the roll.

3.3 New disciplines/stream introduced

A new M.Tech programme in Industrial Mathematics and Scientific Computing (IMSC) with academic and financial assistance from the University of Kaiserslautern and DAAD respectively, was introduced from July 1999 with an intake of 10 students of which 5 each under HTTA and non-HTTA.

3.4 Courses Offered:

In the academic year 1999-2000, 949 courses were offered of which 452 courses in July - Nov 99 and 497 courses in Jan - May 2000. The Department-wise details of the courses offered are given in Table 3.

TABLE 3

S. No	Department	No of courses offered in July-Nov 1999			No of courses offered in Jan-May 2000		
		Core	Elect.	Total	Core	Elect.	Total
1.	Aerospace	25	4	29	18	10	28
2.	Applied Mech	18	13	31	16	15	31
3.	Chemical Eng	23	11	34	16	14	30
4.	Chemistry	17	2	19	15	11	26
5.	Civil Eng	40	18	58	36	26	62
6.	Comp Science	20	13	33	16	12	28
7.	Electrical Eng	38	9	47	20	26	46
8.	Humanities	1	28	29	1	30	31
9.	Mathematics	9	18	27	8	21	29
10.	Mech Eng	37	16	53	27	51	78
11.	Metallurgy	21	17	38	23	14	37
12.	Ocean Eng	22	4	26	17	15	32
13.	Physics	16	8	24	13	21	34
14.	Comptech	-	4	4	-	5	5
	Total	287	165	452	226	271	497

3.5 Convocation

The 36th Convocation was held on 6.8.1999. Dr Jamshed J Irani, Managing Director Tata Steel , delivered the Convocation Address. 949 candidates were awarded various degrees. 670 candidates received degrees in person. The department-wise details of degree awarded are given in Table 4.

TABLE – 4

S.No.	Department	B.Tech.	M.Tech.	M.Sc.	M.S.	Ph.D.	Total
1.	Aerospace Eng.	20	6	-	3	4	33
2.	Applied Mechanics	-	20	-	6	7	33
3.	Chemical Eng.	46	34	-	5	9	94
4.	Chemistry	-	-	23	-	24	47
5.	Civil Eng.	39	54	-	7	9	109
6.	Computer Sci. Eng.	31	49	-	18	4	102
7.	Electrical Eng.	64	46	-	14	4	128
8.	Hum.&Soc.Sciences	-	15	-	4	3	22
9.	Mathematics	-	-	27	-	5	32
10.	Mechanical Eng.	85	91	-	11	17	204
11.	Metallurgical Eng.	27	18	-	2	6	53
12.	Ocean Eng.Centre	21	13	-	6	2	42
13.	Physics	-	6	32	-	12	50
	Total	333	352	82	76	106	949

With this Convocation the number of degrees awarded so far by the Institute is 22,074 the details of which are as follows:

Ph.D.	2169	M.Tech	7256	B.Tech	9452
M.S.	1325	M.Sc	1607	DIIT	265
B.Sc(Tech)	20				

3.6 Award of Prizes to the students:

3.6.1 Convocation Prizes:

The following are the details of Prizes awarded to the students at the 35th Convocation for their best academic records:

President of India Prize ..	A Arvind.	B.Tech. Comp. Science & Engg.
Governor's Prize ..	Vinay B Nair.	B.Tech. Chemical Engg.

Other Prizes

Sl.No.	Donor	Department	Name of student
Doctor of Philosophy – Ph.D.			
1.	Sudharshan Bhat Memorial Prize	Metallurgical Engg.	Gankidi Madhusudan Reddy
2.	Prof Langmuir Prize	Chemistry	Aldrin Denny R
3.	Prof. C N Pillai Prize	Chemistry	Venkatesan M
4.	Dr.A.L.Laskar Memorial Prize	Physics	Vasudevan V
Master of Technology – M.Tech.			
1.	Air India Prize	Aerospace	Anshuman Awasthi
2.	Indira Sivasailam Merit Prize	Applied Mechanics	Praveen Krishna I R
3.	Institute Merit Prize	Applied Mechanics	-do-
4.	Institute Merit Prize	Applied Mechanics	Seethi K A
5.	Prof BVA Rao Endowment Prie	Applied Mechanics	Praveen Kumar IR
6.	Dr.K.Subba Raju Memorial Prize	Chemical Engg	Harini Sundaram
7.	Micro-Bosch Prize	Chemical Engineering	Patil Smita Dinanth
8.	Valli Anantharamakrishnan Merit Prize	Civil Eng.	Bindu V.M.
9.	K Devarajan Memorial Prize	Civil Eng.	Maddula Dharmendra Kumar
10.	CMC Prize	Computer Science & Eng.	Vijyanand C
11.	Prof.H.N.Mahabala Endowment Prize	Computer Science & Eng.	S Ramalingam
12.	Siemens Prize and Dr.Ing.Dieter Kind Prize	Electrical Eng.	Rajnarayanan C K
13.	Prof.Achim Bopp Endowment Prize	Electrical Eng.	Aarthi T
14.	Coka Parthasarathy Prizze	Industrial Management	Prasanna S V
15.	K.V.Arunkumar Memorial Prize and Coka Parthasarathy Memorail Prize	Industrial Management	Prasanna S V
16.	Prof.B.Sengupto Prize	Mechanical Engg.	Potnusu Satya Prasad
17.	Dr S Vaidyanathan Memorial Prize	Mechanical Eng.	Vani Yadha
18.	Prof Ramamohana Rao Memorial Prize	Mechanical Eng.	Rajeshkumar J

19.	S. Anantharamakrishnan Merit Prize	Mechanical Engg.	Rajeshkumar J
20.	S. Anantharamakrishnan Memorial Prize	Met. Eng.	Pothuraju Rama Gopal
21.	Sudarshan Bhat Memorial Prize	Metallurgical Eng.	Pothuraju Rama Gopal
22.	American Bureau of Shipping Prize	Ocean Eng.	Remala Padu Ranga Prasad
23.	Institute Merit Prize	Solid State Technology	Kittu Harish Mallikarjun

Master of Science – M.Sc.

1.	Dr S R Ramadas 60th Birthday Commemoration Award and Ratna Rao Memorial Prize	Chemistry	J Indumathi
2.	Ratna Rao Memorial Prize	Chemistry	S Rajesh
3.	Mrs.Mira Paul Memorial Prize	Mathematics	R Tara
4.	Prof.Chilukury Rama-Sastry Memorial Prize	Physics	P Brijesh

Bachelor of Technology - B.Tech.

1.	President of India Prize	Computer Sci & Engg.	A Arvind
2.	Governor's Prize	Chemical Engg.,	Vinay B Nair
3.	Dr.Shanker Dayal Sharma President of India Prize	-do-	S Rajesh
4.	Bharat Ratna M.Visvesvaraya Memorial Prize	Computer Sci. & Eng.	A Arvind
5.	HAL Prize	Aerospace Eng.	J Giridhar
6.	B.Ravichandran memorial Prize and Reliance Heat Transfer (P) Ltd. Prize	Chemical Eng.	R Arvind Uppili
7.	Prof C A Sastry Endowment Prize	Chemical Eng.	Vinay B Nair
8.	Larsen & Toubro ECC Endowment Medal	Civil Eng	Saravanan V
9.	Alumni Association Prize	Computer Sci & Engg.	A Arvind
10.	B Ravichandran Memorial Prize	-do-	A Arvind
11.	Motorola Prize	-do-	Sumant J Kaushik
12.	Philips (India) Prize and Siemen's Prize	Electrical Eng.	Chandrasekhar M
13.	Prof.Achim Bopp Endowment Prize	Electrical Eng.	Gaurar Khare & N Venkata Subramanian
14.	Dr Ing Dieter Kind Prize	Electrical Engg.	N Nivedan
15.	Banco Foundation Prize and G.V.N.Rayudu Memorial Prize	Mechanical Eng.	Krishnan Sriram
16.	Sivasailam Merit Prize	Mechanical Eng.	Sandeep Kumar Arya
17.	Vaidy Krishnan Memorial Prize	Mechanical Eng.	Krishnan Sriram
18.	Dr.Dhandapani Prize	Metallurgical Eng.	Kanitty Kiran
19.	American Bureau of Shipping Prize	Naval Architecture	G Ramesh

3.6.2 Institute Day Prizes:

On the basis of performance during the academic year 1998-99, the following students were awarded Merit Prizes on the Institute day held on 10.4.2000.

Institute Merit Prizes

B.Tech. (I and II Semesters) 1998-99

1.	First Prize (Book value of Rs.500/-)	CS 98009	Dhyanesh N
2.	Second Prize (Book value of Rs.250/-)	CS 98158	Ashwin Kumar M V N

B.Tech (III and IV Semesters 1997-98)

(Book value of Rs.500/- for each Branch)

3.	Aerospace Engineering	AE 97028	Viswamurthy S R
4.	Chemical Engineering	CH 97143	Shivakumar K
5.	Civil Engineering	CE 97054	Jayaram R
6.	Comp. Sci. and Engineering	CS 97179	Karthik K L
7.	Electrical Engineering	EE 97215	Anand Kaushik D
8.	Mechanical Engineering	ME 97367	Ramnath V
9.	Metallurgical Engineering	MT 96428	Rajappa, T
10.	Naval Architecture	NA 97477	Harini G

B.Tech (V and VI Semesters) 1997-98

(Books value of Rs.500/- for each Branch)

11.	Aerospace Engineering	AE 96003	Hamsa Balakrishnan
12.	Chemical Engineering	CH96034	K Lakshmi Narasimhan
13.	Civil Engineering	CE96347	Sumit Mathew Kunnumkal
14.	Comp. Science & Engg.	CS96130	G Prasanna
15.	Mechanical Engineering	ME96033	Castelino Kenneth Gerard
16.	Metallurgical Engineering	MT96310	T Rajappa
17.	Naval Architecture	NA96334	Jayanth Krishnan
18.	Ramasarma V Kolluri Memorial Prize (Silver Medal)	EE96141	Amal Ekbal
19.	Raghavendra Memorial Prize (Book value of Rs.580/-)	ME97367	V Ramnath
20.	Rajalakshmi Krishnamurthy English Prize (Book value of Rs.200/-)		
21.	Chilikuri Ramasastry Memorial Prize (Cash Prize of Rs.1,599/- each)	PH98597	R Sridevi
22.	R. Padmanabhan Memorial Prize (Cash prize Rs.1500/-)	CY98508	D Hema
23.	Dr. S. Chandrasekharan Memorial Prize (Cash prize of Rs.1000/-)	ME96033	Castelino Kenneth Gerard
24.	Prof. N Venkatarayulu Memorial Prize (Cash prize of Rs.1000/-)	ME98853	R K Parama Hamsa Pappu

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: B.Tech. / M.Tech. / M.S. & Ph.D.

2.1 New Courses Introduced:

Sl. No.	Course No.	Title
1.	AE 711	Acoustic Instabilities in Aerospace Propulsion
2.	AE 623	Grid Generation

2.2 Students on Roll:

Programme	I Year	II Year	III Year	IV Year	V Year	Others	Total
B.Tech	33	28	26	23	--	-	110
M.Tech	14	4	-	-	-	-	18
M.S.	11	4	8	-	-	-	23
Ph.D.	10	2	-	4	2	-	18
Total	68	38	34	27	2	-	169

2.3 Number of Scholarship / Fellowship holders:

Programme	Institute Scholarship	Others	Total
B.Tech.	4	-	4
M.Tech.	7	-	7
M.S.	17	-	17
Ph.D.	1	-	1
Total	29	-	29

2.4 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.	Akula Rajani Kumar	M.S.	Seminar on Advance in Aerospace Technologies (SAAT-2000)	21-2- to 22-1-2000 DRDL, Hyderabad
2.	Prabhu Ramachandran	M.S.	Seminar on Advance in Aerospace Technologies (SAAT-2000)	21-2- to 22-1-2000 DRDL, Hyderabad
3.	K. Kanaka Durga	Ph.D.	International Workshop on Fluid Mechanics	11-1 to 15-1-2000 IIT, Madras
4.	S. Meenakshi Sundaram	M.S.	International Workshop on Fluid Mechanics	11-1 to 15-1-2000 IIT, Madras
5.	S. Hari	M.S.	National Aerodynamic Conference	18 - 19, June 1999 Trivandrum
6.	Jose Mathew	B.Tech.	National Aerodynamic Conference	18 - 19, June 1999 Trivandrum
7.	Sri Hari Adiga	B.Tech.	National Aerodynamic Conference	18 - 19, June 1999 Trivandrum
8.	Vijay Simha Reddy	B.Tech.	National Aerodynamic Conference	18 - 19, June 1999 Trivandrum
9.	Pradeep Chandra babu	B.Tech.	National Aerodynamic Conference	18 - 19, June 1999 Trivandrum

2.5 Number of Degrees Awarded in the last Convocation:

Sl.No.	Programme	Total
1.	B.Tech	20
2.	M.Tech	6
3.	M.S.	3
4.	Ph.D.	4
Total		33

3. Faculty and their Development:

3.1 Faculty

Sl. No.	Name and Qualification	Major Area of Specialization
1.	Gokhale S.S., Ph.D.	Aircraft and missile propulsion, computational methods, simulation and optimization, computer aided instructions
2.	Krishnan S., Ph.D.	Aerospace propulsion
3.	Santhakumar S., Ph.D.	Aerodynamics, flight mechanics, instrumentation
4.	Subramanian G., Ph.D.	Structural analysis, finite element and finite difference techniques, experimental moire interferometry
5.	Tulapurkara E.G., Ph.D.	Aerodynamics, Fluid mechanics, turbulent flows
6.	Varadan T.K., Ph.D.	Structural mechanics, composite
7.	Gowda R.M.S., Ph.D.	Thermal stress analysis, structural mechanics
8.	Job Kurian, Ph.D.	Aero/Gas Dynamics, Shock tube flows and measurements
9.	Ramakrishna M., Ph.D.	Aerodynamics, numerical methods of computer solutions
10.	Sriram P., Ph.D.	Structural mechanics, composites, fatigue & fracture, vibrations
11.	Bhaskar K., Ph.D.	Structural mechanics, composite structures, elasticity
12.	Rajan S.C., M.Tech.	Aerodynamics, Theory and Computation of Vortex Dominated Flows
13.	Sujith R.I., Ph.D.	Gasdynamics, optical flow diagnostics, acoustics
14.	Chakravarthy, S.R. Ph.D.	Combustion, Rocket Propulsion, Fluid Mechanics

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

S. No.	Co-ordinators	Title	Period
1.	E.G. Tulapurkara	International Symposium on "Challenges and New Directions in Computation of Internal Flows"	7 & 8, January 2000
2.	Dr.M. Ramakrishna	International Workshop on Fluid Mechanics	11-1-2000 to 15-1-2000

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

Name of Faculty	Title	Institution	Period/Duration
Prof.E.G. Tulapurkara Dr. Job Kurian Dr.R.I. Sujith	National Aerodynamic Conference	Trivandrum	18 - 19, June 1999
Prof. E.G. Tulapurkara	National Conference on Fluid Mechanics and Fluid Power	I.I.T., Kharagpur	15 - 17, December 1999
Prof.S.S. Gokhale	Workshop of Model Rocketry	DOTe Campus, Chennai	4-8, January 2000
Prof.E.G. Tulapurkara Prof.S.S.Gokhale Dr.M.Ramakrishna Mr.S.C. Rajan	51 st AGM & Seminar on Advance in Aerospace Technologies (SAAT-2000)	D.R.D.L., Hyderabad	21-2-2000 to 22-2-2000

3.4 Special Lectures Delivered by the faculty in other Institutions :

Name of Faculty	Topic of Lecture	Venue & Date
Prof.E.G. Tulapurkara	Turbulence Modelling for Compressible Flow	GTRE, Bangalore 19-1-2000
Prof.S.S. Gokhale	Institutional Development through Strategic Planning Case Study of IIT, Madras, Chennai	10-2-2000 TTTI, Madras

3.5 Visits Abroad by Faculty :

Name of Faculty	Country Visited	Date	Purpose of visit
Prof.S. Krishnan	Israel	1-11-1999 to 30-6-2000	To take up the assignment of Visiting Professorship at Technion-Israel Institute of Technology, Haifa, Israel
Dr.Job Kurian	Germany	2-9-1999 to 29-10-1999	To undertake a visit to the Shock Waves Laboratory, RWTH, Aachen, under DAAD reinvitation Programme
Dr.Job Kurian	Italy	5-9-1999 to 10-9-1999	To participate in and present a paper at the 14 th International Symposium on Air Breathing Engines at Florence, Italy
Dr.S.R. Chakravarthy	U.S.A.	1-12-1999 to 28-2-2000	Short visit to Georgia Institute of Technology, Atlanta, Georgia, USA to participate in Research Activities

3.6 Books / Monographs authored or co-authored :

Name(s) of Authors(s)	Title of Text Book / Monograph	Publisher
T.K. Varadan & K. Bhaskar	Analysis of Plates	Narosa Publishers

4. Design and Development Activities:

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

1. Designed and Developed Oscillatory flow rig for generating bi-directional air flow at different peak rates and frequencies.
2. Tech. Professional Suite - Software
3. 400 MHz P.C. 3 Nos.
4. High Ended PC Server with accessories - 1 No.

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

1. Double stage Rotary Vane Pump from BOC, Edwards
2. Differential Pressure Sensors - 4 Nos.
3. Gas Analyser - 1 No.

5. Research and Consultancy :

5.1 Sponsored Research Projects on hand :

Sl. No.	Title	Period	Funding Agency	Amount (in lakhs)	Co-codinators
1.	Development and Testing of a 2-D Piloted Supersonic Combustions	1996-1999	ISRO	7.40	Job Kurian R.I. Sujith
2	Augmentation of Rerefied Gas Dynamics Facility	1998-2000	ARDB	9.80	R.I.Sujith Job Kurian
3.	Studies on Supersonic mixing and Combustion	1999-2000	ARDB	7.50	Job Kurian S.R.Chakravarthy
4.	Studies on Low speed Turbulent Flows in Complex Enclosures	1993-1999	Volks Wagen Foundation	20.0	E.G. Tulapurkara
5.	Establishment of Centre for Computational Fluid Dynamics	Sep.98 to Sep. 2000	DST	358.0	E.G. Tulapurkara M.Ramakrishna P.A.Aswatha Nanrayana T.Sundararajan Srinivas Jayanthi
6.	Incineration of Solid Waste in an Acoustically Excited Dump Combustor	1998-2000	MHRD	10.00	S.R. Chakravarthy R.I.Sujith
7.	Development of Evaluation of Solid Propellant Rocket Motor	1999-2000	ISRO	6.14	S.R. Chakravarthy S. Krishnan
8.	Vortex Simulation	1999-2000	ISRO	6.35	S.R. Chakravarthy R.I. Sujith
9.	Discontinuity stress in Laminated Composed Pressure Vessels	1997-99	DST	5.25	K.Bhaskar T.K.Varadan
10.	Gun Internal Ballistics of SFRJ	1999-2001	ARMREB	5.18	S.S. Gokhale
11.	Analysis of Distributed Computing Flow over and air-breathing Vehicle	1996-1999	ISRO	10.70	M.Ramakrishna Janaki Ram (CSE)
12.	Refurbishing of Oscillatory Flow Rig	1998-2000	NIOT	5.20	S. Santhakumar
13.	Development of Planar Laser Induced Fluorescence to Study the Flow in Supersonic Chemical Oxygen Iodine Lasers	1997-2000	DAE	14.74	R.I. Sujith
14.	Theoretical and Experimental Investigation for the Determination of Gc for Composites	1997-2000	ISRO	7.00	P.Sriram
15.	Further Erosive Burning Studies of Solid Propellants under Transonic and Supersonic Cross flow Mach Numbers	1997-1999	ARDB	3.39	S.Krishnan
16.	Development of Laser Induced Fluorescence to study the flow in Supersonic Chemical Oxygen Iodine Laser	1997-1999	BRNS	8.74	R.I.Sujith
17.	Aerodynamics Study of Helicopter Rotor and Development of computer Code	1997-2000	ARDB	3.19	S.C.Rajan M.Ramakrishna
18.	Development of Gelled Propellant Rocket Motor		ISRO	6.14	S.Krishnan S.R. Chakravarthy

5.2 Industrial Consultancy :

S. No.	Name of the Faculty	Title	Industry	Amount (in Rupees)
1.	E.G. Tulapurkara B.H.L. Gowda	Calibration of Probe and Advice	TCP Limited	Rs.8000
2.	S. Santhakumar S. Krishnan	Failure analysis and Energy Consideration in a Sugar Mill	Dharani Sugars	Rs.50000

5.3 RBIC Projects:

Sl. No.	Name of Faculty	Title	Industry	Amount (in lakhs)
1.	Job Kurian & R.I.Sujith	Experimental Investigation on Heat Transfer to GSLV and Satellite	ISRO	6.00
2.	S.Krishnan R.I.Sujith S.R.Chakravarthy	Vortex Shedding as a Source of Pressure Perturbations and Associated problems in Segmented Large Solid	ISRO	14.12
3.	S.Krishnan R.Palaninathan (Applied)	Software for Nozzleless Booster Structural Analysis	DRDL	4.00
4.	S.Krishnan S.R.Chakravarthy	Erosive Burning characteristics of Nozzleless Booster Propellants	DRDL	5.00
5.	G.Subramanian	Finite Element Algorithms	ADA	0.55
6.	S. Santhakumar	Transonic Tunnel Development	DRDL	2.50
7.	S. Santhakumar P.A. Aswatha-Narayana	Low Speed Wind Tunnel Testing Configurations upto High Angle of Attack	DRDL	3.50

5.4 Exchange programme with other Universities :

1. Dr. Job Kurian, Associate Professor - DAAD reinvitation programme, Aachan University, Germany
2. Mr. Sham Gurav - M.Tech. Student - DAAD Sandwich Programme
3. Mr. Praful Vinayak Bahadure - M.Tech. Student - DAAD Sandwich Programme

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

S.No	Name of the Faculty	Level	Journal
1.	Prof.G. Subramanian	Editor	Journal of Mathematics and Physical Science

Research Publications :

a) No. of papers published in:

Refereed National Journals : 8
 Refereed International Journals : 7

b) No. of Papers presented in

National Conference : 8
 International Conference : 8

A) In Refereed National Journals:

1. Lakshmana Gowda, B.H., Tulapurkara, E.G., Das, A.K., "Mutual interference effects on the wind pressure distribution on two low-rise prismatic bodies", Indian Journal of Engineering and Material Sciences, Vol.6, pp.297-306, 1999.
2. K. Bhaskar, T.K., Varadan, & Chinnu Jacob., "Free Edge Stresses in Symmetric Cross-ply Plates undergoing Flexure due to Transverse Loading", Jl. of Aero. Soc. of India., Vol.51, pp.163-173, 1999.
3. Achyutha, H, Radhakrishnan, K., Santhakumar, S., "An Experimental Facility to investigate blast loading on Structures", IE(I) Journal -CV, Vol.80, pp.30-32, 1999.
4. Tulapurkara, E.G., & Lakshmana Gowda, B.H. "Flow Visualisation Studies on Two-dimensional Surface Mounted Square Obstacles", Jl. of Aero. Soc. of India, Jan.21-22, pp.2-3, 2000
5. Vara Prasad Rayapudi, Narra Venkateswarlu, Kowsik, B.V.R., Karthik, B., Sujith, R.I., and Chakravarthy, S.R., "Cold Flow Simulations of Vortex Shedding in Segmented Solid Rocket Motors", Jl. of Aero. Soc. of India, Jan.21-22, pp.10-11, 2000.
6. Muruganandam, T.M., Srihari Lakshmi, Ramesh, A.A., Viswamurthy, Sujith,R.I and Sivaram, B.M., "Investigation of Mixing of Transversely injected jets into a Cross Flow Using Planar Laser Induced Fluorescence", Jl. of Aero. Soc. of India, Jan.21-22, pp.51-52, 2000.
7. Prabhu Ramachandran, Rajan, S.C., and Ramakrishna, M. " An Accurate Two-dimensional Panel Method", Jl. of Aero. Soc. of India, Jan.21-22, pp.74-75, 2000.
8. Gokhale, S.S., and Akula Rajani Kumar, "Orthogonal Grid Generation For 2-D Complex Geometries", Jl. of Aero. Soc. of India, Jan.21-22, pp.76-77, 2000.

B) In Refereed International Journals

1. Selvarajan, S., Tulapurkara, E.G., and Vasanta Ram, V, "Stability characteristics of wavy walled channel flows", Physics of Fluids, Vol.II, pp.579-589, 1999
2. Karthik, K, Tulapurkara, E.G., Damodaran, K.A., "Influence of separated wing flow on tail downwash of low-wing pusher configuration", Journal of Aircraft, Vol.36, pp.902-904, 1999.
3. J.S.M. Ali, K. Bhaskar & T.K. Varadan, "A New Theory for Accurate Thermal Mechanical Flexural Analysis of Symmetrically Laminated Plates", Composite Structures, Vol.45, pp.227-232, 1999.
4. D.Das & S. Santhakumar, "An Euler correction method for computing 2-dimensional unsteady transonic flows", The Aeronautical Journal, Vol.103, No.1020, pp.85-94, Feb.1999.

5. Maeda, H., Santhakumar, S., Setoguchi, T., Takao, M., Kinoue, Y., Kaneko, K., "Performance of an impulse turbine with fixed guide vane for wave power conversion", *Renewable Energy*, 17, pp.533-547, 1999
6. R.I. Sujith, G.A. Waldherr, J.I. Jagoda and B.Th. Zinn, "A Theoretical Investigation of the Behaviour of Droplets in Axial Acoustic Fields", *Journal of Vibration and Acoustics*, Vol.121, (3), pp.286-294, 1999.
7. Karthik, R. Krishna Mohanraj, R., Ramakrishnan and R.I. Sujith, "Exact Solutions to One-dimensional Acoustic Fields with Temperature Gradient and Particulate Damping", *Journal of the Acoustic Society of America*, Vol.106, pp.2391-2395, 1999.

C) In Proceedings of National Conference

1. Thakar I.H., Somandapalli, V.S.R., Chakravarthy, S.R. Sujith, R.I. and Kurian, J. "Characterisation of Pressure Oscillations induced by confined Supersonic Flow Past Rectangular Centres. Proc. of National Aerodynamic Conference 1999, pp.213-228.
2. Jose Mathew, Hari, S., and J. Kurian, "Mixing enhancement of a Supersonic Jet Using Stretch", *Proc. of National Aerodynamic Symp.* 1999, pp.149-155.
3. Tulapurkara, E.G., Manohar, N. Venkatesh, T.N. Joseph Mathew, "Evaluation of the k- ϵ model of turbulence using DNS database in a jet", *Proc. National Aerodynamics Conference (NAC-99)*, Thiruvananthapuram, June 18-19, 1999, pp.49-61.
4. Tulapurkara, E.G., Gawda, B.H.L., Roychaudhury, R.L, Biswas, S.P., and Elangovan, M., "Tests on Model of sails in wind tunnel", *Proc. 26th Fluid Mech. & Fluid Power Conf.*, Kharagpur, Dec. 15-17, 1999, pp.309-314.
5. Tulapurkara, E.G., Gowda, B.H.L., Roychaudhury, R.L, Biswas, S.P., and Elangovan, M., "Wind tunnel tests on model of ship with sails", *Proc. 13th National convention of Marine Engineer*, Chennai Dec.17-18, 1999, pp.41-52.
6. Ramesh, R., Pradeep. S., Sujith, R.I., "Studies of Freejets from Nozzles for high speed mixing applications", *National Aerodynamics Conf. of the Aero. Soc. of India*, June 18-19, Trivandrum, 1999.
7. Muruganandam, T.M., Srihar Laskhmi, Sujith, R.I., and Sivaram B.M., "An Experimental Investigation of Mixing of Oxygen and Iodine in Chemical Oxygen Iodine Lasers using planar laser induced fluorescence", *Proc. of the National Aerodynamics conf. NAC -99*, The Aero. Soc. of India., June 18-19, Trivandrum, pp.160-174, 1999.
8. Sujith R.I., Francis, R., Scarborough, D.E., Matta L.M., and Zinn. B.T., "An Experimental Investigation of Pyrolysis of Scrap Automotive Tires in the Presence of Acoustic Oscillations, *Proc. Of the 5th Technical Sessions of the Madras India Regional Chapter of the Acoustical Society of America*, August 19-20, IIT Madras, 1999.

D) In Proceedings of International Conference

1. Thakar, I.H., Somandapalli, V.S.R., Chakravarthy, S.R. Sujith, R.I. and Kurian, J. "Characterisation of Acoustic field induced by flow past cavities in Supersonic Combustors" AIAA Paper No.99-2637, 35th AIAA/ ASME/ SAE/ ASEE joint Propulsion Conf. & Exhibit, Los Angeles, CA, U.S.A., June 1999.
2. Suresh, V., Kurian, J and Bhaskaran, K.A., "Shock Tube study of Convective Ignition of metallized Solid Propellant", presented at the 22nd Int. Symp. of Shock Waves, London, (1999).
3. Srikrishnan, A.R., Kurian J, Sriramulu, V., "Comparative Experimental Study of Supersonic Combustors", Presented at 22nd ISABE, Sep. (1999)
4. Chakravarthy, S.R., "Surface Layer Dynamics in the Pyrolysis of Ammonium Perchlorate - Hydraulics Binder Propellants", II Asia-Pacific Combustion Conference, Taiwan, Taiwan, 260-264, May 1999.
5. Price.E.W., Freeman, J., Jeenu, R., Chakravarthy, S.R., Sigman, R.K., and Seffzman J.M., "Plate burning of Ammonium Perchlorate propellants", AIAA Paper, 35th AIAA/ASME/SAE/ ASEE joint Propulsion Conf. & Exhibit, Los Angeles, CA, U.S.A., June 1999.
6. Achyutha, H, Radhakrishnan, K., Santhakumar, S., "Response of micro concrete plate elements subjected to blast loading" correcting with concrete, International Congress, Dundee, Scotland, Sep. 6-10, 1999.
7. Thakar I.H., Somandapalli, V.S.R., Chakravarthy, S.R. Sujith, R.I. and Kurian, J. "Characterisation of Acoustic field induced by flow past cavities in Supersonic Combustors, AIAA/ASME/SAE/ASEE Joint Propulsion Conference, 1999, June 20-23, Los Angeles, USA.
8. Muruganandam, T.M., Srihar Laskhmi, Sujith, R.I., and Sivaram B.M., "Planar Laser Induced Fluorescence for Investigating Mixing in a Subsonic Chemical Oxygen Iodine Lasers, International Conf. on Laser Materials and Devices", held at Laser Science and Technology Centre, Metcalfe House, Delhi, Dec.8-10, pp.310-313, Dec. 1999.

6. Distinguished Visitors to the Department :

S.No.	Name of the Visitor and Designation	Date of visit	Purpose of visit
1.	Prof.Narayanan Komerath Georgia Tech., U.S.A.	16-8-1999	Seminar Talk
2.	Prof.A.E. Beylich, Aachen University, Germany	February - March 2000	Discussion with Faculty Member and Seminar Talk
3.	Mr.Srinivasa Rao, Scientist 'C', CVRDE, Avadi, Chennai	3-3-2000	Seminar Talk
4.	Mr.K.S. Narasimhan, Director, Airworthiness, Chennai Airport	10-3-2000	Seminar Talk
5.	Mr.Shankar, General Manager (MPMC) SHAR Centre, Sriharikota	24-3-2000	Seminar Talk
6.	Mr.Raghuraman Govardhan, Dept. of Mechanical Engineering, Cornell University, U.S.A.	29-3-2000	Seminar Talk

6.1 Other Activities:

Dr. Job Kurian - Warden, Jamuna Hostel - June 1997 to till date

Dr. S.S. Gokhale - Head of the Department from Feb. 1998 to till date
Management Representative for ISO 9000 - from June 1997 onwards

S. Santhakumar - Warden, Krishna Hostel 1-1-97 to 30-12-1999 -
Chairman, IIT, Madras Campus Educational Society from 1-2-2000

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 Bioinstrumentation, 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 and 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:

Sl.No.	Course No.	Title
1.	AM 781	Chaotic Vibration
2.	AM 301	Introduction to Biomechanics
3.	AM 302	Fundamentals of Medical Instrumentation
4.	AM 401	Biomedical Signal Processing
5.	AM 402	Sports Biomechanics

2.2 Students on Roll:

Programme	I Year	II Year	III Year	IV Year	V Year	Others	Total
M.Tech.	20	14	-	-	-	-	34
M.S.	10	10	14	-	-	-	34
Ph.D.	7	4	4	3	11	-	29
Total	37	28	18	3	11	-	97

2.3 Number of Scholarship/Fellowship holders:

Programme	Institute Scholarship	Others	Total
M.Tech	19	-	19
M.S.	24	-	24
Ph.D.	7	-	7
Total	50	-	50

2.4 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 and Venue
1.	M.Ramesh	Ph.D.	IUTAM Symposium on Nonlinearity and Stochastic Structural Dynamics.	Jan.4-8, 1999, I.I.T. Madras, Chennai-36
2.	V.Balamurugan	M.S.(Ext.)	National Seminar on Aerospace and Related Mechanisms.	June 25-26, 1999, DRDL, Hyderabad.
3.	D.Hanumanna	Ph.D.(Ext.)	9 th National Conference on Machines and Mechanisms NACOMM.	Dec.16-17, 1999, I.I.T. Bombay, Mumbai.
4.	V.Balamurugan	M.S.(Ext.)	International Conference on Smart Materials-Structures and Systems.	July 7-10, 1999, I.I.Sc., Bangalore.
5.	V.Balamurugan	M.S.(Ext.)	51 st AGM of Aeronautical Society of India and Seminar on Advances in Aerospace Technologies (SAAT2000).	Jan.21-22, 2000, DRDL, Hyderabad.
6.	A.B. Khoshnevis	Ph.D	25 th Natl. & Intl.Conference.on FM&FP	Dec.'99, IITD
7.	M.Vamanamurthy	A.C.College Jalpaiguri Calcutta	Finite Element Mesh Partitioning Using self organising artificial Neural Methods.	27-30 Nov. 1999
8.	M. Manjunatha.	Ph.D	10 th International Conference of Biorheology	July 18- 22, 1999 PECS, Hungary

2.5 Number of Degrees Awarded in the last convocation:

Sl.No.	Programme	Total
1.	M.Tech:	
	Engineering Mechanics	3
	Industrial Tribology	4
	Maintenance Engineering & Management	11
	Bio-medical Engineering	2
2.	M.S.	6
3.	Ph.D.	7
Total		33

3. Faculty and their Development:

3.1 Faculty

Name and Qualifications	Major Area of Specialization
Dr. P.A. Aswatha Narayana, Ph.D	Fluid Mechanics
Dr.N.Ganesan, Ph.D.	Vibration, Acoustic & Noise Control & Smart Structures
Dr. B.H. Lakshmana Gowda, Ph.D	Fluid Mechanics
Dr.Megha Singh, Ph.D.	Laser & Ultrasound in Medical Diagnostics, Cardiovascular Hemodynamics
Dr.S.Narayanan, Ph.D.,	Mechanical vibration, Nonlinear and Random Vibration, Chaos, Acoustics-Vibration and Noise Control, Active and Passive Structural Dynamics.
Dr.R. Palaninathan, Ph.D.	Solid Mechanics, Composite Structures, Plates and Shells
Dr. K.M. Patil, D.Sc	Biomechanics, Rehabilitation Engineering
Dr.B.S.Prabhu, Ph.D.	Tribology, Rotor Dynamics and Maintenance Engineering
Dr.J. Raamachandran,Ph.D.	Solid Mechanics, Boundary Element Method, Plates and Shell, FEM
Dr V Ramamurti, Ph.D.	Vibrations, Stress Analysis & Finite Element Analysis
Dr V Ramjee, Ph.D.	Fluid Mechanics
Dr S Radhakrishnan, Ph.D.	Biomechanics, Rehabilitation Engineering
Dr C Lakshmana Rao, D.Sc	Solid Mechanics, Fracture, Bio-materials
Dr J Lakshminarasimhan, Ph.D.	Internal Flows, CFD, Fluid Mechanics
Dr M Ramasubba Reddy,Ph.D.	Biomedical Instrumentation
Dr G Santhanakrishnan, Ph.D.	Tribology, Manufacturing Engg, Composites Technology Biomedical Signal Processing
Dr.C.Sujatha, Ph.D.	Machine Dynamics, Condition Monitoring, Vehicle Dynamics, Instrumentation and Signal Processing, Acoustics.
Dr S Swarnamani, Ph.D.	Experimental Techniques, Vibration/Acoustics/ Diagnosis.
Dr.P.Chandramouli, Ph.D.	Acoustics & Noise Control; Nonlinear Dynamics.
Sri G. Thomas, M.Sc.	Experimental Stress Analysis
Sri V Ganesh, M.S.	Stress Analysis

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

S.No.	Co-ordinators	Title	Period
1	Dr.B.S.Prabhu-as Vice-Chairman	Int. Conf. On Medical Diagnostics	Dec. 15-17, 1999
2	Dr.S.Narayanan (Chairman of Scientific Committee and Organising Committee)	International Union of Theoretical and Applied Mechanics (IUTAM) Symposium on Nonlinearity and Stochastic Structural Dynamics, I.I.T. Madras.	Jan. 4-8, 1999.

3	Dr.P.Chandramouli Treasurer Dr.M.Ramakrishna Secretary	FLUMEC-2000	January 2000
4	Prof. Megha Singh Prof. S.Radhakrishnan Prof. K.M. Patil Dr. M.R.S. Reddy & others	International Conference on Medical Diagnostic techniques & Procedures	15-17, Dec. 1999

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

Sl. No.	Name of Faculty	Title	Institution	Period/ Duration
1.	Dr.B.S.Prabhu	Int. Conf. On Industrial Tribology, ICIT-99	BHEL, Hyderabad.	1-4, Dec. 1999.
2.	Dr.S.Narayanan	IUTAM Symposium on Nonlinearity and Stochastic Structural Dynamics.	I.I.T. Madras	Jan.4-8, 1999.
3.	Dr.S.Narayanan	International Conference on Smart Materials, Structures and Systems.	I.I.Sc., Bangalore.	July 7-10, 1999.
4.	Dr.S.Narayanan	National Symposium on Acoustics (NSA99)	MEPCO, SCHENCK Engg.College , Sivakasi.	Sept.23-24, 1999.
5.	Dr.S.Swarnamani	Annual Meeting of MIRC ASA	I.I.T. Madras	2 Days
6.	Dr.C.Sujatha	Asia Pacific Vibration Conference'99 (APVC'99).	Nanyang Technological University, Singapore.	Dec.13-15, 1999
7.	Dr C Sujatha	Fifth Technical Sessions of Madras India Regional Chapter of Acoustical Society of America (ASA)	Aug.19-20, 1999.	
8.	Dr.J.Raama-chandran	Finite Element Mesh Partitioning using self Organising Artificial Neural methods	A.C.College, Jalpaiguri Calcutta	27 to 30 Nov 99
9.	Dr. M. Ramasubba Reddy	All India conf. on Biomedical Instrumentation	College of Engg	Feb 5-6, 1999
	Dr.M.Ramasubba Reddy	International Conf on Medical Diagnostic Techniques and Procedures	IIT, Chennai	Dec 15-17, 1999

3.4 Special Lectures Delivered by the faculty in other Institutions:

Sl. No.	Name of Faculty	Topic of Lecture	Venue and Date
1.	Dr.C.Sujatha	Finite Element Analysis-Case studies.	AU-FRG Inst. For CAD CAM, 25 th May 1999.
2.	M.S.Sivakumar	Behaviour of SMAS	Louisiana State Univ. U.S.A July 31, 1999
3.	Prof. K.M. Patil	New methods of modelling measurement and analysis of diabetic foot pressures for the mechanics of plantar ulcers	21-10-1999 Institute of Orthopedic, University of Munster, Munster, Germany
4.	Prof. K.M. Patil	New methods of measurements and analysis of foot pressures in diabetic neuropathy	19-10-99 and 26-10-99(two lectures) Institute of Applied Biomechanics, Faculty of sports, University of Munster, Munster, Germany
5.	Prof. K.M. Patil	Methods of modeling analysis of stresses in a 3-D model of the foot in diabetic neuropathy	2-11-99 and 5-11-99 (two lectures) Institute of Applied Biomechanics, Faculty of Sports, Munster, Germany
6.	Prof.S.Radhakrishnan	Biomechanics of Head Injuries	National Workshop on Biomedical Engg., Indian Scenario, March 1999
7.	Dr. M.R.S. Reddy	Importance Biomedical Engineering in the present World Scenario	Dec 19, 1999 V.R. Siddhartha Engg. College; Vijayawada

3.5 Visits Abroad by Faculty:

Sl.No	Name of Faculty	Country Visited	Date	Purpose of Visit
1.	Dr.B.S.Prabhu	Canada	July 23-30, 1999	26 th QNDE Conference
2.	Dr.C.Sujatha	Singapore	Dec.12-17, 1999.	To attend Asia Pacific Vibration Conference.
3.	M.S.Sivakumar	U.S.A.	June - Aug. 1999	Collaborative research
4.	Prof. K.M. Patil	Germany	1-6-1999 to 18-11-99	Alexander von Humboldt Fellow in Munster, Germany

3.6 Honours and Awards obtained:

Sl. No.	Name of Faculty	Name of Awarded	Awarded by	Awarded for	Date
1	Dr.S.Narayanan	Dr.A.P.J.Abdul Kalam Best Paper Award	Aeronautical Society of India	For the best paper presented at the 51 st AGM of the Aeronautical Society of India and Seminar on Advances in Aerospace Technologies (SAAT 2000) for the paper entitled "Vibration Control of Shells using Distributed piezoelectric Sensors and Actuators" by V.Balamurugan and S.Narayanan at DRDL, Hyderabad.	January 22, 2000
2	Prof. K.M. Patil	Humboldt Fellowship	Alexander von Humboldt Foundation, Germany	For doing research	01-06-99-18-11-99
3	Prof.Megha Singh	Shri Shyam Lal Saxena memorial Award	National Academy of Med. Science, (India)	Biomedical Sciences	19-03-2000

3.7 Books/Monographs authored or co-authored:

Sl.No	Name(s) of Author(s)	Title of Text Book/ Monograph	Publisher
1	Dr V.Ramamurti	Computer Aided Mech.- Design & Analysis: 4 th Edition.	Tata McGraw Hill, New Delhi.
2	Dr Megha singh, Dr.S. Radhakrishnan Dr. K.M. Patil Dr. M. Ramasubba Reddy	Medical Diagnostic techniques & Procedures	Narosa Publishers New Delhi
3	Dr. J.F. Stoltz Dr. Megha Singh Dr. P. Riha	Hemorheology in Practice	IOS Publishers Amsterdam

**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
Dr.V.Ramamurti	INSA	Fellow	1989
-do-	INAE	Fellow	1989
-do-	Association for Mechanism & Machines	Life Member	1998
Dr.B.S.Prabhu	Fellow of INAE	Fellow	1999
Dr.S.Narayanan	Acoustical Society of India	Vice-President	
-do-	Aeronautical Society of India	Member, Grading Committee	
-do-	Alexander Von Humboldt	Fellow	1984-85
-do-	Acoustical Society of India	Fellow	1993
-do-	Acoustical Society of India	Fellow	1996
-do-	National Academy of Engineers	Fellow	1997

4 Design and Development Activities

Active Vibration Control Test Set-up. (Dr.S.Swarnamani)

Designed and Developed Curved duct facility and curved diffusers for research work (Dr.J.Lakshminarasimhan)

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

1. Development of laser tomographic system for early detection of breast Cancer and
2. Laser reflectometer to detect abnormalities embedded within tissues developed by Dr Megha Singh

4.2 New facilities added or major equipment procured through project funds:

Communication Aid for Children - developed by Dr M Ramasubba Reddy

5. Research and Consultancy:

5.1 Sponsored Research Projects:

Sl. No.	Title	Period	Funding Agency	Amount (in lakhs)	Co-ordinators
1.	Development of laser - breast cancer	1998-2000	DST	8.00	Dr. Megha Singh Dr.S. Swarnamani Dr.S. Chacko
2.	Vibro-Acoustic Response of Launch Vehicle Structures using Statistical Energy Analysis.	1997-2000	ISRO-IIT Space Technology Cell	8.50	Dr.S.Narayanan Dr.S.Swarnamani
3.	Vibration Control using piezoelectric actuators and sensors.	1997-2000	ARDB	8.41	Dr.S.Narayanan Dr.S.Swarnamani

4.	Scattering, Radiation and Transmission of Acoustic Signals in Composite Panels for Acoustic Attenuation.	1999-2002	NRB	20.00	Dr.S.Narayanan Dr.P.Chandramouli Dr.S.Swarnamani Dr.C.Sujatha
5.	Studies on the Interaction between multiple Supersonic Jets	1996-1999	ISRO	5.50	Dr. V. Ramjee & Dr.T.Sunda-rarajan
6.	Entrainment studies in LMFBR; Phase 1 :Inception of air entrainment in laboratory models.	1997-2000	IGCAR	4.70	Dr. BHL Gowda & Dr. BVSSS Prasad
7.	Studies on jet mixing under confinement as applicable to rocket-ramjet combustors.	3 years 1998-2001	DST	6.70	Dr. BHL Gowda & Dr. R.Natarajan
8.	Numerical and experimental investigations on local blockages in LMFBR fuel sub-assemblies.	3 years 1999-2002	BRNS	24.70	Dr.B.V.S.S.S. Prasad & Dr. BHL Gowda
9.	Coastal Atmospheric Desperation Studies: Evolution of Methods for Realistic Source Term Estimation and Development of Hybrid Models	1999-2002	AERB	25.00	Dr. P.A.Aswatha Narayana & Dr. J.L.Narasimhan
10.	Development of Software for Spacecraft Thermal Analysis Using Finite Element Method— Phase 2	1999-2000	ISRO	1.50	Dr.T.Sundararajan. & Dr.P.A. Aswatha Narayana
11.	Setting up a Centre for Computational Fluid Dynamics	1999-2000	DST	318.00	Dr.E.G.Tulapurkara Dr.M.Ramakrishnan Dr. Srinivas Jayanthi Dr.V. Ganesan Dr. T.Sundararajan & Dr.P.A. Aswatha Narayana
12.	Selectively Reinforced Squeeze Cost Pistons.	Dec.99 - May 2000	India Pistons Chennai	1.75	Prof.R.Palaninathan Prof.M.Singaperumal Dr.G.Santhana- krishnan
13.	Fracture Assessment of Secondary Sodium Piping	1997-2000	IGCAR	17.40	Dr.C.Lakshmana Rao Dr.Raju Sethuraman
14.	Dev.Bio.Comp. for Consumer Durable Components	1998-2001	DST	13.50	Dr.C.Lakshmana Rao Dr.A.P.Deshpande Prof.S.K.Malhotra Dr.G.Santhana- krishnan

5.2 Industrial Consultancy:

Sl. No	Name of Faculty	Title	Industry	Amount (in Lakhs)
1.	Dr.C.Sujatha Dr.S.Swarnamani	Strain measurement on Break Chamber.	Sundaram Clayton Ltd., Padi, Chennai-50.	0.21
2.	Dr.S.Narayanan Dr.S.Swarnamani Dr.P.Chandramouli	Noise measurements and Analysis of Automotive Airconditioner compressor belts.	Fenner (India) Limited, Chennai-35.	0.25
3.	Dr.C.Sujatha Dr.N.Ganesan Dr.P.Chandramouli	Seismic testing of 245 kV SF6 CB Type FXT-14F.	Alstom Limited, Chennai-96.	0.30
4.	Dr.S.Swarnamani	Clarification on Piezo Ceramic Elements.	Fly Jac Forwarders, Chennai-1	0.03
5.	Dr.S.Swarnamani Dr.N.Ganesan Dr.P.Chandramouli	Vibration and shock test on 2.5 kVA bulk inverter.	Autometers Secheron Ltd., Noida-201 301	0.35
6.	Dr.S.Swarnamani Dr.V.Ramamurti Dr.N.Ganesan	Seismic test on 420 kV SF6 GCB.	Transformers and Electricals Kerala Limited, Angamally South PO-683 573	0.30
7.	Dr.C.Sujatha	Natural frequency on damper assembly.	Vibromech Engineers & Services Ltd., Chennai-96.	0.025
8.	Dr.C.Sujatha Dr.S.Narayanan Dr.G.Santhana-Krishnan	Seismic test on 145 kV/31.5 kA SF6 Gas Circuit Breakers.	Crompton Greaves Ltd., Nasik-422 010	0.30
9.	Dr.C.Sujatha Dr.V.Ramamurti Dr.G.Santhana-Krishnan	Seismic test on 145 kV, 40 kA SF6 Gas Circuit Breakers.	Crompton Greaves Limited, Nasik-422 010	0.30
10	Dr.C.Sujatha Dr.V.Ramamurti	Vibration analysis in Diesel Generating Station.	Crompton Greaves Ltd., Chennai-1	0.30
11	Dr.C.Sujatha Dr.S.Swarnamani Dr.P.Chandramouli	Sound level measurements.	DB Xtreme, Chennai-18.	0.075
12	Dr.S.Swarnamani Dr.S.Narayanan	Witnessing of mechanical endurance test o 245 kV isolators.	S&S Power Switchgear Ltd., Chennai-116.	0.15
13	Dr.C.Sujatha Dr.V.Ramamurti	Vibration test on the meter reading instrument.	Signals & System India P.Ltd., Chennai.	0.05
14	Dr.C.Sujatha Dr.B.S.Prabhu Dr.P.Chandramouli	Seismic test of 420 kV SF6 Gas Circuit Breaker.	B.H.E.L., Ramachandrapuram Hyderabad-32	0.30
15	Dr.S.Swarnamani Dr.N.Ganesan Dr.P.Chandramouli	VCB Seismic Test.	Autometers Alliance Ltd., Noida-201 301	0.39

16	Dr.V.Ramamurti Dr.C.Sujatha Dr.P.Chandramouli	Shock and vibration test on vacuum circuit breaker.	Daimier Chrysler Rail System (India) Ltd., Maneja, Baroda-390 011	0.25
17	Dr.P.Chandramouli Dr.S.Swarnamani	Noise measurement on silencer design.	Sundaram Clayton Ltd., Chennai-50	0.20
18	Dr.C.Sujatha Dr.V.Ramamurti	Vibration measurement on generator.	National Thermal Power Corporation Ltd., Rihandnagar PO, UP-231 223.	0.20
19	Dr.P.Chandramouli Dr.S.Swarnamani Dr.B.S.Prabhu	Seismic withstand test on 145 kV 3150 AMPS Air Break Isolator.	Mullar & Co., Howrah-711 101	0.35
20	Dr.C.Sujatha Dr.G.Santhana-Krishnan Dr.B.S.Prabhu	Seismic test on 390 kV Arrester.	W.S.Industries (India) Ltd., Bangalore-562 157	0.30
21	Dr.C.Sujatha Dr.S.Narayanan Dr.G.Santhana-Krishnan.	Seismic test on 145 kV SF6 Gas Circuit Breaker.	B.H.E.L., Hyderabad-32	0.30
22	Dr.C.Sujatha	Calibration of FFT vibration analyser and Accelerometer.	Prumatech Services P.Ltd., Chennai-18.	0.05
23	Dr.S.Swarnamani Dr.Dr.N.Ganesan Dr.P.Chandramouli	Seismic test of 400 kV hcb Isolator.	Elpro International Ltd., Hyderabad-37.	0.35
24	Dr.C.Sujatha Dr.V.Ramamurti Dr.S.Narayanan	Seismic test on SF6 145 kV 3 ARS CB.	B.H.E.L., Ramachandrapuram Hyderabad-32	0.30
25	Dr.C.Sujatha Dr.V.Ramamurti Dr.P.Chandramouli	Seismic test on 390 kV LA.	Crompton Greaves Ltd., Ambad, Nasik-10.	0.35
26	Dr.V.Ramamurti	Technical consultancy on the problem of development of cracks in FD Fan Impellers.	National Thermal Power Corporation Ltd., Kahalgaon, Bihar.	0.20
27	Dr.V.Ramamurti Dr.C.Sujatha	Vibration measurement on generator transformers.	Hyundai Heavy Industries Co. Ltd., Near Basin Bridge Power Mill Road, Chennai.	0.20
28	Dr.C.Sujatha Dr.V.Ramamurti Dr.S.Narayanan	Seismic test on 400 kV CVT.	B.H.E.L., Bhopal-462 022	0.30
29	Dr.C.Sujatha	Floor Vibration Measurement.	Heavy Vehicles Factory, Avadi, Madras.	0.08
30	Dr.C.Sujatha Dr.V.Ramamurti	Vibration measurement of Isolators.	Crompton Greaves Ltd., Chennai-1.	0.10

31	Dr..B.H.L. Gowda Dr. E.G. Tulapurkara	Tests on Sail Models	NSDR, Visakapatnam	2.90
32	Dr.P.A.Aswatha Narayana & Dr.S.Santhakumar	Low Speed Wind Tunnel Testing Configuration upto High Angles of Attach	DRDL	3.50
33	Dr.J.L.Nara- simhan	Calibration of pitot tube	Hindustan. Shipyards Ltd.,Visaka Patnam	0.10

5.3 Research Based Industrial Consultancy:

Sl. No	Name of Faculty	Title	Industry	Amount
1.	Dr.S.Narayanan Dr.P.Chandramouli	Underwater Propellor Noise Radiation Studies	NSTL, Vishakapatnam	Rs.5,71,000/=
2.	Dr.P.Chandramouli	Efficient Num.Soln. for Nonlinear Probs.	Boeing, USA	US \$ 15,000/= (Approx. Rs.6/= Lakhs)
3.	G.Thomas	Buckling Investigations in PFBR Main vessel Model	IGCAR	4.70
4.	G.,Thomas	Experimental Stress Analysis of Tyre curing Presses	LTM	0.65
5.	G.Thomas	Residual stress analysis	Ashok Leyland	0.40

5.4 Retainer Consultancy:

Sl. No	Name of Faculty	Title	Industry	Amount (Rs. in Lakhs)
1.	Dr.V.Ramamurti	Design Consultancy	MCP Sugar Engg., Chennai	0.90
2.	Dr.P.Chandramouli	Noise & Vibration of Compressors.	Kirloskar Copeland Ltd., Karad.	0.35

5.5 Journal Editorial Boards:

Sl. No.	Name of the Faculty	Level	Journal
1.	Dr.K.M. Patil	Member of Editorial Board	Medical & Life Science Engg. Journal
2.	Dr. Megha Singh	Editor	Clinical Hemorheology and Microcirculation

5.6 Research Publications:

a) No. of papers published in	
Refereed National Journals	: 11
International Journals	: 27
b) No. of papers presented in	
National Conference	: 21
International Conference	: 33

(A) In Refereed National Journals:

1. K.Renji, P.S.Nair and S.Narayanan, "Estimation of non-resonant response using statistical energy analysis", J.Acoustical Society of India, 27(1-4), pp.51-55, 1999.
2. J.Ramamurthy, N.Ganesan, S.Swarnamani, Transient Acoustic Radiation of Spherical Shells, J.Acoust.Soc.India, Vol.XXVII, No.1-4, 1999, pp.283-287.
3. Major. Chitale Ranjit Gadasiv, C.Sujatha, Chandramouli Padmanabhan, 'Helicopter noise radiation-A Case Study', Journal of the Acoustical Society of India, Vol.XXVII, No.1-4, pp.165-169, 1999.
4. Y.V.Siva Prasad, Chandramouli, P. & N.Ganesan, 1999, "Acoustic, structural and Coupled Frequencies of a Refrigeration Compressor", J.Acoust.Soc.India, Vol.XXVII, pp.141-144.
5. B.H.L. Gowda, E.G. Tulapurkara and A.K. Das, "Mutual interference effects on the wind pressure distribution on two low-rise prismatic bodies", Indian Journal of Engineering and Material Sciences, Vol.6, 1999, pp. 297-306
6. Sethuraman R, Lakshmana Rao C, Kameswara Rao P., "Fatigue cracks growth & semi elliptical Surface cracks in curved geometries, Journal of Structural Engg. Vol.26, No.1, April 1999 pp.81-86
7. Kalag S. Lakshmana Rao C, "Moments in composite Beams and Slabs comparative study" Journal of Structural Engg. Vol.25, No.4, January 1999 PP267-277
8. Uma, R and Singh, M. Ultrasonic 3D- visualization of tissue phantoms. J. Pure Appl. Ultrasound. 20, 45-56, 1999.
9. Ramakrishnan, S. and Singh, M. Influence of acidosis on erythrocyte aggregation as analysed by on-line light aggregometer. Biomedicine 19, 221-225, 1999.
10. Ramakrishnan, S., Grebe, R., Schmid-schonbein, H. and Singh, M. Aggregation of shape altered erythrocytes: an in vitro study. Curr. Sci., 77, 805-808, 1999.
11. Kumar, D., Chacko, S. and Singh, M. Monte Carlo simulation of photon scattering in biological tissue models. Ind. J. Biochem. Biophys. 36, 330-336, 1999.

(B) In Refereed International Journals:

1. Modal Analysis and updating studies on 3 wheeler autos, M.Hanumantha Rao, V.Ramamurti, J.Vibr. and Control, pp.253-256 (1999), V.5.
2. Study of effect of inplane and interlaminar stress, C.Saravanan, N.Ganesan, V.Ramamurti, Composite Structures, n pp.301-320 (1999), V.43.
3. Elastic Impact of typical CFPR payload fairing, V.Ramamurti, G.V.Rao, S.Rajaraman, Composite Structures, V.45/2, pp.147-154 (1999).
4. Predictive Maintenance of rotating machinery using expert system, Int. J.Rotating Machinery, 1999, B.S.Prabhu and M.Sarat Kumar.
5. Thermoelasto hydrodynamic analysis of tilting pad journal bearing-Theory and Experiments, 1999, STLE Transactions, B.S.Prabhu, D.Sudheer Kumar Reddy and S.Swarnamani.
6. M.Ramesh and S.Narayanan, "Chaos control by nonfeedback methods in the presence of noise", Chaos, Solitons and Fractals, 10(9), 1473-1489, 1999.
7. A.Raghothama and S.Narayanan, "Bifurcation and Chaos in geared rotor bearing system by Incremental Harmonic Balance Method", J.Sound and Vibration, 226(3), 469-492, 1999.
8. A.Raghothama and S.Narayanan, "Nonlinear Dynamics of a Two-Dimensional airfoil by Incremental Harmonic Balancing", J.Sound and Vibration, 226(3), 493-517, 1999.

9. A.Raghothama and S.Narayanan, "Bifurcation and Chaos in Escape equation Model by Incremental Harmonic Balancing", *Chaos, Solitons and Fractals*, 11(9), 1349-1363.
10. B.H.L. Gowda and V.S.B. Durbha, "Mean and turbulence characteristics of a three-dimensional wall jet on convex cylindrical surfaces", *J. of Fluids Engineering, Trans. ASME*, Vol.121, No.3, 1999, pp. 596-604.
11. B.S.V.Patnaik, P.A. Aswatha Narayana and K.N.Seetharamu, Numerical Simulation of Vortex Shredding Past a Circular Cylinder Under the Influence of Buoyancy, *Inter-national Journal for Heat and Mass Transfer*, 42-- (18), 3495-3507, 1999.
12. B.S.V.Patnaik, P.A. Aswatha Narayana and K.N.Seetharamu, Numerical Simulation of Laminar Flow Past a Transversely Vibrating Circular Cylinder, *Journal of Sound & Vibration*, 228 (3), 459-475, 1999.
13. M.S.Rajagopal, K.N.Seetharamu, and P.A. Aswatha Narayana Finite Element Analysis of Radial Cooled Rotating Electrical Machines, *Inter-national Journal of Numerical Methods Heat & Fluid Flow*, 9—No.1, 18 - 38, 1999.
14. K. Murugesan, K.N.Seetharamu, and P.A. Aswatha Narayana Study of Shrinkage Stresses for Drying of Brick as a Conjugate Problem, *Inter-national Journal for Numerical Methods in Engineering*, (In Press), 1999.
15. C.Rajamohan and J.Raamachandran, "Bending of olympic plates by charge simulation methods *Advance in Engineering Software*, 30, 1999 pp369-373
16. Patil, K.M., Bhat. M.V., M.M., Narayanamurthy, V.B., and Parivalavan, R. "New on-line methods for analysis of walking foot pressures in diabetic neuropathy", *Frontiers of Medical and Biological Engg.*, The Netherlands, Vol. 9, fNo.1, 49-62, 1999.
17. Shanti. J. and Patil, K.M. "Three dimensional foot modelling and analysis of stresses in normal and early stage leprosy with muscle paralysis", *J. of Rehabilitation Research and Development*, U.S.A, Vol. 36, No.3, 252-263, 1999.
18. Bhatia, M.M. and Patil. K.M. "New on-line parameters for analysis of dynamic foot pressures in neuropathic feet of Hansen's disease subject", *J. of Rehabilitation Research and Development*, USA, Vol. 36, No.3, 264-272, 1999.
19. Shanti, J and Patil, K.M., "Stress analysis in three dimensional foot models of normal and diabetic neuropathy", *frontiers of Medical and Biological engg. The Netherlands*, Vol. 9, No.3, 211-227, 1999.
20. Joseph S. Paul, M.R.S. Reddy and V. Jagadeesh Kumar, A QRS Estimator using Linear prediction approach, *Journal of signal Processing*, Vol.72, pp: 15-22, 1999.
21. Joseph S Paul, M.R.S. Reddy and V. Jagadeesh Kumar, A Ceptral transformation technique for dissociation of wide QRS type ECG signals using DCT, *Journal of Signal Processing*, Vol.75, No.1, pp:29-39, May 1999.
22. Ramakrishnan, S., Grebe, R., Singh, M. and Schmid-Schonbein, H. Evaluation of hemorheological risk factor profile in plasmacytoma *Clin. Hemorheol. Microcir.* 20, 11-19, 1999.
23. Ramakrishnan, S., Grebe, R., Singh, M. and Schmid - Schonbein, H. Influence of local anaesthesia on aggregation and deformability of erythrocyte. *Clin. Hemorheol. Microcir.* 20, 21-26, 1999.
24. Chacko, S. and Singh, M. Multilayer imaging of human organs by measurement of laser backscattered radiations. *Med. Biol. Eng. Comput.* 37, 278-284, 1999.
25. "An Evaluation of Multiaxial Fatigue Life Assessment Methods for Engineering Components," *International Journal of Pressure Vessel and Piping*, 76 (10), pp.741-746, 1999.
26. "A Procedure for Correction for Creep in Foam Rubber Optical Pressure Measurement Techniques," *Intl. J. Experimental Mechanics*, 9, pp.125-131, 1999.
27. "A two variant thermomechanical model for Shape Memory Alloys" *Mechanics Research Communications*, 26, pp.301-307, 1999.

(C) In Proceedings of National Conferences:

1. Machinery reliability assessment using failure modes and effects analysis (FMEA), NaCoMM-99, Dec. 16-17, 1999, IIT Bombay, pp.64-73 (Co-author: N.Ravi Sankar).
2. Ball bearing stiffness algorithm, NaCoMM-99, Dec. 16-17, 1999, IIT Bombay, pp.137-147 (Co-author: K.M.Venkata Subrahmanyam and G.Santhana Krishnan).
3. V.Balamurugan and S.Narayanan, "Active Vibration Control of smart beams using distributed piezoelectric sensors/actuators", Proc. Of National Seminar on Aerospace and Related Mechanisms, DRDL, Hyderabad, June 25-26, 1999.
4. S.Narayanan and V.Balamurugan, "Active Vibration Control of beams using piezoelectric distributed sensors and actuators", Proc. of Fifth technical session of the Madras Regional Chapter of the Acoustical Society of America, I.I.T. Madras, August 19-20, 1999, pp.1-8.
5. D.Hanumanna, S.Narayanan and S.Krishnamurthy, "Estimation of Fatigue Life of Gears subjected to Random Loading", Advances in Machines and Mechanisms, Proc. of 9th National Conference on Machines and Mechanisms, NACoMM-99, I.I.T. Bombay, Dec.16-17, 1999, pp.3-17.
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12. V. Ramjee, T. Sundararajan, Bhaskar & Vijayakumar, "A Numerical study of Multiple Supersonic jets", SIAGM, Jan. 21, 2000 at Hyderabad.
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2. Modal, Vibration Analysis of passenger vehicle, M.Karupiah, C.Sujatha, V.Ramamurti, SIAT99.
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4. Estimation of leakage and dynamic characteristics of labyrinth seals using finite element method, Proc. Of ICIT-99, Hyderabad, 1-4 Dec. 1999, pp.146-153, B.S.Prabhu, D.Rame Gowda and P.Chandra Sekhar).
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25. Prabhu, G.K., Patil, K.M., Srinivasan, S., Narayanamurthy, V.B. and Parivalavan, R., "Early detection of neuropathy in diabetic feet by processing of pedobarographic images", Procedures, Madras, pp 312-318, Dec 1999.
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28. S. Venkatesh, C.V. Subba Rao, G. Thomas & S. Radhakrishnan. "Invitro measurement of cuspal movements of teeth restored with composite resin", Proc. of the Int. conf. on Medical Diagnostic techniques & Procedures, pp 372-376, Dec 1999.
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31. "A constitutive model for SMAs considering twinning transformations," in Smart Materials, Structures & Systems, P.D.Mangalgiri, A.R.Upadhyya, A. Selvarajan. Eds Proceedings of ISSS-SPIE '99, Allied Publishers Ltd., New Delhi. pp.127-133, 1999.
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33. "An one-dimensional model for SMAs with twinning effects," in Progress in Mechanical Behaviour of Materials: Proceedings of the Eighth International Conference on the Mechanical Behaviour of Materials, F. Ellyin and J.W. Provan (Eds) pp. ,1999.

6. Distinguished Visitors to the Department:

S. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1.	Dr.Bala Balachandran Professor, University of Maryland	16 th July 1999	Delivered a talk on 'Active Noise Control of enclosed Acoustic Fields'.
2.	Dr.Jerry Farstad, Boeing, U.S.A.	September 1999	Delivered a talk on "Component Mode Synthesis of Machine Structures".
3.	Dr.Michael Brennan and Dr.P.F.Joseph, Institute of Sound and Vibration Research, University of Southampton, England.	10 th December 1999	Delivered two talks on 'Active Vibration and Noise Control'.
4.	Staff and Trainees of the Directorate General of Employment and Training, Govt. of India, Advanced Training Institute, Guindy, Chennai-32	During October 1999	Industrial Visit to study the latest technology and machineries on Industrial Tribology and Bearing Maintenance.

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 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 :

Programme	I Year	II Year	III Year	IV Year	V Year	Total
B.Tech	65	55	50	49	-	219
M.Tech	41	25	-	-	-	66
M.S.	3	9	8	-	-	20
Ph.D.	12	7	3	2	20	44
Total	121	96	61	51	20	3 49

2.2 Number of Scholarship/Fellowship holders:

Programme	Institute Scholarship	Others	Total
B.Tech.	5	-	5
M.Tech.	52	-	52
M.S.	13	-	13
Ph.D.	19	-	19
Total	89	-	89

2.3 Number of Degrees Awarded in the Last Convocation:

Sl.No.	Programme	No.
1.	B.Tech	46
2.	M.Tech	34
3.	M.S.	5
4.	Ph.D.	9
Total		94

3. Faculty and their Development:

3.1 Faculty:

Name and Qualification

Professors

M.S. Ananth, Ph.D. (Florida)
A.R. Balakrishnan, Ph.D (Waterloo)
M.Chidambaram, Ph.D (IISc)
K.Krishnaiah, Ph.D.(IIT Madras) (Head)
D.V.S.Murthy, Ph.D (IIT Madras)
N.R.Neelakantan, Ph.D(Swansea)
V.S.Ramachandra Rao, Ph.D (IIT Madras)
T.K.Ramanujam, Ph.D (IIT Madras)
S.Subba Rao, Ph.D (Connecticut)
T.Panda Ph.D (IIT Delhi)

Associate Professors

S.Pushpavanam, Ph.D (Florida)
S.Sankaranarayanan, Ph.S (Queens Land)

P.Sesha Talpa Sai, Ph.D (IIT Madras)
Shankar Narasimhan, Ph.D (North Western)
T.Swaminathan, Ph.D (IIT Kanpur)

Assistant Professors

Abhijit Deshpande, Ph.D (Washington)
Kannan. A Ph.D (McMaster Univ., Canada)
J.Ravi Prakash, Ph.D (IISc)

Sachin C. Patwardhan, Ph.D (IIT Bombay)
Srinivas Jayanti, Ph.D (IIT Bombay)
Susy Varughese, Ph.D (IIT Kharagpur)

Major Area of Specilazation

Thermodynamics, Mathematical Modelling
Heat Transfer, Computer Aided Design
Non-linear Control, Periodic Operation of Reactors
Chemical Reactor Analysis and Design, Fluidization
Particle Technology, Environmental Engineering
Polymer Processing, Rheology
Internal Model Control , Adaptive Control
Environmental Engineering, Particle Technology
Mass Transfer, Computer Aided Design
Biochemical Engineering and Bio Technology,
Protoplast Fusion Technology

Modelling and Simulation, Non-linear Dynamics
Optimum Control of Grinding Circuits and other
Mineral Beneficiation Processes
Chemical Reactor Analysis and Design, Rotary Kilns
Computer Aided Design
Environmental Management, Biotechnology,
Membrane Technology

Polymers and Polymeric Materials
Separation Processes, Computer Aided Design
Mechanics of Granular Materials, Rheology Process
Control
Process Control
Computational Fluid Dynamics
Polymers and Elastomeric Materials

3.1 Short term Courses/Workshops/ Seminar/Symposia/ Conferences organised:

Sl. No.	Co-Ordinators	Title	Period
1.	Prof. T. Panda	Education of Biotechnology in India	23/3/1999
2.	Prof. K. Krishnaiah Prof. T.K. Ramanujam Prof. D.V.S.Murthy	One day seminar on "World Environmental Day.	2.6.1999

3.2 Short term Courses/Workshops/Seminar/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.	Prof. D.V.S.Murthy Dr. T. Swaminathan	Rapporteurs in Biomedical Waste Management Conference	TNPCB	10-12 th Feb 1999
2.	Prof. T. Panda	Interdisciplinary Dialogue on Climate, Biotechnology & Food and Water Security	M.S. Swami-nathan Research Foundation	3-6 th Feb 1999
3.	Prof. K. Krishnaiah Prof. DVS Murthy	Emission Trading International Experience and its relevance for India	US - AEP & CII	23.10.99
4.	Prof. DVS Murthy	Electrical Power Generation from Municipal Garbage – Status and Prospects	Max Mueller Bhavan & EXNORA International, Chennai	3-4 th Dec. 1999

3.3 Special Lectures delivered by the faculty in other Institutions:

Sl. No.	Name Of Faculty	Topic Of Lecture	Venue & Date
1.	Prof. T.K. Ramanujam	Environmental issues due to Industrial Pollutants	Periyar Maniammal College of Tech. for Women, Tanjore, 11.3.1999
2.	Prof. K. Krishnaiah	Chemical Reaction Engineering	RVR & JC College of Engineering, Guntur, AP 24.9.99
3.	Prof. DVS Murthy	Environmetal Engineering	RVR & JC College of Engineering, Guntur, AP 27.9.99
4.	Prof. T.K. Ramanujam Prof. DVS Murthy	Control of Air and Water Pollution	Fluid Control Res. Inst. (FCRI) Palakkad, Kerala

3.4 Visits Abroad by Faculty:

S. No.	Name Of Faculty	Country Visited	Date	Purpose Of Visit
1.	Dr. T. Swaminathan	AIT, Bangkok	4.5.99-4.8.99	Teaching
2.	Dr. S.C. Patwardhan	Technische Univ. Munich, Germany	14.5.99-9.7.99	Research
3.	Dr. J. Ravi Prakash	Alexander Von Humboldt, Germany	15.5.99-till date	Research
4.	Prof. M.S. Ananth	Univ. of Aachen, Germany	31.5.99-15.7.99	Research
5.	Dr. S. Pushpavanam	Max Planck Inst. Germany	14.6.99-11.9.99	Research
6.	Dr. T. Swaminathan	Germany	1.9.99-30.10.99	DAAD invitation program
7.	Prof. T.K. Ramanujam	AIT, Bangkok	27.1.99-29.1.99	Asian Regional Work Shop on Environmental Technology

3.5 Honours and Awards obtained:

S. No.	Name Of Faculty	Name Of Awarded By	Year	Awarded For
1.	Dr. A. Kannan	INAE Young Engineers Award	Jan 2000	Research and Development contribution (1993-98)
2.	Dr. S. Pushpavanam	Rajaram Bapu National Award, ISTE	1999	Best Teacher in Engineering Colleges

3.6 Books/Monographs authored or co-authored:

S.No.	Name Of Author	Title Of Text Book/Monograph	Publisher
1.	Prof. DVS Murthy	Advances in wastewater treatment technologies (a chapter contributed)	Techno Science Publication, Jaipur
2.	Shankar Narasimhan	Data Reconciliation and Gross Error Detection. An intelligent use of Process Data.	Gulf Hemisphere

4. Design and Development Activities:

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

- Computer interface with pH process
- Studies are being conducted in the commercial wheel classifier to develop sharp classification of the powders with optimal efficiency – Introduced "Ball mill Simulation" Experiment in Mechanical Operations Laboratory.
- Developed a two stage process for detoxification of hazardous wastes.

- d. Developed a biodegradation process for removal of odor and hazardous solvents.
- e. Developed a solidification process for fixation of heavy metals in industrial sledges.
- f. Designed and developed a software for distillation column simulation in the internet along with B.Tech.
- g. Inverse Fluidized Bed Reactor was equipped with sophisticated measurement techniques for holdup estimation.

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

- a. Armfield Reactor
- b. High Temperature Pressure Transducers

5. Research And Consultancy:

5.1 Sponsored Research Projects :

Sl. No.	Title	Period	Funding Agency	Amount (Lakhs)	Co-Orinators
1.	MODROBS (Process Control Lab)	1999	MHRD	10.00	Prof. M. Chidambaram
2.	Simulation of Pneumatic fines classifier	1998-2001	CSIR	3.7	Dr. S. Shankara Narayanan
3.	Natural Fiber Composites	1999-2001	DST	11.02	Dr. Abhijit P. Deshpande
4.	Heat Pump Assisted Agricultural Dryer	1996-1999	MHRD	80.00	Prof.A.R.Balakrishnan
5.	Vapor Compression Heat Pump Chiller	1997-1999	MHRD	100.00	Prof.A.R.Balakrishnan
6.	Effect of Tube Diameter on Gas-Liquid Counter-Flow and Flooding	1996-1999	DST	11.92	Prof.A.R.Balakrishnan
7.	Influence of Sea Waves induced oscillations on the forced connective heat transfer in barge mounted heat exchanger	1997-2000	Dept. of Atomic Energy	14.20	Prof.A.R.Balakrishnan
8.	Boiling and two phase flow studies of cryogenic fluids	1999-2002	ISRO	22.82	Prof.A.R.Balakrishnan
9.	Online monitoring of Anaerobic Fluidized process	1998-2001	MHRD	6.00	Prof. K.Krishnaiah, Prof. DVS Murthy, Prof. N. Bala subramanian
10.	Modernization of CRE Laboratory	1998-1999	MHRD	12.00	Prof. M.S. Ananth, Prof. K.Krishnaiah & Dr.PST Sai
11.	Studies on Treatment of Wastewater using FB (RA)	1997-2000	CSIR	2.30	Prof. K. Krishnaiah

Chemical 1999-00

12.	Development of a Hybrid UASB Reactor for treating high strength waste waters	1998-1999	MHRD	10.46	Prof. T.K.Ramanujam
13.	Development of Computer aided instrumentation modules using process simulator for Chemical Engg. Courses	1999-2001	CCE	2.50	Dr. A. Kannan
14.	Identification and Robust control design of a Waste water pH-neutralization process	1997-2000	Volkswagen-Stiftung, Germany	20.00	Prof. VSR Rao

5.2 Industrial Consultancy :

Sl. No.	Name Of Faculty	Title	Industry	Amount (In Lakhs)
1.	Dr. Abhijit P.Deshpande & Dr. Susy Varughese	Solution to the adhesion problem in bitumen and Coal tar topes	Iwl India Ltd.	0.30
2.	Prof. S. Subba Rao	Design of scrubber, crystalliser heat exchanger	Indian Rare Earth Ltd.	0.30
3.	Dr.S. Sankara Narayanan	Studies on co-milling of coal and petcoke	BHEL, R & D	1.60
4.	Dr. T. Swaminathan	Scrutin & Vetting of proposal for recovering water from waste water Design of Water treatment plant	Coco-Cola India Ltd. Neyveli Lignite Corpn.	0.25 5.00
5.	Prof.A.R.Balakrishnan	Spray Drying of Uracil and Suparex ME Design of Evaporator, Crystallizer, vapour Scrubbing etc.	BTP India Ltd. Indian Rare Earth Ltd.	0.10 0.30
6.	Prof. DVS Murthy Dr. T. Swaminathan Prof. DVS Murthy	Rapid EIA for the HITECH Park in Tirunelveli Design of Water treatment plant Environmental Audit	TIDCO Neyveli Lignite Corpn. Orchid Chemicals & Pharmaceuticals Ltd.	0.12 5.00 1.00
7.	Prof. T.K.Ramanujam	Characterisation and technical advice of water samples	5 Industries	0.96

5.2 RBIC :

Sl. No.	Name Of Investigator/ Co-Investigator	Title	Number	Amount (In Lakhs)
1.	Dr. S. Pushpavanam	Scale up of Trickle Bed Reactors	1	20.00

6. Research Publications :

No. of papers published in:

- a) Refereed National Journals : 4
b) Refereed International Journals : 27

No. of papers presented in:

- a) National Conference : 13
- b) International Conference : 5

Refereed National Journals

1. Feed forward Control of Wiener type Non-Linear, M.Chidambaram, S.N. Jyothi , Ind. Chem. Eng. V 41, T 85-86 July-Sept. (1999).
2. Treatment of dairy (milk) effluent using an anaerobic fluidized bed reactor – Ms.R.S.Unnitha, R. Saravannane & D.V.S. Murthy, Indian Chemical Engineer, V 41,4, p. T 117-T275, Octo-Dec. (1999).
3. Pressure drop and Phase Hold ups in multistage TBC with downcomers, K. Soundarajan & K. Krishnaiah. Indian Jl. Chem. Tech. 5, 179-186, (1998)
4. Hydrodynamic Aspects of Multistage Turbulent Contactor, K. Soundarajan & K. Krishnaiah. Indian Jl. Chem. Tech. 5, 267-275, 1998.

Refereed International Journals

1. Closed Loop Identification of Transfer Function Model for Unstable bioreactors for tuning PID controllers, Bioprocessing Bioengineering, 22, 185-188 (2000).
2. Closed Loop Identification of Transfer Function Model for Unstable Systems., M. Chidambaram and S. Ananth, V 336, 1055-1061 (199) J. Franklin Institute.
3. Fuzzy Tunes PI Controller of an unstable bioreactors, bioreactors, bioprocess engg. Satish Kumar & M. Chidambaram, (1999).
4. Microfines Disc Centrifuge type Pneumatic Classifier for fluid energy based comminution System, Nair, P.B.R. & Narayanan. S.S. Accepted for publication in Advanced Power Technology (1999).
5. A strategy for Detection of Gross Errors in Nonlinear Processes, T. Renganathan & S. Narasimhan, I & EC Research, V 38, p. 2391-99 (1999).
6. Optimization of lignin Peroxidase from Pherarocheate chynspuium using SM – Bioprocess Engineers, R. Manimegalai & T. Swaminathan, 21 (5), 463-467 (1999).
7. Parametric Studies on Thermally Stratified Chilled Water Storage Systems, J.E.B. Nelson, A.R. Balakrishnan & S. Srinivas Murthy, Applied Thermal Engineering, 19, 89-115 (1999).
8. Experimentals on Stratified Chilled Water Tanks, J.E.B. Nelson, A.R.Balakrishnan & S.Srinivasa Murthy, International Journal of Refrigeration, 22, 216-234 (1999).
9. Kinetics of Melt Crystallization in Falling Films, K.B.Radhakrishnan & A.R.Balakrishnan, Chemical Engineering Communications, 171, 29-53 (1999).
10. Nucleate Pool Boiling Heat Transfer of Binary Mixtures at Low to Moderate Heat Fluxes, R.J.Benjamin & A.R.Balakrishnan, Trans. ASME, J. of Heat Transfer, 121, 365-375 (1999).
11. Treatment of synthetic dairy wastewater using a cross flow medium trickling filter – Journal of Environmental Science & Health – Part A (USA), V 34, 2, pp 357-369 (1999).

12. Comparison of trickling filter models for the treatment of dairy wastewater in cross flow Medium trickling filter, S. Amalraj & DVS Murthy, *Bioprocess Engg.*, V21, 1, p. 51-55 (1999).
13. Nitrification of Sewage wastewaters in an upflow biofilter, Ms.S.Chandradanam & DVS Murthy, *Bioprocess Engg.*, V 21, No. 2 P 117-122 (1999).
14. Carbon Oxidation and nitrification of dairy wastewater using a trickling filter, S. Amalarj & DVS Murthy, *J. of Env. Sci. & health - Part A (USA)*, V 34, 7, p.1317-1327 (1999).
15. Colour removal of bagasse based pulp mill effluent using a white rot fungus - S.V. Srinivasan & DVS Murthy, *Bioprocess Engg.*, V 21, 6, p.561-564 (1999).
16. Transient Response Studies in Rotary Kiln, V. Sriram and PST Sai, *Can. J. Chem. Engg.* 77, 597-601 (1999).
17. Enrichment of Titanium dioxide in Red Mud, a kinetic study, Hydrometallurgy, Pankaj Kasliwal and PST Sai, 53, 73-87 (1999).
18. Optimization of air distribution in direct reduction process in rotary kiln, *Can. J. Chem. Engg.* 77, 775-883 (1999).
19. Mathematicl Modelling of Pneumatic char injection in a direct reduction rotary Kiln, V. Ramakrishnan & PST Sai, *Matt. Met. Trans.*, 30B (1999).
20. Studies on effect of air distribution on the performance of a direct reduction rotary kiln, V. Niyamathuula & PST Sai, *J. Energy, Heat & Mass Transfer*, 21, 77-84 (1999).
21. Radial liquid distribution in gas-liquid concurrent downflow through packed beds. B. Kunjummon, T. Shyam Prasad & PST Sai, *Bioprocess Engg.*, 19 (1999).
22. Treatment of distillery spentwash by hybrid UASB reactor, Shivayogimath, C.B. & T.K. Ramanujam, *Bioprocess Engineering*, V 21, p.255-259 (1999).
23. Effect of chloride and condensable tannin in aerobic degradation of tannery wastewaters. Vijayaraghavan, K & Ramanjum T.K. *Bioprocess Engineering*, V20, p.499-503 (1999).
24. Effect of substrate concentration on biodegradation of 2,4-Dichlorophenol using modified Rotating Biological Contactors' G. Swaminathan & T.K. Ramanjuma, *Bioprocess*, V21, p.169-173 (1999).
25. In situ hypochlorous and generation for the treatment of Distillery Spentwash, K. Vijayaraghavan & T. K. Ramanujam, *Ind-Eng. Chem. Res.*, V 38, p.2264-67 (1999).
26. Formation of Tailed Drops in liquid extraction. A. Kannan & M.V.I. Baird, *Chemical Engg. Sci.*, V55, p.1027-1031 (2000).
27. Rebuttal Ore Comments on production of activated carbon from coconut shell char in a fluidized bed reactor, P.M. Satya Sai, J. Ahmed & K. Krishnaiah, *Ind. Eng. Chem. & Research*, 38, 1169-1171 (1999).

National Conferences

1. Feed forward control of Hammerflow Non-linear System, M. Chidambaram & S.N. Jyothi, *Proc. TIMA-99*, Allied Publications, 280-283.
2. Feed forward control of linear type non-linear systems, M. Chidambaram & S.N. Jyothi, *Chem. Engg. Congress, CHEMCON, Chandigarh*, 18-21, Dec. (1999).

3. Control of unstable Hammerflow Isotherm with input multiple, M. Chidambaram & S.N. Jyothi, CHEMCON (1999).
4. Design of PI/PID Controllers for systems with zero, M. Chidambaram & S.N. Jyothi & S. Aravind, TIMA-99, p.298-301 (1999).
5. Development of a microfines multi-column pneumatic classifier, S.S. Narayanan & P.B.R. Nair.
6. Recent Techniques in Mineral Processing, Waste Environmental Management, RRL, Bhubaneshwar, RETMEM-99, Nov. (1999).
7. Treatment of Sugar and Distiller Wastewater - S.V. Srinivasan & DVS Murthy, 14th National Convention of Chemical Engineers, 26-27 Organised by Institution of Engineers (India), Chennai, March (1999).
8. Biodegradation of Recalcitrant compounds by White rot fungi, S.V. Srinivasan & DVS Murthy, 2nd Annual Conference of Indian Environmental Association organised by Indian Environmental Association, Mumbai 14-15, May (1999).
9. Studies in nitrification of Synthetic wastewater in a trickling filter, S. Amalraj & DVS Murthy, CHEMCON-99, Univ. of Punjab, Chandigarh, Dec. 16-19 (1999).
10. Removal of color from wastewater using fluidized bed - A Review, Sharma, A.K. & Krishnaiah, K., 14th National Convention of Chemical Engineers, Institution of Engineers (Chennai) 26-27 March (1999).
11. Sharma, A.K. & Krishnaiah, K., Studies on fluidized bed for the removal color from wastewater, 2nd International Conference of Wastewater Management in next decade, ENVIRO VISION-99, Mumbai, 14-15 May (1999).
12. Sharma, A.K. & Krishnaiah, K., Studies on removal of colour from wastewater using fluidized bed, Second Annual Conference on Active Research by Environmental Sciences in Student, Caress-99, Weizmann Institute of Science, Rehovot, ISRAEL, May 27 (1999).
13. Krishnaiah, K., Chemical Engineering and Biotechnology : Two sides of the same coin in Education of Biotechnology in India, Curriculum Development Workshop, IIT Madras, March 23 (1999).

International Conferences

1. M. Vijayan, C., Indu, S. Jayanti & A.R. Balakrishnan, Circumferential Coherence of waves in falling film and the Mechanism of Flooding in Counter current flow, Proc. of two phase flow Modelling and Experimentation - 1999, pp.607-611 (1999) ed. GP Pelata, P.Di Marco & R.K.Shal.
2. Studies on production of ultra-fine powders using circular fluid energy mill, S.S. Narayanan & PBR Nair, Engineering Foundation Conference on Control of Particulate Processes V I, Queensland, Australia, Sept. (1999).
3. Circumferential Coherence of Waves in Falling Film and the Mechanism of Flooding in Countercurrent Flow, M. Vijayan, C. Indu, S. Jayanti & A.R. Balakrishnan, Two Phase Flow Modelling and Experimentation 1999 - Proceedings of the 2nd International Symposium on Two Phase Flow Modelling and Experimentation, Pisa, Italy, May 23-25, p. 607-611, (1999).
4. Biological decolorization of pulp mill effluent using white rot fungus trametes versicolor, S.V. Srinivasan & DVS Murthy, African International Protection Symposium, Pietermaritzburg (South Africa) 4-8, July (1999).
5. Statistical optimization of process variables for the production of poly (3-hydroxy butyrate) using *Ralstonia euluxopha*, CHEMCON 99, Chandigarh (1999).

6. Distinguished Visitors to the Department:

- a. Dr. Shekar Viswanathan, Associate Professor, Chemical & Environmental Engineering National University, Singapore
- b. Dr. Duane Johnson, Univ. of Alabama, Tuscaloosa, USA
- c. Dr. Ing. G. Mennig, Dept. of Chemical Engineering, Germany
- d. Prof. H.S. Shankar, Dept. of Chemical Engineering, IIT Bombay
- e. Dr. J.P. Tharakan, Howard Univ., Washington, USA
- f. Prof. Chris Buckley & Dr. Deresh Ranguernath, Dept. of Chemical Engineering Univ. of Natal, South Africa
- g. Prof. S. Sundaresan, Dept. of Chemical Engineering, Princeton Univ. USA
- h. Dr. R. Pickhardt, Senior Scientist, Atomic Control Laboratory, Ruhr-univ., Bochum, Germany
- i. Prof. Arthur Soucemarianadin, Universite' Joseph Fourier Grenoble, France
- j. Dr. J. Polaczek, Institute of Organic Chemistry & Technology, Cracow Univ. of Technology, Poland
- k. Dr. Arun Kumar, Schlumberger, Houston, USA
- l. Prof. Dr. -Ing. H. Unbehauen, Head, Control Engineering Laboratory, Dept. of Electrical Engineering Information, Sciences, Ruhr-Univ. of Bochum Germany
- m. Prof. Dr. -Ing. Karl-Friedrich Knoche, Lehrstuhl für Technische Thermodynamik, RWTH Aachen, Germany
- n. Dr. -Ing. Klaus Vittinghof, Executive Director, Univ. of Karlsruhe, Germany
- o. Dr. -Ing. A. Vogelpohl, Director, Institut für Thermische Verfahrenstechnik Technische Universität, Clausthal, Germany

4.4 DEPARTMENT OF CHEMISTRY

1. Introduction :

The Department of Chemistry, in addition to offering instructions at the B.Tech and select M.Tech levels, offers 4 semester M.Sc and Ph.D programmes. 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 :

2.1 Students on Roll:

Programme	I Year	II Year	III Year	IV Year	V Year	Others	Total
M.Sc	25	25	50
Ph.D	20	14	15	15	38	..	102
Total	45	39	15	15	38	..	152

2.2 Number of Scholarship/Fellowship holders:

Programme	Institute Scholarship	Others	Total
M.Sc	29	..	29
Ph.D	49	31	80
Total	78	31	109

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.	V. Geetha	Ph.D	National Seminar on Organo-metallic Chemistry	March 24-25, 1999 at Bharathidasan Univ., Trichy
2.	D. Jesudurai	Ph.D	National Seminar on Organo-metallic Chemistry	March 24-25, 1999 at Bharathidasan Univ., Trichy
3.	V.S. Raphael	Ph.D	68 th Annual meeting of the Society of Biological Chemists (India)	Decem.27-29, 1999 at IISc Bangalore

4.	N. Pappayee	Ph.D	XIX International Biophysics Congress, New Delhi	Sep.19-24, 1999 Jan 12-17, 2000 -do-
5.	J. Shobini	"	TSRP 2000, BARC, Mumbai -do-	Jan 30 - Feb 4, 2000 -do-
6.	N. Pappayee	Ph.D	ISBOC - 2000, NCL, Pune	-do-
7.	J. Shobini	Ph.D	-do-	
8.	R. Manivannan	Ph.D	Polymers '99	Jan. 11-15, 2000, IIT Delhi
9.	R. Malati	M.Sc	Advances in Organometallic	April 2-5, 1999 Bharathidasan Univ, Trichy
10.	Ch.Subramanyam	Ph.D	National Seminar Trends in Industrial Catalysis	Sept. 10-11, 1999 Baroda
	-do-	Ph.D	National Workshop on Catalysis	Jan.7-8, 2000 IICT, Hyderabad
11.	S. Shanmugam	Ph.D	Winter School in Solid State and materials chemistry	Nov.29-Dec.4, 1999, JNC, Bangalore
	-do-	Ph.D	DST Winter School on catalysis for Research scholars	Dec.20-Jan.4, 2000 IIT Madras
12.	Arindam Das	Ph.D	DAE-Solid State Physics Symposium	Dec.20-29, 1999 IGCAR, Kalpakkam
13.	V. Selvamurugan	Ph.D	V International Symposium on Bio-organic Chemistry	Pune Jan 30-Mar. 2000
14.	S. Vijayasaradhi	Ph.D	-do-	-do-
	-do-		XIV Carbohydrate Conference, IITM	Dec.16-17, 1999
15.	T. Lakshmanan	Ph.D	XII International Biophysics Congress	New Delhi Sep.19-24, 1999
	-do-		V International Symposium on Bioorganic Chemistry	Pune Jan30-Feb.4, 2000
16.	K. Priya	Ph.D	XIV Carbohydrate Conference	IITM Dec.16-17, 1999
17.	P. Muni Bhaskar	Ph.D	-do-	-do-
18.	T. Kannan	Ph.D	V International Symposium on Bioorganic Chemistry	Pune Jan.30-Feb.04, 2000
19.	B. Gopal Mishra	Ph.D	13 th Annual Conference of Orissa Chemical Society	Puri, Orissa Dec.19-20, 1999
20.	H.Ranjan Sahu	Ph.D	-do-	-do-
	-do-		National Workshop on Catalysis	IICT, Hyderabad Jan.7-8, 2000

21.	V. Vidyalakshmi	Ph.D	Nuclear & Radiochemistry Symposium by BRNS & DAE Nucar '99	BARC, Mumbai Jan 19-22, 1999
22.	M. Suseela Devi	Ph.D	Modern Trends in Inorganic Chemistry	IISc, Bangalore Jan.18-20, 2000
23.	R. Ramesh	Ph.D	Winter School at Statistical Mechanics	IIT Kanpur Feb 26, 2000

2.4 Number of Degrees Awarded in the last convocation:

Sl.No.	Programme	Total
1.	M.Sc	23
2.	Ph.D.	24
Total		47

3. Faculty and their Development:

3.1 Faculty

Name and Qualifications

Major Area of Specialization

Professors:

K.K. Balasubramanian, Ph.D (Madras)
N. Balasubramanian, Ph.D (IITM)
T.S. Chandra, Ph.D (IISc, B'lore)
M.S. Gopinathan, Ph.D (IITK) (**Head**)

Synthetic & Mechanistic Organic chemistry
Analytical & Environmental Chemistry
Biochemistry & Microbial Biotechnology
Quantum & Theoretical Chemistry,
Molecular Spectroscopy, Nonlinear
Dynamics & Chaos

K.Lalitha, Ph.D (Mysore)
S.Vancheesan, Ph.D (IITM)
C.S. Venkatachalam, Ph.D (IITM)
B. Viswanathan, Ph.D (IITM)

Biochemistry & Biotechnology
Organometallics & Homogeneous Catalysis
Electrochemistry
Surface Science, Materials Science,
Catalysis

Associate Professors:

A.K. Mishra, Ph.D (IITK)
S.Sankararaman, Ph.D (Victoria, Canada)
M.N.Sudheendra Rao, Ph.D (IISc,B'lore)
G. Sundararajan, Ph.D (Rutgers, USA)
T.K.Varadarajan, Ph.D (IITM)
U.V.Varadaraju, Ph.D (IISc, B'lore)
Joined with MSRC
R.P. Viswanath, Ph.D (IITM)

Physical photochemistry
Fluorescence Spectroscopy
Synthetic & Physical Organic Chemistry
Organic Photochemistry
Inorganic Heterocycles, Chemistry of Main
Group Elements
Organometallic Chemistry
Heterogeneous Catalysis
Solid State Chemistry, Materials Science
Heterogeneous Catalysis

Assistant Professors:

Archita Patnaik, Ph.D (BHU, Varanasi)
Anju Chadha, Ph.D (IISc, B'lore)

Nuclear Science (Application of Nuclear
methods to materials science)
Bioorganic Chemistry

P. Bhyrappa, Ph.D (IISc, B'lore)
S. Baskaran, Ph.D (IITKanpur)

R. Dhamodharan, Ph.D (Mass,USA)
Indrapal Singh Aidhen, Ph.D (Pune)
D. Loganathan, Ph.D (IITB)

K. Mangala Sunder, Ph.D (McGill, Canada)

N. Narasimha Murthy, Ph.D (IISc, B'lore)
T. Pradeep, Ph.D (IISc, B'lore)

Joined with RSIC

G. Ranga Rao, Ph.D (IISc, B'lore)
M.V. Sangaranarayanan, Ph.D (IISc, B'lore)
M.S. Subramanian, Ph.D (IITM)
Sanjay Kumar, Ph.D (IIT Kanpur)

K. Vidyasagar, Ph.D (IISc, B'lore)

Bioorganic Chemistry
Development of New Synthetic Methodology and
their application to the Synthesis of Biologically
active molecules

Macromolecular Chemistry
Synthetic Organic Chemistry
Organic Chemistry, Carbohydrate Chemistry

Theoretical Chemistry, Spectroscopy
Chemical Reaction Dynamics
Bio-Inorganic Chemistry
Spectroscopy, Glusters, Monolayers

Catalysis & Surface Processes
Electrochemistry
Analytical Chemistry
Theoretical and Computational Chemistry,
Quantum Chemistry, Molecular Reaction
Dynamics
Solid State Chemistry

Emeritus Scientist:

D.V. Ramana (CSIR)
R. Ramaswamy (AICTE)

Organic Chemistry
Physical Chemistry

CSIR Research Associates:

Dr S Suma
Dr M Aulice Scibioh
Dr V Charulatha
Dr Jayantha Sinha
Dr Tapan Kumar Kundu
Dr Agarwal Sushma
Dr Tedidi Narasimha

3.2 Short Term Courses/Workshops/Seminars/Symposia/Conferences organised:

S. No	Co-ordinators	Title	Period
1.	N. Balasubramanian & A.K. Mishra	UNESCO Regional Training Prog. in Analytical Chemistry	22.11.99 to 5.12.99
2.	M.N. Sudheendra Rao	Organised a level-II Screening Examination (in both theory & Lab) as regional coordinator for selecting 'Young Chemists' to participate in the international chemistry Olympiad - by Homi Bhabha Centre for Science Education, Mumbai (for Govt. of India)	May 19-20, 1999
3.	B. Viswanathan	DST Orientation Programme for catalysis	Dec.20 Jan.4, 2000
4.	Indrapal Singh Aidhen and D. Loganathan	XIV Carbohydrate research at the interface of chemistry, biology and medicine: Emerging Trends	Dec.16-17, 1999

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

S.No	Name of Faculty	Title	Institution	Period/Duration
1.	M.N.Sudheendra Rao -do- -do- -do-	National Seminar on Organometallic Chemistry Regional Coordinator for Ist Indian National Chemistry Olympiad screening One day seminar on Spectroscopic instruments MTIC -VIII, - Invited to chair a session	Bharathidasan Univ., Trichy IIT Madras Lab India IISc., Bangalore	March 24-25, 1999 May 19-20, 1999 Dec.2, 1999 Jan.18-20, 2000
2.	S. Sankararaman	7 th European Symposium on Organic Reactivity (ESOR-7)	University of Ulm, Germany	Aug 22-27, 1999
3.	G. Sundararajan -do-	Polymers'99 Advances in orga-nometallic Chemistry	IIT Delhi Bharathidasan Univ., Trichy	Jan.11-15, 2000 April 2-5, 1999
4.	Archita Patnaik	Materials and surface science with Accerators DAE Solid State Physics Symposium IUC-DAEF-CAT Annual School on Science with Synchrotron Radiation 2 nd International Symposium on polymer surface modification	Institute of Physics, Bhubaneswar IGCAR, Kalpakkam CAT, Indore Hotel Park Sheraton, Newark, New Jersey	Oct.4-6, 1999 Dec.20-24, 1999 Jan.27 to Feb.2, 2000 April 24-26, 2000
5.	Anju Chadha	Curriculum Development work-shop on education of Biotechnology in India Lipases-First Acaemic Industry Interaction National Workshop on Orient Programme on catalysis Research	Dept. of Cheml. Engg, IITM Delhi University Dept. of Chemistry, IITM	March 23, 1999 May 20-21, 1999 Dec Jan. 2000
6.	S. Baskaran	Programme for Gifted Youth 8 th NOST Symposium	IIT M NOST in Jaipur	April 26-May 15, 1999 March 2-5, 2000
7.	Indrapal Singh Aidhen	IInd National Symposium in Chemistry	IICT, Hyderabad	Jan.27-29, 2000

8.	D. Loganathan	XII International Biophysics Congress	IUPAB, New Delhi	Sep.19-24, 1999
		V International Symposium on Bio-organic chemistry	NCL, Pune	Jan.30-Feb.4, 2000
9.	G. Ranga Rao	Germany-UK Joint Seminar on Lead Analysis	Germany	June 1999
		National Workshop on Catalysis	IICT, Hyderabad	Jan 7-8, 2000
10.	K. Vidyasagar	Modern Trends in Inorganic Chemistry Symposium	IISc., Bangalore	Jan 18-20, 2000
11.	K. Mangala Sunder	NMR Spectroscopy from basics	Calicut University	Sep.27-28, 1999
		Error Analysis -UNESCO Training Program	IIT M	Dec.4, 1999

3.4 Special Lectures Delivered by the faculty in others Institutions:

S. No	Name of Faculty	Topic of Lecture	Venue and Date
1.	K.K.Balasubramanian	Some aspects of chemistry of glycols -14 th Carbohydrate Conference	IITM, Dec.16-17, 1999
		Radical cyclisation approach to triquinanes and condensed carbocycles	Kyoto Instt. Of Tech, Japan Jan 18, 2000
		-do-	Kyoto Univ, Japan
	K.K. Balasubramanian	New catalysts for Ferrier rearrangement	Osaka City Univ, Japan Jan 20, 2000
		Radical cyclisation approach to triquinanes and condensed carbocycles	Nagoya Instt. of Tech. Japan, Jan 21, 2000
		-do-	Kanazawa Univ, Japan Jan 24, 2000
		-do-	Tokushima Univ, Japan Jan 25, 2000
	Radical cyclisation approach to triquinanes and condensed carbocycles, Ferrier rearrangement and some aspects of chemistry of glycols	Osaka Univ, Japan Jan 26, 2000	
	New catalysts for Ferrier rearrangement and some aspects of chemistry of glycols	Teikyo Univ, Japan Jan 27, 2000	
2.	M.N.Sudheendra Rao	Inorganic Rings & Polymers (Refresher Course)	Annamalai Univ. March 6, 1999
		Hypervalency-theory & Practice (Refresher Course)	Gandhigram Univ. April 9, 1999
		Multiple bonding in metals chemists Award to Dri T.Ramasami, Director, CLRI-Invited talk	Madras Univ April 22, 1999

3.	S. Sankararaman	Synthetic transformations using Lithium perchlorate in organic media	University of Braunschweig, Germany, Feb.'99
4.	G. Sundararajan	Soluble and Tunable Metal complexes for Metathesis polymerization	Society of Polymer Science, Thiruvananthapuram, Sep.3, 1999
	-do-	Chiral Lewis acids for Asymmetric Induction in Organic Reactions	Regional Research Laboratory, Thiruvananthapuram, Sept.4, 1999
5.	T.K. Varadarajan	Catalysis by Solid Acids	DST Winter School on catalysis for Research scholars, IIT Madras Dec.12'99 to Jan.4, 2000
6.	Archita Patnaik	Electronic conduction in ion-beam induced polymers	Bhabha Atomic Research Centre. June 8 th 1999
		Optical properties of amorphous hydrogenated carbons synthesized upon N ⁺ beam implantation	Institute of Physics, Bhubaneswar October 7, 1999
7.	Anju Chadha	Lipases promising resolving agents	Delhi University May 21, 1999
		Biocatalysts:potential Industrial catalysts	GNVFC, Gujarat July 15, 1999
8.	R. Dhamodharan	Polymers in constrained Geometries	UMASS, Amherst, USA May 1999
9.	G. Ranga Rao	Spectroscopic identification of various adsorbed nitrogen species on metal surfaces	Institute fur Physikalische and theoretische chemie, Erlangen, Germany June 16, 1999
	G. Ranga Rao	Thin film chemistry of Rcc(001) surface	-do- June 22, 1999
		Synthesis and reactivity of Surface intermetallic phases on Rcc(001): XPS investigation	Univ. of Triesti, Italy June 25, 1999
10.	M.V. Sangaranarayanan	Adsorption at electrochemical interfaces	Univ. of Calicut Dec.1999
		Chemically modified electrodes	Univ. of Calicut Dec.1999
		Analysis of Electrochemical systems - Progress and prospects	Loyola College Jan 28, 2000
11.	K. Vidyasagar	Comparison of x-ray electron and reaction diffraction	Univ. of Madras Sept.20, 1999
		Structures of NaCl, CsCl, NiAs, ZuS, diamond, graphite, normal and inverse spinels	-do-

12.	K. Mangala Sunder	NMR Spectroscopy from Basics to 2D NMR	Calicut University Sept.27-28, 1999
		Computer simulation in Physics	Vivekananda College Nov.10, 1999
		Chemistry teaching in the new millennium	Loyola College Jan.11, 2000

3.5 Visits Abroad by Faculty:

Sl. No	Name of Faculty	Country visited	Date	Purpose of Visit
1.	K K Balasubramanian	Japan	Jan 17-29, 2000	INSA-JSPS Scientist exchange program
		USA	Feb 12-17, 2000	Inform XX Conference
2.	B. Viswanathan	Switzerland	June-Aug,1999	Visiting Professor
		Kazakhstan	Sep.1999	Member of DST Delegation
3.	S. Sankararaman	Germany	April 1998-May 1999	Alexander von Humboldt Fellowship
4.	G. Sundararajan -do- -do-	Germany	June 1-July 31, '99	Research Collaboration
		The Netherlands	July 11-15, 1999	Symposium
		France	July 21-24, 1999	Lecture
5.	Archita Patnaik	USA	April 20-27, 1999	Lecture 2 nd International Symposium
6.	P. Bhyrappa	Germany	May 15 – 1999	AvH Fellowship
7.	R. Dhamodharan	USA	May-August, 99	Research seminars and perform research
8.	G. Ranga Rao -do-	Germany	May-July, 1999	Research work
		Italy	June 24-27,1999	Research project
9.	K. Mangala Sunder	Canada	June-July, 1999	Research Work

3.6 Honours and Awards obtained:

S. No	Name of Faculty	Name of Award	Awarded by	Awarded for	Date
1.	M.N.Sudheendra Rao	Invited to train student for Chemistry Olympiad	HBCSE, Mumbai		June 1999
2.	S. Sankararaman	Alexander von Humboldt Fellowship	AvH Foundation	Research	July 1998
3.	P. Bhyrappa	AvH Foundation, Germany	AvH Foundation	Research	14.5.99
4.	R. Dhamodharan	Senior Fulbright research fellowship	Fulbright Research Foundation	Research	May Aug.1999

5.	D. Loganathan	Who's who in the World	Mar quis New Jersey, USA	General Career Performance	Jan.2000
6.	G. Ranga Rao	2 nd best oral presentation	IICT Hyderabad	Oral presentation	Jan.7-8. 2000
7.	M.S.Subramanian	4 th Prize for Board of research in Nuclear Sciences	DST	Paper presentation	Jan 19-22, 1999

3.7 Books / Monographs authored or co-authored:

S. No	Name(s)of Author(s)	Title of Text Book/Monograph	Publisher
1.	K.K. Balasubramanian	Lithium tetrafluoroborate in organic synthesis some recent developments PI-4, Vol7, 1999	Acros Organics
2.	B. Viswanathan	Principles and applications of Electro chemistry	S. Viswanathan & Co.
3.	A.K. Mishra	Photoluminescence Spectroscopy In advances in Physical chemistry Ed. T.Pradeep, 195-214, 1999	Allied Publishers Limited, New Delhi
4.	S.Sankararaman	Time resolved spectroscopy from seconds to femtoseconds: Probing chemical intermediates and transition states in Advances in Physical Chemistry, Chapter-II	Allied Publishers Limited, New Delhi 1999, Chapter 11 pp.215-228
5.	G. Ranga Rao	Adsorption and surface catalytic reactions Advances in physical chemistry	Allied Publications 1999
6.	K. Mangala Sunder Byan Sanctuary & Adam Halstead	General Chemistry CD Pre-General Chemistry CD	MCH Multimedia Montreal
7.	T. Pradeep (Ed)	Frontiers of Physical Chemistry	Allied Publishers, 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 Admission
M.S. Gopinathan	Indian National Science Academy Indian Academy of Sciences	Fellow Fellow	1992 1988
K.K.Balasubramanian	Indian Science Academy Indian National Science Academy	Fellow -do-	1991 1993
P. Bhyrappa	AvH Foundation	Research Fellow	May 15, 1999
S. Baskaran	AvH Foundation	Research Fellow	1991

4 Design and Development Activities

A polymer characterization laboratory with a guest atmosphere glove box, a HPLC/GPC for molecular weight and distribution analysis. A HPLC/GPC for molecular weight and distribution analysis, a FT-IR with internal reflection and diffuse reflectance accessories, a UV-Visible electrophotometer and the photoreactors has been developed.

CVD, insitu 2 R cells have been fabricated and used successfully.

A thermal desorption/mass spectrometry system fabricated.
 A microwave discharge system for the synthesis of materials has been developed.
 A discharge source for ozone has been developed.
 A low temperature infrared set-up has been put in place and is working in COMTECH

Curriculum development using multimedia in physical chemistry – A CD Rom on primer in Quantum Chemistry.

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

- a) CVD for the preparation of fine metal catalysts
- b) Institute IR Cell with cooling /heating facilities for chemi supplier and catalytic measurements
- c) CD Rom in Chemistry using an authoring tool

4.2 New facilities added or major equipment procured through project funds:

- a) A few equipments the sorptometer, Electro analytical systems were added
- b) Constant Fraction Differential Discriminators (2 Nos.) and a brassed amplifier were added to the positron lifetime spectrometer to obtain a fine time resolution.
- c) Uv-Visible absorption spectrophotometer – DST Project
- d) A HPLC/GPC
- e) A FT-IR with internal reflection and diffuse reflectance accessories
- f) A UV-Visible Spectrophotometer
- g) Nucon Gas-chromatography with TCD and FiD
- h) Pentium PC Workstation; Laserjet Printer, Mathematica packages, MAT Lab tool boxes
- i) High Vacuum pump
- j) Two furnaces with programmable controllers

4.3 Patents awarded:

Patents filed: Applied for homogeneous hydroxylation of aromatic hydrocarbons

5 Research and Consultancy:

5.1 Sponsored Research Projects:

S. No	Title	Period	Funding Agency	Amount Inlakhs	Co-ordinators
1.	Dynamic analysis of chaos and its possible control in experimental time series	1997-2000	DST	10.00	Dr.M.S. Gopinathan
2.	New routes to C-Aryl glycosides	May 95 to Dec.99	DST	13.70	Dr.K.K.Balasubramanian
3.	Development of fluorescence based Optical sensors for Monitoring pollutants in industrial effluents	1996-2000	DAE, BRNS	7.06	Dr. A.K. Mishra & Dr. K.S Viswanathan IGCAR, Kalpakkam
4.	Development of fluorescence based Analytical methods For estimation of Polycyclic aromatic Hydrocarbons	1996-2000	CSIR	0.42	Dr. A.K. Mishra

5.	Novel Phosphine Oxides.... Radioactive wastes	1996-2000	DAE (BRNS)	5.70	Dr. M.N.S.Rao Dr. P.R.V. Rao Head, FCP,IGCAR, Kalpakkam
	TM hyper valent silicates	1999-2002	CSIR	9.50	Dr. M.N.S. Rao
	PSN heterocycles	2000-2003	DST	14.0	Dr.M.N.S. Rao
6.	Novel Cyclophanes with Structure and Reactivity Studies	1999-2001	Volkswagen Foundation Germany	DM 92,500	Dr. S.Sankararaman IITM and Prof. Dr. H.Hopf, Univ. of Braunschweig, Germany
7.	Metathesis and Zigler Natta Polymerisation	1988-2000	Dupont USA	USD 24,000	G. Sundararajan
	Asymmetric Catalysis with Cn-symmetric Ligand	1997-2000	CSIR	5.00	-do-
	Switching the Mechanism of Polymerisation	1997-2000	IITM-BMBF	...	Dr.G.Sundararajan & Prof.Walter Kaminsky Hamburg
8.	CrO ₃ supported catalysts for dehydrogeration of alkanes	1997-2000	CSIR	7.00	Dr.R.P.Viswanath
	Control of Environmental pollution control of auto exhaust by oxide catalysts	1999-2001	TNPCB	7.80	Dr. R.P. Viswanath Dr.N.Balasubramanian
9.	Positrons..... Polymers	1997-2000	DST, New Delhi	22.14	Dr.Archita Patnaik
	Chem..... Fullerenes	1999-2002	IUC-DAEF Calcutta	2.49	-do-
10.	A Novel Biocatalytic Deacemisation reaction	2000-2003	DST	15.00	Dr.Anju Chadha
11.	Nanoporous porphyrinic solids, design, synthesis and their properties	3 years	DST	16.43	Dr.P. Bhyrappa
12.	Harvesting sunlight... polymers	1996-99	CSIR	8.00	Dr.R.Dhamodharan
	Synthesis and adsorption.... Polymers	1997-2000	DST	30.00	-do-
	Chemical modification... Materials	1998-2001	DRDO	13.50	-do-
13.	A simple approach towards C-aryl Glycosides		CSIR	7.79	Dr.Indrapal Singh Aidhen
14.	Glycosyl Amidophos-phates: Novel Isosteric Analogues of Glycosyl phosphates	2000-2002	CSIR	7.38	Dr. D.Loganathan
15.	Catalytic chemistry....	1998-2001	CSIR	9.00	Dr. G. Ranga Rao
16.	Tandem Mass Spectrometry and ion surface collisions	1997-2000	DST	48.60	Dr. T. Pradeep
17.	Chemistry of metallo-carbohedrenes	3 years		21.25	Dr. T. Pradeep & Dr. P.T. Manoharan
18.	Monolayers on metal clusters	1999-2002	CSIR	6.63	Dr. T. Pradeep

19.	Analysis of transient electrochemical techniques	1999 - 2001	CSIR	5.00	Dr. M.V. Sangaranarayanan
	Analysis of charge transport through redox polymers	2000-2002	DST	12.40	-do-
20.	Dynamics of Nuclear Spins		CSIR	6.00	Dr. K. Mangala Sunder
	Theoretical rotational vibrational spectroscopy		DST	7.00	-do-
21.	Synthesis and structural characterization of Novel Microporous metal phosphates and phosphonates	1999-2002	DAE	7.38	Dr. K. Vidyasagar

5.2 Industrial Consultancy:

Sl. No	Name of Faculty	Title	Industry	Amount (in lakhs)
1.	R. Dhamodharan	Estimation of polymer in centrate and sludge cake	Pidilite	0.05
		Development of a suitable method to clean the mould following polymerization	M.M. Foam	0.25
		Development of New applications for Ultrahydrophobic Fluoropolymer	Midas	0.05
		Assessment of polymer used in coating musical instruments	Harmony Musicals	0.05
2.	T. Pradeep	Oxidation of CO on supported palladium clusters	DRDE	4.88

5.3 RBIC

S.No	Name of Faculty	Title	Industry	Amount In lakhs
1.	K.K.Balasubramanian	Development of Isopropoxy silanes	VENIL & Company, Pondicherry	0.50
2.	R. Dhamodharan	Development of speciality lubricants	ORDB	48.00
		Development of Microen-capsulation	Technology Anabond	0.50

5.4 Retainer Consultancy :

S. No	Name of Faculty	Title	Industry	Amount (Lakhs)
1.	K.K.Balasubramanian		Shasun Chemical & Drugs, Chennai	0.30
2.	D. Dhamodharan	Development of modified silicon polymer	Anabond Technochem	0.24
		Development of Toner Formulation for Xerography		0.24

5.5 Journal Editorial Boards:

S. No	Name of the Faculty	Level	Journal
1.	B. Viswanathan	Editorial Board Member -do-	Indian J Chem Indian Chem. Technology Applied Catalysis
2.	G. Sundararajan	Regional Editor	Molecules-Online Journal
3.	T. Pradeep	Member, Editorial Board	Asian Journal of Spectroscopy

5.6 Research Publications:

a) No. of Papers published in

Refereed National Journals	:	10
Refereed International Journals	:	74

b) No. of Papers presented in

National Conference	:	18
International Conference	:	25

In Refereed National Journals:

1. M.S. Gopinathan, 'Chaos in chemistry and Biology in "Advances in Physical Chemistry", Ed. T. Pradeep, Allied Publishers, 1999
2. R. Sumathi, K. Johnson, B.Viswanathan and T.K.Varadarajan, catalytic properties of $BaPb_{1-x}Bi_xO_3$ Peraskite oxides for partial oxidation of benzyl alcohol, Indian J. Chemistry, 38A, 40-48, 1999
3. V. Raghuvver and B.Viswanathan, rare earth cuprates as electrodes for methanol oxidation, Bulletin of Electrochemistry, 1998
4. B.Rajesh and B.Viswanathan, Polymer based oxidation catalyst for director methanol fuel cell, Indian J. Chemistry (1999)
5. S.S. Bharathi and A.K. Mishra, Deconvolution of the fluorescence spectra into its component Gaussians: A method to analyze the binding of coumarin to bovine serum albumin, Indian.J.Biochem.Biophys., 36, 188-194 (1999)
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9. T. Pradeep, , Self assembled monolayers, Resonance, 4 (1999) 53-62.

10. Sanjay Kumar, Characterization of low-lying electronic states of CO^{2+} , Indian Journal of Chemistry A, 2000 (in press)

In Refereed International Journals:

1. R.B. Govindan, R. Narayanan, M.S. Gopinathan, N. Pradhan, R. Sreenivasan and P. Dwivedi. "The spectrum of upo of the Human Brain.." Ch.4, in "Non-linear Dynamics and Brain functionality", Ed.P.E. Rapp, 1999
2. Basab Chakraborti and B. Viswanathan, Surface acidity of MCM-4^1 by in sites ir studies of pyridine Adsorption, Catalysis inday, 49, 253-260, 1999
3. K. Vijayaraghavan, T.K. Ramanujam, N. Balasubramanian, Insitu hypochlorous acid generation for the treatment of Distillery spend wash – Ind.Eng.Chem.Res., 38,2264-2267 (1999)
4. K. Vijayaraghavan, T.K. Ramanujam, N. Balasubramanian, Insitu hypochlorous acid generation for the treatment of Syntan Waste Water –Waste Management, 19, 319-323 (1999)
5. N. Gayathri and N.Balasubramanian, Spectrophotometric determination of Nitrogen dioxide, nitrite and nitrate with Neutral red – Analisis, 27, 174-181 (1999)
6. K. Srividya, N.Balasubramanian, Sensitive spectrophotometric determination of Ascorbic acid in pharmaceutical samples and fruit extracts – Chem.Anal.(warsaw) 44, 689-696 (1999)
7. M. Sreekala, T.R.Santosh and K. Lalitha, Oxidative stress during selenium deficiency in seedlings of *Trigonolla foeneum-graceum* and mitigation by mimosine Part-I – Hydroperoxide metabolism, Biol.Trace.Elem.Res.70(3), 193-207 (1999)
8. T.R. Santosh, M.Sreekala and K. Lalitha, Oxidative stress during selenium deficiency in seedlings of *Trigonolla foeneum-graceum* and mitigation by mimosine Part-II– glutathione metabolism , Biol.Trace.Elem.Res.70(3), 207-223 (1999)
9. Chitra Hariharan and A.K. Mishra, 2-Naphthol-aliphatic amine exciplex systems: a method for approximate estimation of kinetic parameters, Chemical Physics, 248, 41-51, (1999)
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11. R. Sudha and S.Sankararaman. Chemoselective Aldol Condensation in 5 mol dm^{-3} Lithium Perchlorate-Nitromethane. A comparison with Lithium Perchlorate Diethyl Ether Medium, J.Chem.Soc.Perkin Trans.1, 383-386, 1999.

12. S. Sankararaman and R. Sudha, Highly Selective 1,2-and 1,4-Addition of Silyl Enol Ether to α,β -unsaturated Carbonyl Compounds in 5 M Lithium Perchlorate-Nitromethane Medium, *J.Org.Chem.*64, 2155-2157, 1999
13. S.Sankararaman and J.E. Nesakumar, Highly Chemo-and Regioselective Rearrangement of α,β -Epoxyketones to 1,3-Dicarbonyl Compounds in 5 mol dm⁻³ Lithium Perchlorate-Diethyl Ether Medium, *J,Chem.Soc.Perkin Trans* 1,3173-3175, 1999
14. V. Vasudevan and G. Sundararajan, Synthesis of GAP-PB-GAP Triblock copolymer and its application as modifier in AP/HTPB composite propellant, *Propellants, Explosives, Pyrotechnics* 24, 295-300, 1999
15. G. Manickam and G. Sundararajan, Asymmetric Diels-Alder and ene reactions promoted by a Ti (IV) Complex bearing a C₂-symmetric tridentate ligand, *Tetrahedron Asymmetry* 10, 2913-25, 1999
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17. V.Vasudevan and G. Sundararajan, Triblock copolymers based on HTPB as additives in composite propellants, *Applied Catalysis* 182, 97-106, 1999
18. G. Manickam and G. Sundararajan, Lithium bis (1R, 5R) 3-aza-3-benzyl-1,5-diphenylpentan, 1,5-diolato]-Aluminium-A New Heterobimetallic Catalyst for Michael Addition Reactions, *Tetrahedron*, 55, 2721-36, 1999
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20. R. Krishnan and S.Vancheesan, Catalase and epoxidation activity.... Complexes, *J.Mol.Catal (A)*, 142,377-382, 1999
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24. A.Das, S. Dhara, and Archita Patnaik, Fractal nature of π -bonded nanocrystalline clusters: a N⁺ beam induced phenomena, *Phys.Rev.*B59, 11069, 1999
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26. A.Das and A.Patnaik, Response of pristine and doped poly (p-phenylene sulfide) towards MeV gamma photons, *Radiat.Phys.Chem.*54 (2), 109-112, 1999
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44. B.Vidyavathy, and K. Vidyasagar, Hydrothermal Synthesis and Characterization of a Novel Two-dimensional Tellurite of Molybdenum (VI), $(\text{NH}_4)_6 \text{Mo}_8\text{O}_{43}\text{H}_2\text{O}$, *Inorg.Chem.*38, 3458-3462, 1999
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In Proceedings of National Conference

1. B. Rajesh and B. Viswanathan, Bimetallic clusters on carbon nanotubes as electrode materials for direct methanol fuel cell, *National Workshop on Catalysis, IICT, Hyderabad*
2. R.S.Achyuthlal Babu, S. Srinivasamurthy and B. Viswanathan, Hydrogen storage alloy as electro catalyst for electrolysis of water for rechargeable battery applications, *National Workshop on Catalysis, IICT, Hyderabad*
3. Ch.Subramanyam, B. Viswanathan and T.K. Varadarajan, Alkylation of naphthalene by alcohols over MCM 48, *National Workshop on Catalysis, IICT, Hyderabad*
4. V. Raghavan and B. Viswanathan, Perovskites shites as alternate anode materials for dried methanol fuel cells, *National Workshop on Catalysis, IICT, Hyderabad*
5. Rohit Kumar Rana and B.Viswanathan, Hetero element substitution in silicates a Theoretical study, *National Workshop on Catalysis, IICT, Hyderabad*

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In Proceedings of International Conferences:

1. R.K. Rana and B. Viswanathan, Synthesis, characterization and catalytic properties of Mo substituted mesoporous silicates, Indo-kazakhstan seminar on catalysis, Sept. 27 – Oct.1, 1999
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3. K. Lalitha, M.Sreekala and T.R.Santosh, Evidence for the antioxidant nature of mimosine, a toxic aminoacid, Fifth IUPAC International Symposium on Bioorganic Chemistry, (ISBOC-5) held at NCL, Pune, Jan.30 – Feb.4, 2000.P.83.
4. N. Pappayee and A.K. Mishra, study of interdigitation in lipids through ESPT fluorescence probes, Fifth international symposium on Bioorganic chemistry, NCL, Pune, January 2000.
5. J. Shobini and A.K. Mishra, Exploring the conformation of gramicidin A in CTAB micellar media, Fifth International symposium on Bioorganic chemistry, NCL, Pune, January 2000
6. N. Pappayee and A.K. Mishra, Carbazole as an excited state proton transfer probe for lipid bilayers in alkaline medium, XIX international Biophysics Congress, Sep.19-24, 1999, NewDelhi
7. J. Shobini and A.K. Mishra, Interaction of Leucinyl-phenylalanyl-valine on phase transition of DMPC liposome, XIX international Biophysics Congress, Sep.19-24, 1999, NewDelhi
8. S. Sankararaman, J.E. Nesakumar and R. Sudha, Highly selective conversion of epoxides to carbonyl compounds in lithium perchlorate-diethyl ether medium, 7th European Symposium on Organic Reactivity, Aug 22-27, 1999, Ulm, Germany, Poster 156, p.269
9. R. Manivannan, G. Sundararajan, and Walter Kaminsky, Switching the Mechanism of Polymerisation from Ziegler-Natta to Metathesis, Polymers Beyond AD 2000, Ed.A.K. Ghosh, Indian Institute of Technology, New Delhi, pp.190-193, 1999
10. G. Sundararajan, Metathesis Polymerisation with Photo-Generated Catalysts, Polymers Beyond Ad 2000, Ed.A.K. Ghosh, Indian Institute of Technology, New Delhi, pp 51-54, 1999
11. Archita Patnaik and Changlin Li, Interface configuration and Au/Polycarbonate bilayer structure; Influence of Al^{3+} ion mixing, 2nd International Symposium on Polymer Surface Modification: Relevance to Adhesion, Newark, NY, USA, May 24-26, 1999
12. R.Ravi Kumar Reddy, Anju Chadha and Enakshi Bhattacharya, Porous silicon as a potentiometric Biosensor, Xth International Workshop on Physics of semiconductor Devices, Dec.1999

13. Anju Chadha, Biocatalytic Reaction and Biosensors, use of porous silicon as a microenzyme reactor, International Symposium on Trends in Medicinal Chemistry and Biocatalysis, Jan.26-29, 2000
14. M. Chitra, V. Madhurima, R. Dhamodharan, B. Subramanyam and V.R.K. Murthy, Dielectric studies of hydrogen bonded polar binary mixtures of ethyl benzoate with aromatic amines, oral presentation at the 13th International Conference on Dielectric liquids held in Nara, Japan, July 20-25, 1999 Won the Forster prize for the Best Oral Presentation.
15. Beena George, J.M. Nasrullah, R. Dhamodharan, Hypercrosslinked polystyrene as a useful material for the concentration of hydrocarbon pollutants from petrochemical processes-Synthesis Characterization and application studies, Presented at the petrotech-99 International Conference and Proceedings Publications, following review.
16. A. Ramakrishna, R. Dhamodharan, Controlled sequential and random atom transfer radical copolymerization of styrene and vinyl pyridine, In polymers '99 an international Symposium on polymers Beyond A.D 2000 conducted at IIT New Delhi in January 1999
17. N. Satyamurthi, I.S. Aidhen, An efficient synthesis of 4,5=O-Isopropylidene protected L-(-)-Rhodnose, 10th Carbohydrate Symposium, Galway, Ireland, July 11-18, 1999
18. S. Vijayaradhi, I.S. Aidhen, A simple approach towards C-Aryl glycoside, International symposium on Bio-organic chemistry (ISBOC-5), Pune, India, Jan.30-Feb.4, 2000
19. V. Selvamurugan, I.S. Aidhen, An efficient synthesis of 5-Aryl-2-Furanols: A potential starting point to cyclic ether acetals as PAF Antagonists, International Symposium on Bio-Organic Chemistry (ISBOC-5), Pune, India, Jan.30 - Feb.4, 2000
20. T. Lakshmanan, D. Sriram, S. Srinivasan and D. Loganathan, Crystal structure of N-Glycoprotein Linkage Region models and related saccharides, J.Biosciences, 24(1), 149, 1999.
21. LTAN, B. Sobhana Babu. K.K.Balasubramanian, A practical method for tetrahydropyranylation of alcohols catalysed by lithium tetrafluoroborate in acetonitrile, 7th International Congress of Heterocyclic Chemistry (IHC), Vienna, Austria, Aug.1-6, 1999
22. B. Sobhana Babu. K.K.Balasubramanian, Synthesis of alkyl and aryl 2,3-unsaturated glucofuranosides catalysed by Indium Trichloride, 218th American chemical Society meeting, New Orleans, Louisiana, USA, Aug 22-26, 1999
23. K.Jayaprakash. K.K.Balasubramanian and C.S.Venkatachalam, A convenient one pot synthesis of aryl-3-pyrolenes, 218th American chemical Society meeting, New Orleans, Louisiana, USA, Aug 22-26, 1999

24. M. Raja, K.S. Dhathathreyan, K.K.Balasubramanian & C.S. Venkatachalam, Cathodic cyclisation and hydroxylation of 2-iodo-N-alkylcinnamylidides, 218th American chemical Society meeting, New Orleans, Louisiana, USA, Aug 22-26, 1999
25. R. Lakshmi and K.K.Balasubramanian, From carbohydrates to aflatoxin framework-chiral synthesis of furano(2,3-b) benzofuran system, 218th American chemical Society meeting, New Orleans, Louisiana, USA, Aug 22-26, 1999

6. **Distinguished Visitors to the Department:**

S. No	Name of the visitor and Designation	Date of Visit	Purpose of Visit
1.	Prof. Axel Muller, University of Mainz, Germany	Jan 4-6, 1999	Seminar
2.	Prof. Dr. P. Chaudhuri, Univ. of Paderborn, Germany	Feb.17-19, 1999	Discussion & Lecture
3.	Dr. Jean Heuschen, Vice President	Sep.3, 1999	Discussion
4.	Prof. Dr. J.F. Nixon, FRS, Univ. of Sussex, England.	Jan.20-21, 2000	Discussion & Lecture
	Prof. Dr. H.J. Haupt, Univ. of Paderbon, Germany	Jan.20-22, 2000	Discussion & Lecture
5.	Dr. Ing.Klaus Vittinghoff President, International Seminar University of Karlsruhe, Germany	Feb.12 to 16, 2000	Discussion
6.	Prof. Krish Rengan Professor, Eastern Michigan Univ.	Feb.26, 2000	Discussion
7.	Mr. Adam Halstead	Feb.16 - Mar.5,2000	Educational CD Rom development
8.	Prof. Tom Halstead	March27 & 28, 2000	Scientific visit
9.	Prof. M.P. Schneider Organische Chemie Uni. Wuppertal, Germany	Feb.10-12, 2000	Lecture

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 specialization in all the major branches 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 perhaps 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, the former USSR., etc.

The activities of the Department are carried out under different disciplines administratively organized into five Divisions. There are fourteen well-equipped laboratories attached to different specializations. Environmental and Water Resources Engineering and Structural Engineering Laboratories have received substantial initial funding from the Federal Republic of Germany.

2. Academic Programmes:

The Department provides training to students in both theoretical and practical aspects of Civil Engineering. The students are trained in current state-of-the-art technologies to enable them to adapt themselves to fast changing technological developments in the world.

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

2.1 Students on Roll:

Programme	I Year	II Year	III Year	IV Year	V Year	Others	Total
B.Tech	56	57	43	44	-	-	200
M.Tech.	88	65					153
M.S.	7	13	17	-	-	-	37
Ph.D.	11	3	4	4	13	-	35
Total	162	138	64	48	13	-	425

2.2 Number of Scholarship/ Fellowship holders:

Programme	Institute Scholarship	Total
B.Tech	5	5
M.Tech.	71	71
M.S.	22	22
Ph.D.	17	17
Total	115	115

2.3 Number of Degrees Awarded in the last Convocation:

Sl.No.	Programme	No.
1.	B.Tech	39
2.	M.Tech	54
3.	M.S.	7
4.	Ph.D.	9
Total		109

3.0 Faculty and their Development:

3.1 Faculty

Name and Qualifications Professors

Major Area of Specialization

Dr.H.Achyutha, Ph.D. (IITM)

Structural Engineering - Civil Engineering Materials, Experimental Studies, Mix Design, Nuclear Structures, Brick-infilled Frames, Safety of Structures subject to Impact and Blast Loading

Dr.P.K.Aravindan, Ph.D. (IITM)

Structural Engineering - Reinforced and Pre-stressed Concrete Shells, Folded Plates, Soil-Structure Interaction, Tall Towers, Impact Loading on Concrete Structures.

Dr.K.Elago, Ph.D. (IITM)

Hydraulic Engineering - Hydrologic Analysis and Design of Surface and Ground Water Systems, Water Quality Modelling, Pipelines Sewerage Design.

Dr.V.Kalyanaraman, Ph.D. (Cronell)

Structural Engineering - Steel Structures, Buckling of Steel and Advanced Composite Members, Optimization and Computer Aided Design, Smart Control of Structural Instability.

Dr.C.S.Krishnamoorthy, Ph.D.
(London)

Structural Engineering - Finite Element Analysis, Error Estimates and Adaptive Meshing, Evolutionary Computation for Structural Optimization, Artificial Intelligence, Expert Systems, High Performance and Parallel Computing for Structural Engineering.

Dr.N.R.Krishnaswamy, Ph.D.
(IITKanpur)

Geotechnical Engineering - Soil Dynamics, Analysis and Design of Foundations and Earth Structures subjected to Vibrations, Foundations for Industrial Machinery and Turbo-generators, Reinforced Soil Structures, Geo-synthetics and Natural Reinforcing Materials, Ground Improvement and Modern Techniques in Geotechnical Engineering.

Dr.M.S.Mathews, Ph.D. (IITM)

Building Technology - Construction Materials, Maintenance and Repair of Buildings, Restoration of Historic Buildings.

Dr.Nainan P Kurian, Ph.D. (IITM)

Geotechnical Engineering - Foundation Engineering, Soil Investigation and Recommendation of Appropriate Foundations and their Design, Shallow Foundations, Shell Foundations and other Special Foundations, Pre-cast

Foundations, Modern Techniques in Foundation Engineering, Soil Retention Systems, Ground Improvement Methods, Geosynthesis and their Applications.

Dr.N.Rajagopalan, Dr-Ing. (Stuttgart)

Structural Engineering - Tension Structures, Damage Detection and Rehabilitation, Concrete Technology, Infuse Hypertension, Prestressed Concrete Bridges, Tall Structures, Water Towers, Large Span Roofs.

Dr.V.Rengaraju, Ph.D. (IISc. Bangalore)

Transportation Engineering - Pavement Materials, Design and Evaluation of Highway and Airfield Pavements, Traffic and Transportation Planning.

Dr.B.S.Thandaveswara, Ph.D. (IISc Bangalore)

Hydraulic Engineering - Numerical Modelling for Hydraulic and Water Resources Engineering Problems, Unsteady Flow Analysis including Flood Flows, Flow Measurements, Hydraulic Modelling, Computer Aided Design, Environmental Hydraulics.

Associate Professors

Dr.R.Ambalavanan, Ph.D. (IITM)

Building Technology - Structural Masonry, Industrial Waste Utilization, Corrosion Damage and Repair of Structures.

Dr.A.Boominathan, Ph.D. (Moscow)

Geotechnical Engineering - Soil Dynamics and Liquefaction Analysis, Machine Foundations, Ground Improvement, Field Dynamic Testing, Seismic Design of Foundations and Earth Structures.

Dr.S.R.Gandhi, Ph.D. (IITM)

Geotechnical Engineering - Pile Foundations, Ground Improvement, Field Monitoring, Industrial Solid Waste Management.

Dr.S.Mohan, Ph.D. (IISc. Bangalore)

Hydraulic Engineering - Water Resources System Analysis, Irrigation Water Management, Stochastic Hydrological Modelling, Drought and Flood Management, Water Quality and Environmental System Analysis.

Dr.S.B.Pattnaik, Ph.D. (IIT Kanpur)

Transportation Engineering - Transportation System Analysis and Modelling, Traffic Engineering Management and Safety Studies, Expert Systems, Fuzzy Logic and Optimization Applications.

Dr.K.Rajagopal, Ph.D. (Florida)

Geotechnical Engineering - Geosynthetics, Reinforced Soil Structures, Finite Element Techniques, Constitutive Modelling of Soils, Software for Interactive Design of Soil Structures, Ground Improvement Techniques.

Dr.A.Ramachandraiah, Ph.D. (IITM)

Building Technology - Acoustics, Noise Control, Functional Efficiency of Buildings (Lighting, Thermal Comfort and Ventilation).

Dr.R.Sivanandan, Ph.D. (Virginia Tech.)

Transportation Engineering - Intelligent Transportation Systems (ITS), Transportation Planning, Traffic Engineering and Operations, Computer Applications in Transportation Engineering.

Dr.K.Srinivasan, Ph.D. (IITM)

Hydraulic Engineering - Water Resources Planning and Management, Flood Management, Stochastic Modelling of Stream flow, Regionalization of Hydrologic Information, Frequency Analysis of Floods and Droughts.

Dr.V.Thamizh Arasan Ph.D. (IITM)

Transportation Engineering - Transportation System Planning, Evaluation and Design, Travel Demand Modelling, Highway and Traffic Engineering.

Assistant Professors

Dr.Devdas Menon, Ph.D. (IITM)

Structural Engineering - Reinforced and Prestressed Concrete Structures - Chimneys, Towers and Bridges, Structural Reliability, Structural Dynamics, Wind Engineering, Biomechanics, Structural Materials and Systems.

Mr.K.Gopalakrishna, M.Tech. (IIT Kanpur)

Environmental Engineering - Water Supply and Waster Water System Management

Dr.Koshy Varghese, Ph.D. (Texas, Austin)

Building Technology - Computer Integrated Construction, Geographic Information Systems

Dr.A.Meher Prasad, Ph.D. (RICE)

Structural Engineering - Deterministic and Probabilistic Structural Dynamics, Earthquake Engineering, Soil Dynamics, Machine Foundations, Off-shore Structures, Computer Aided Design, Structural Reliability

Dr.B.S.Murthy, Ph.D. (Washington St)

Hydraulic Engineering - Numerical Modelling of Surface and Sub-surface Flows, Unsteady Flow in Conduit and Avalanche Dynamics, Contaminant Transport

Dr.K.Ramamurthy, Ph.D. (IITM)

Building Technology - Constructional Materials, Structural Masonry, Building Services, Energy Management in Buildings.

Dr.K.N.Satyanarayana, Ph.D. (Cornell)

Building Technology - Construction Project Management, Construction Contracts, Quality Management, Construction Equipment, Computer Applications in Construction.

Dr.S.R.Satish Kumar, D.Engg. (Nagoya Univ.)

Structural Engineering - Damage Assessment, Thin walled Steel Structures, Concrete-filled Tubes, Structural Dynamics, Non-linear Seismic Analysis and Aseismic Design, Testing of Structural Members under Cyclic Loading.

Lecturer

Dr.K.Ananthanarayanan, Ph.D. (IITM)

Building Technology - Scheduling Construction Projects, Resource Management, Surveying.

Senior Scientific Officer Gr.I

Dr.K.D.Chandrasekaran, Ph.D. (IITM)

Environmental Engineering - Environmental Chemistry, Design of Industrial Experiments, Chemical and Biological Processes.

Scientific Officer Gr.I

Mr.N.Subbi Reddy, M.S. (IITM)

Transportation Engineering

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

Sl No.	Co-ordinators	Title	Period
1.	Dr.C.S.Krishnamoorthy	A Regional Training Course on Simulation Models in Engineering and Technology, UNESCO, New Delhi	25-10-99 to 05-11-99
2.	Dr.V.Kalyanaraman	Workshop on Steel-Concrete Composite Structures (CEP)	25-29 Oct. 1999
3.	Dr..N.R.Krishnaswamy Dr.K.Rajagopal	Geosynthetics & Reinforced Soil Structures (organised under QIP)	5-11 Dec. 1999
4.	Dr..N.R.Krishnaswamy Dr.K.Rajagopal	Geosynthetics & Reinforced Soil Structures (organised under CEP)	6-10 Dec. 1999
5.	Dr.M.S.Mathews	Indo-German Workshop on Conservation of Heritage Monuments	3-12-1999
6.	Dr.M.S.Mathews Dr.K.Ramamurthy	Research Methodology	24-9-99 onwards (nine half-a-day sessions)
7.	Dr.R.Ambalavanan Dr.K.Ramamurthy	AICTE-STEP and CEP Course on Energy Management in Buildings	20- 25 Dec. 1999
8.	Dr.A.Meher Prasad Dr.Devdas Menon	Computer Aided Structural Modelling and Analysis	24 - 28 May 1999
9.	Dr.Devdas Menon	Advances and Innovations in Bridge Engineering 1999	12 - 14 Aug. 1999
10.	Dr.S.R.Satish Kumar	Steel Concrete Composite Structures	25 - 29 Oct. 1999
11.	Dr.H.Achyutha Dr.R.Sivanandan Dr.K.Rajagopal	Development in Civil Engineering Infrastructure	22-1-2000
12.	Dr.K.Elango Dr.S.Mohan	Workshop on Maintenance of Irrigation Structures, under the sponsorship of European Commission Project	24 - 25 Jan. 2000

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

Sl. No.	Name of Faculty	Title	Institution	Period/ Duration
1.	Dr.K.N.Satyanarayana	3 rd National Conference on Construction: Globalization: Challenges for the Indian Construction Industry, Vigyan Bhavan, New Delhi	Construction Industry Development Council, New Delhi	10-11 Feb. 2000
2.	Dr.C.S.Krishnamoorthy	Structural Engineering Convention - 2000	IIT Bombay	6-8, Jan. 2000
3.	Dr.N.Rajagopalan	60 th Annual Seminar of IRC	IRC Delhi	4-7, Jan. 2000
4.	Dr.V.Kalyanaraman	Structural Engineering Convention - 2000	IIT Bombay	6-8, Jan. 2000
5.	Dr.V.Kalyanaraman	A Seminar on Stability of Structures	ING-IABSE Aurangabad	4-5, Feb. 2000

6.	Dr.S.R.Satish Kumar	Structural Engineering Convention - 2000	IIT Bombay	6-8, Jan. 2000
7.	Dr.S.R.Satish Kumar	Curriculum Issues in Steel Design	MAFCO Splenk College of Engineering Sivakasi, TamilNadu	29-1-2000
8.	Dr.A.Boominathan	12 th World Conference on Earthquake Engineering	Newzealand Earthquake Commission, Auckland,	30-1-2000 to 4-2-2000
9.	Dr.K.Elango	Two Day Zonal Seminar on Water Partnership-India component	Anna University Chennai	18-19, June 1999
10.	Dr.K.Elango	Two Day Zonal Seminar on Water Partnership-India component	Anna University Chennai	13- 14, Dec. 1999
11.	Dr.S.Mohan	Two Day Zonal Seminar on Water Partnership-India component	Anna University Chennai	13- 14, Dec. 1999
12.	Dr.K.Elango	Small Scale Irrigation Systems	Anna University Chennai	15-12-1999
13.	Dr.K.Elango	"World Commission on Dams" - India Country Paper	Madras Institute of Development Studies	1-3 March 2000
14.	Dr. S. Mohan	Workshop on "Monitoring of Groundwater Regime in Hard Terrain - Accomplishments, Constraints & Future Trends" (invited paper)	Central Ground Water Board, Chennai	28-12-1999
15.	Dr. S. Mohan	Nat. Conf. On "Planning and Development of Groundwater Resources in India - A Perspective for the 21 st Century" (Key note address, Session Chairman)	Patna University, Patna	17-18, Dec. 1999
16.	Dr. S. Mohan	"Electrical Power Generation from Municipal Garbage : Status & Prospects" (Session Chairman)	Max Mueller Bhavan & I.I.T. Madras, Chennai	3-4, Dec. 1999
17.	Dr. S. Mohan	Nat. Seminar on "Watershed Management and Sedimentation of Reservoirs & Tanks"	Institute of Water Studies, Taramani, Chennai	27-28, Jan. 2000
18.	Dr. S. Mohan	One Day Symposium on "Mathematical Methods & Applications"	I.I.T. Madras, Chennai	22-12-1999

19.	Dr. B.S. Murty	National Workshop on "Hydrologic and Hydraulic Routing" (invited paper)	N.I.H., Roorkee	26-27, Nov. 1999
20.	Dr.R.Sivanandan	Traffic Safety in I-81 in Virginia"	Transportation Society of Virginia	6-8, June 1999

3.4 Special Lectures Delivered by the Faculty in other Institutions:

Sl.No	Name of Faculty	Topic of Lecture	Venue and Date
1.	Dr.A.Boominathan	Liquefaction of fly ash under monotonic and cyclic loading	National University of Singapore, 9-2-2000
2.	Dr.A.Boominathan	Dynamic characteristics of pile groups under vertical vibrations	National University of Singapore, 9-2-2000
3.	Dr.A.Boominathan	Field measurement of dynamic properties of soil	College of Engineering, Anna University, 11-3-2000
4.	Dr.K.Rajagopal	Civil foundations for large structures	Refinery School of Training, MRL, Chennai. 20-1-2000
5.	Dr. S. Mohan	Presidential Address for Nava Chaitanya '99	Chaitanya Bharati Inst. of Tech. Hyderabad, 18-11-1999
6.	Dr. S. Mohan	Fuzzy logic: An Introduction	Osmania University, Hyderabad, 7-1-2000
7.	Dr. S. Mohan	Reservoir operation using fuzzy logic	Osmania University, Hyderabad, 7-1-2000
8.	Dr. S. Mohan	Environmental siting of industries (Keynote Address)	Inst. Of Engineers (Ind), Chennai, 5-6-1999
9.	Dr. K. Srinivasan	Some recent trends and techniques in statistical hydrology	Karnataka Regional Engrg. College, Suratkal, 26-6-1999
10.	Mr.K.Gopalakrishna	Pollution hazards by thermal power station and nuclear reactors	Bharathidasan Univ, Trichy, Oct. 1999
11.	Mr.K.Gopalakrishna	Advanced waste water management as applicable to industries	Bharathidasan Univ, Trichy, Dec. 1999
12.	Mr.K.Gopalakrishna	Maintenance of treatment units	Neyveli Lignite Corporation, Neyveli Dec. 1999
13.	Dr. S.R. Gandhi	Ground improvement	Anna University 8-5-1999
14.	Dr. S.R. Gandhi	Densification of deposited ash slurry	Anna University 22-10-1999
15.	Dr. S.R. Gandhi	Role of instrumentation in foundation monitoring	Vadodara 14-8-1999

16.	Dr. S.R. Gandhi	Construction techniques on dumped soils	Neyveli Lignite Corporation Ltd., Neyveli. 2-3-2000
17.	Dr.V.Kalyanaraman	A review of instability of structures	IIT Bombay 6-8, Jan. 2000
18.	Dr.V.Kalyanaraman	Design life and durability of steel structures	Aurangabad, 4-5, Feb. 2000
19.	Dr.S.R.Satish Kumar	Theory of composite structures	Anna University, Chennai 21-3-2000
20.	Dr.S.R.Satish Kumar	Seismic behavior of composite structures	Anna University, Chennai 24-3-2000
21.	Dr.R.Sivanandan	Intelligent transportation systems - Past present and future	IIT Madras 9-11-1999
22.	Dr.R.Sivanandan	Simulation of highway traffic	IIT Madras 1-11-1999

3.5 Visits Abroad by Faculty:

SI No.	Name of Faculty	Country Visited	Date	Purpose of Visit
1.	Dr.A.Boominathan	New Zealand	29-1-2000 to 4-2-2000	To present a paper and attend the 12 th World Conference on Earthquake Engineering, at Auckland
2.	Dr.A.Boominathan	Singapore	6-9 Feb. 2000	Visit to National University of Singapore
3.	Dr. S. Mohan	U.K.	14-22, June 1999	European Commission Project
4.	Dr. S. Mohan	Italy	June 23-July 3, 1999	European Commission Project
5.	Dr. B.S. Murty	U.S.A	14-5-1999 to 11-7-1999	Summer Research Program at HydroGeoLogic Inc., Virginia
6.	Dr. S.R. Gandhi	Germany	30-11-1999	Visit to Universities at Karlsruhe and Darmstadt to identify DAAD Sandwich Program
7.	Dr. S.R. Gandhi	U.S.A.	12-12-1999	15 th International Conference on Solid Waste Technology and Management
8.	Dr. S.R. Gandhi	Malaysia	22-1-2000	Construction sites, Discussions with Consultants.
9.	Dr. S.R. Gandhi	Singapore	26-1-2000	Visit to National University of Singapore.
10.	R. Sivanandan	USA	45 Days during 20-5-1999 to 9-7-1999	Research Fellowship
11.	V. Thamizh Arasan	USA	20-3-99 to 4-4-99	Attending International Conference and Visit to Universities

3.6 Honours and Awards obtained:

Sl. No	Name of Faculty	Name of Award	Awarded by	Awarded for	Date
1.	S.B. Pattnaik	Sir Arthur Cotton Memorial Prize	Institution of Engineers (India)	For the paper in Transportation Engineering	31-1- 2000
2.	Dr.C.S.Krishnamoorthy	The Maharashtra State National Award	ISTE	Outstanding Research Work in Engineering and Technology in 1999	will be awarded in 2000
3.	Dr.N.Rajagopalan	Prestressed Concrete Design Award	National Design and Research Forum		Recd. 1999
4.	Dr.Nainan P Kurian	IGS Annual Prize	Indian Geotechnical Society	Best paper on Shallow Foundations	Recd. 1999
5.	Dr.S.B.Pattnaik	JSPS Fellowship	Japan Society for Sciences, Japan	Collaborative Research in Japan	1999

3.7 Books/ Monographs authored or co-authored:

Sl No.	Name(s) of Author(s)	Title of Text Book/ Monograph	Publisher
1.	S.U.Pillai & Devdas Menon	Reinforced Concrete Design (First reprint (revised) 763 pages)	Tata McGraw-Hill Publishing Co Ltd.
2.	Dr.K.Rajagopal and Dr.N.R.Krishnaswamy	Investigation of the Strength and Stiffness of Geocell Reinforced Soft Foundation Soils, No. of pages 124	Sponsored Research Project Report submitted to Netlon India, A Division of Parry & Co. Ltd., Vadalam

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

Sl No.	Name of Faculty	Name of the Academy/ Professional Society	Level	Year of Admission
1.	Dr.Nainan P Kurian	Indian Geotechnical Society	Life Fellow	1984
2.	Dr.N.Rajagopalan	Indian Concrete Institute	Fellow	2000
3.	Dr.N.Rajagopalan	Indian Institute of Bridge Engineers	Fellow	1999
4.	Dr.C.S.Krishnamoorthy	Institution of Structural Engineers, London	F.I.Struct.E (Lodnon)	1992
5.	Dr.C.S.Krishnamoorthy	Institution of Engineers (India)	F.I.E.	1992
6.	Dr.C.S.Krishnamoorthy	Indian National Academy of Engineering	F.N.A.E.	1993
7.	Dr.S.R.Gandhi	Indian Geotechnical Society (New Delhi)	Life Fellow	1997

8.	Dr.A.Ramachandraiah	Acoustical Society of India	Fellow	
9.	Mr.K.Gopalakrishna	Institution of Environmental Engineers New Delhi	Fellow	1998
10.	Dr.B.S.Thandaveswara	Institution of Engineers, Calcutta	Fellow	1994
11.	Dr.B.S.Thandaveswara	The Indian Association for Hydrologists, Roorkee	Fellow	1994

4. Design and Development Activities

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

An in-situ testing device for underwater testing of bridge support for Military Engineering Services, is being developed by Dr.S.R.Gandhi

Dr.P.K.Aravindan has developed a pullout test arrangement with facility for automatic recording of load slip curves.

Dr.Nainan P Kurian has designed and fabricated a Table Top Model "Retaining Wall Apparatus" which is useful in projects and also for instructional purposes.

Dr K.Rajagopal as part of a sponsored research project, has developed a creep testing equipment for testing of geosynthetic materials. As part of another sponsored research work, a retaining wall test facility in which retaining walls 1.8 m high can be tested up to uniform pressure of 200 kPa (equivalent to about 12 m of soil) through inflatable air bag has been developed. Both the above facilities include electronic data measuring systems and a computer controlled data acquisition system.

Dr.A.Ramachandraiah has developed a demonstrative experimental set up to evaluate dust noise attenuation.

Stochastic streamflow modelling is being developed by Dr.K.Srinivasan

A Computer Aided Instructional Module for Hydrology is being developed by Dr.K.Srinivasan

Dr.K.Ramamurthy developed a Water Penetration test setup for masonry

Dr.N.Rajagopalan has developed a system for dynamic testing of prestressed anchorages

4.2 New facilities added or major equipment procured during the year:

1. Water Level Recorder
2. Automatic Leveling Instrument
3. Current meter
4. UV Spectrophotometer
5. TOC Analyzer
6. BOD Incubator
7. Color Laser Printer
8. Personal Computers (worth over Rs. 3 lakhs)
9. HBM make Carrier Frequency Amplifier system of MGA type with 2 channel
10. ME50 amplifier (Value Rs.2.00 lakhs)
11. HBM make Acceleration Transducer of B12/500 (Value Rs.45,000)
12. Magnetic Extensometer worth Ra.1 lakh
13. Field Pore Pressure Transducers worth Rs. 1 lakh

5. Research and Consultancy:

5.1 Sponsored Research Projects:

Sl. No	Title	Period	Funding Agency	Amount (in lakhs)	Co-ordinators
1.	Fly ash densification	1997-00	DST, New Delhi	10.00	Dr. S.R. Gandhi
2.	Geosynthetic in reinforced earth embankment	April 1995 to Sept. 1999	DST New Delhi	9.83	Dr. N.R. Krishnaswamy Dr. K. Rajagopal Dr. S.R. Gandhi Dr. A. Boominathan
3.	Investigation of the strength and stiffness of Geocell reinforced soft foundation soils	April 97 to May 1999	M/s. Netlon India, Vadodara	3.67	Dr. K. Rajagopal Dr. N.R. Krishnaswamy
4.	Geotechnical aspects of design of shallow foundations	1 year from Nov. 1999	IIT Madras, Centre for Continuing Education	0.30	Dr. Nainan P Kurian
5.	Experimental & analytical investigation of the structural behaviour of nuclear containment domes	3 years	Atomic Energy and Regulatory Board, Mumbai	17.00	Dr. N. Rajagopalan Dr. K. Ramamurthy
6.	Intermittent water supply system design and control	3 yrs	Department for International Development, South Bank Univ. UK	20.00	Dr. K. Elango Dr. S. Mohan
7.	Fuzzy Logic procedure for maintenance of irrigation and drainage	3 Yrs	European Commission	65.00	Dr. K. Elango Dr. S. Mohan

8.	A Knowledge based computing system, for integrated engineering of steel railway bridges	1998-2001	DST	18.43	Dr.V.Kalyanaraman
9.	Smart control of instability	1998-2000	ISRO	9.33	Dr.V.Kalyanaraman
10.	Preparation of teaching resource material on design of steel structures	1999-2001	INSDAG	33.56	Dr.V.Kalyanaraman Dr.S.R.Satish Kumar
11.	Structural Engineering Laboratory classes on multi-media	1999-2000	CDC	1.21	Dr.V.Kalyanaraman Dr.A.Meher Prasad
12.	Effects of various types and amounts of fly ash and durability and performance of concrete in hydraulic structures	1996-2000	INCCMS	18.41	Dr.M.S.Mathews Dr.B.Viswanathan
13.	Techniques to improve cyclone resistant characteristics of roofing of industrial sheds	1997-2000	AICTE	7.00	Dr.M.S.Mathews
14.	Development of an interactive Software for watershed analysis and management	1997-2000	DST	3.96	Dr.S.Mohan
15.	Modernisation of Public Health Laboratory	1998-2000	MHRD	13.00	Dr.S.Mohan Sri.K.Gopalakrishna Dr.K.D.Chandrasekaran
16.	Interlocking block masonry	1998-2000	BMTPC	7.50	Dr.R.Ambalavanan Dr.K.Ramamurthy
17.	Modernisation of Construction Materials and Systems Laboratory	1999-2000	MHRD	10.00	Dr.R.Ambalavanan Dr.M.S.Mathews Dr.K.Ramamurthy
18.	Studies on anchored retaining walls for highway and railway applications	1999-2000	MHRD	6.00	Dr.R.Sivanandan Dr.K.Rajagopal
19.	Modernisation of Traffic Engineering Laboratory	1999-2000	MHRD (MODROBS Scheme)	5.00	Dr.R.Sivanandan
20.	Development of appropriate system planning technique for industrial conditions	1994-2000	Volkswagen Foundation, Germany	20.00	Dr.V.Tamizh Arasan
21.	Off-line planning and simulation of Multiple Mobile Crane Lifts	1999-2001	DST	11.00	Dr.K.N.Satyanarayana Dr.Koshy Varghese Dr.N.Ramesh Babu

22.	Infrastructure for Decision Support Systems for cyclone disaster mitigation	1999-2001	MHRD	12.00	Dr.K.N.Satyanarayana Dr.A.Meher Prasad Dr.L.S.Ganesh Dr.C.Rajendran Dr.Koshy Varghese
23.	Development of Improved Codal Recommendations for design of RC stairs	1999	IC & SR	1.00	Dr.Devdas Menon
24.	Computer aided instructional module for hydrology	1999-2000	CD Cell, IIT Madras	1.10	Dr.K.Srinivasan
25.	Standardization of damage - frequency relationship for flood damage assessment	1994-1999	DST	5.04	Dr.B.S.Thandaveswara Dr.K.Srinivasan
26.	Reservoir performance analysis	1997-2000	INCON, Ministry of Water Resources	6.30	Dr.B.S.Thandaveswara Dr.K.Srinivasan
27.	Development of techniques for classification of urban features from remote sensed data for use in GIS applications	1997-2000	ISRO	7.50	Dr.Koshy Varghese Dr.B.Yegnanarayana Dr.Sukendu Das
28.	Ultimate loads capacity of prestressed concrete containment structures	1994-2000	AERB	23.00	Dr.H.Achyutha Dr.V.Paramasivam
29.	Optimal Design Processor for Structural Systems	1996-1999	Indo-US, NSF	5.00	Dr.C.S.Krishnamoorthy
30.	Knowledge based expert system for design of R.C.Multistory office buildings	1996-1999	DST	4.91	Dr.C.S.Krishnamoorthy Dr.K.Ramamurthy
31.	High performance finite element analysis for manufacturing industry using Parallel Virtual Machine Environment	1997-2000	DST	12.30	Dr.C.S.Krishnamoorthy Dr.R.Krishnakumar

5.2 Industrial Consultancy:

Sl. No.	Name of the Faculty	Title	Industry	Amount (in Lakhs)
1.	Dr. A.Boominathan Dr.K.Rajagopal Dr.N.R.Krishnaswamy	Soil investigation for liquefaction analysis for PFBR site at Kalpakkam	Indira Gandhi Centre for Atomic Research, Kalpakkam	6.95
2.	Dr.K.Rajagopal Dr.N.R.Krishnaswamy Dr.N.Kumar Pichumani	Recommendations for the repair of railway track neat Katpadi Junction	Southern Railway, Chennai	0.40

3.	Dr.A.Boominathan Dr.N.R.Krishnaswamy	Foundation design of 750 KW Wind Electric Generator	Asian Wind Turbines (P) Ltd., Chennai	1.20
4.	Dr.Nainan P Kurian	Assessment of soil profile at Andamans	Garrison Engineeris, Andamans	0.24
5.	Dr.A.Boominathan Dr.N.R.Krishnaswamy	Dynamic testing of piles at IOCL - DHD's Unit of Haldia, W.B.	Technimont SPA India Project Office, Mumbai	2.00
6.	Dr. S.R. Gandhi Dr. Devdas Menon Dr. P.K. Aravindan	Foundation design for boring machine	KCP Ltd.	1.00
7.	Dr. S.R. Gandhi Dr. Nainan P. Kurian	Geotechnical consultancy for 2 nd Launch Pad project at Sriharikota.	MECON, Ranchi	0.78
8.	Dr. S.R. Gandhi	Raising of ash dyke at Durgapur Steel Plant	Steel Authority of India	3.00
9.	Dr. S.R. Gandhi	Raising of ash dyke at NALCO	M.N. Dastur & Co. Ltd.	3.20
10.	Dr. S.R. Gandhi Dr. R. Sundaravadivelu	Construction of Cargo Berth No.8 (multipurpose) at Tuticorin Port Trust	Tuticorin Port Trust	6.00
11.	Dr. S.R. Gandhi Dr. R. Sundaravadivelu	Extension of Naval Wharf at Port Blair	Navy, Port Blair	5.00
12.	Dr.S.R.Gandhi	Foundation design for Elcome Surveys Ltd	M/s. Elcome Surveys	2.00
13.	Dr.S.R.Gandhi	Soil Investigation work of 220 MW Barge Mounter Power project at Tanir Bavi near Mangalore	Simplex Concrete Piles Ltd	0.50
14.	Dr.P.K.Aravindan	Inspection of FACT Ammonia Storage foundation at Willingdon Island, Cochin	FACT Cochin	0.60
15.	Dr.P.K.Aravindan	Testing of steel beams / timbers	L & T Chennai	0.39
16.	Dr.P.K.Aravindan	Testing of sheathing pipes / bearings / plates	Mecon Ltd., Vishkapatnam	0.30
17.	Dr.P.K.Aravindan	Non-destructive tests to water tanks at Rameswaram	M/s. BHEL, Trichy	0.50
18.	Dr.P.K.Aravindan	Design for gantry structures for IOC LPG Botling Plant	M/s. R.R.Fabricators, Bangalore	0.30
19.	Dr.P.K.Aravindan	Non destructive test on the slab retaining wall at Tidal Park	M/s. L & T Chennai	0.50
20.	Dr.P.K.Aravindan	Checking of foundation design for additional bullets at Cochin Botling Unit	M/s. IOCL Chennai	5.00
21.	Dr.P.K.Aravindan	Design, checking and analysing the proposed compound wall at Trichy	M/s. IOCL Chennai	0.45
22.	Dr.P.K.Aravindan	Structural design and analysis of BTMA Digester for the project at Hyderabad	M/s. Enlcem Engineerings Pvt. Ltd	1.90
23.	Dr.P.K.Aravindan	Checking of structural design for Malabar Cancer Society at Tellicherry	M/s. Technicalaya Consultants, Chennai	0.30
24.	Dr.P.K.Aravindan	Testing of HT Strand construction of New Lane Bridge across River Krishna at Vijayawada.	M/s.U.P.State Bridge Corporation, Vijayawada	0.50

25.	Dr.P.K.Aravindan	Checking of 4 th Oil Jetty at Kandla	M/s.Kandla Port Trust	3.60
26.	Dr.P.K.Aravindan	Cyclone damage structures at Kandla	M/s.Kandla Port Trust	1.37
27.	Dr.P.K.Aravindan	Rehabilitation of structures in LPG at Cochin	M/s.IOCL	6.00
28.	Dr.P.K.Aravindan	Quality control of construction at Bangalore	M/s.CGEWHO	5.00
29.	Dr.P.K.Aravindan	Construction of Admn Buildings, NSC Bose Road	TELECOM Civil	0.90
30.	Dr.P.K.Aravindan	Checking the design of guest house at Ernakulam	M/s.KSCC	0.15
31.	Dr.N.Rajagppalan	Vetting of design calculation and drawings for structure at M/s. Gayatri Super Complex, Nellore	M/s. ECONS Engg. Consultancy, T.Nagar.	0.60
32.	Dr.N.Rajagppalan	Rubber bearings test	M/s. Kanta Rubber Industries	0.45
33.	Dr.N.Rajagppalan	Testing of Dual Gauge concrete sleepers	M/s. Tantia Concrete Products, Calcutta	0.55
34.	Dr.N.Rajagppalan	Fatigue Testing of 1025 Banjo Assembly for Lakh Cycles	M/s. Hindustan Motors Ltd., Earmoving Equipments Divn., Peravalur	0.90
35.	Dr.N.Rajagopalan	New design of Prestressed concrete sleepers	M/s. Mysore Structural Limited	0.75
36.	Dr.N.Rajagopalan	Fatigue test for Freyssinet Anchorages	M/s. Freyssinet Prestressed Concrete Co. Ltd.	0.80
37.	Dr.N.Rajagopalan	Testing of cable stay anchorages and prestressed concrete anchorages	M/s. Grips India	0.80
38.	Dr.N.Rajagopalan	Quality control on Neoprene Bearings	M/s. Pioneer Rubber Industries	1.00
39.	Dr.N.Rajagopalan	Preparation of computerised software for design of service reservoirs	TWAD Board Chennai	10.00
40.	Dr.K.Elango Dr.S.R.Gandhi Dr.K.Srinivasan	Water supply system for a proposed fertilizer plant	IFFCO - Nellore	2.10
41.	Dr.K.Elango Dr.B.S.Murthy	Breach analysis of a storage reservoir	IFFCO - Nellore	0.70
42.	Dr.K.Elango Dr.Rajat Roy Choudhry, (NIOT)	Flood Hydrology of Cheyyur Thermal Plant site	NTPC - NIOT	0.50
43.	Dr.Nainan P Kurian	Soil Resistivity Survey for Lignite Fired Power Project at Neyveli, Tamil Nadu	Asea Brown Boveri Ltd., New Delhi	2.41
44.	Dr.V.Kalyanaraman	Structural soundness and rehabilitation	Indian Navy, Cochin	18.00
45.	Dr.V.Kalyanaraman Dr.S.R.Satish Kumar	Designing and drawing of aluminium truss		35.00
46.	Dr.V.Kalyanaraman Dr.S.R.Satish Kumar	Design of cable supported pipe bridge at Cochin	L & T Ramboll Chennai	60.00
47.	Dr.B.S.Thandaveswara (Ground Leader)	CETP	SIPCOT/SIDCO, Ranipet	1% of Total cost

48.	Dr. B.S.Thandaveswara Dr.K.Srinivasan Dr.B.S.Murthy	New Tirupur water supply project	Tirupur	5.00
49.	Dr. S.Mohan Dr.S.Kumaraswamy Dr.D.V.S.Murthy Dr.R.Ambalavanan Dr.T.Swaminathan Dr.K.Ramamurthy Dr.K.D.Chandrasekaran	Design of water treatment plant in Neyveli	Neyveli Lignite Corporation Ltd.	5.00
50.	Dr.S.Mohan	Testing of water samples for cooling purposes	ABB Ltd., New Delhi	0.25
51.	Dr.S.Mohan	Testing of bricks for environmental quality	Needle Industries Ltd. Ooty	0.10
52.	Dr. K.Rajagopal	3-D Finite Element Analysis of HDPE pipe-soil interaction	Florida Atlantic University, Boca, Raton, USA	0.86
53.	Dr.K.Rajagopal	Finite Element Analysis of strutted excavation in Colombo, Sri Lanka	UFC Sincon (India) Private Ltd., Chennai	0.15
54.	Dr.K.Rajagopal Dr.B.S.Thandaveswara Dr.H.Achyutha	Recommendations for the repair of Guntur Branch Canal at mini-hydel power plant	Krishna Cement Products Private Ltd.	1.50
55.	Dr.K.Rajagopal	Recommendations for the repair of the foundation of oil storage tank	Madras Refineries Ltd., Chennai	0.70
56.	Dr.K.Rajagopal	Testing and recommendation of the design properties of multifunctional deocomposite	Calcutta Port Trust, Chennai	0.25
57.	Dr.K.Rajagopal	Recommendation of design parameters for construction of flyover on NH-10, New Delhi	UP State Bridge Corporation, New Delhi	0.30
58.	Dr.K.Rajagopal	Testing and recommendation of geosynthetics for BHEL Simhadri project	BHEL, Chennai	0.30
59.	Dr.K.Rajagopal	Testing and recommendation of special design properties for Flyover Projects	L&T ECC Ltd, Chennai	0.50
60.	Dr.K.Rajagopal	Evaluation of gabion wall design for repair of slips at Valiyasala	Southern Railway, Chennai	0.20
61.	Dr.K.Rajagopal	Recommendation for the construction of pavements at Container Freight Station at Manali	Blamer Lawrie & Co. Ltd., Calcutta	1.01
62.	Dr.V.Thamizh Arasan	Technical investigation for grade separation of highway intersection	Corporation of Chennai	2.00
63.	Dr.V.Thamizh Arasan	Design of mixes for bearing and wearing courses	National Highways Department	0.60
64.	Dr.V.Thamizh Arasan	Evaluation of materials for sub-base course of highway pavements	M/s. Gurumurthy Engineering Enterprises, Chennai	0.50
65.	Dr.V.Thamizh Arasan	Derivation of job mix formula for highway pavement work	National Highways Department	0.40

66.	Dr.V.Thamizh Arasan	Mix design for DBM & SDBC works	National Highways Department	0.50
67.	Dr.V.Thamizh Arasan	Technical advice on lining with bituminous material for storage tank in copper manufacturing plant	M/s. Sterlite Copper, Tuticorin	0.65
68.	Dr.V.Thamizh Arasan	Mix design and derivation of job mix formula for bituminous content of highway pavement	Mr.S.P.Lakshmanan, Engineering Contractor	0.50
69.	Dr.V.Thamizh Arasan	Material characterisation and mix design for highway pavement work	Mr.U.P.Ramaiah, Engg. Contractor	0.55
70.	Dr.R.Ambalavanan	Evaluation of granites for exports	Gem Granite	0.50
71.	Dr.R.Ambalavanan	Investigations on construction materials and advice	Tamilnadu Housing Board	0.20
72.	Dr.R.Ambalavanan	Investigations of some samples for elastic properties	CPWD	0.095
73.	Dr.R.Ambalavanan	Investigations on flush door shutters and advice	Mohan Associates	0.06
74.	Dr.R.Ambalavanan	Concrete mix design	Hindustan Steel Works Construction Ltd.	0.08
75.	Dr.R.Ambalavanan	Investigations on building materials	Alengar Constructions	0.30
76.	Dr.R.Ambalavanan	Non destructive investigations of STG foundations	Bharat Heavy Electricals Ltd.	0.15
77.	Dr.R.Ambalavanan	Concrete mix design	Madras Cements Ltd	0.15
78.	Dr.R.Ambalavanan	Investigations on granite stone materials	Gem Granites	0.635
79.	Dr.R.Ambalavanan	Investigations on construction materials and advice	Advance Constructions	0.50
80.	Dr.R.Ambalavanan	Investigations on prestressing strands	TATA SSI Limited	0.25
81.	Dr.R.Ambalavanan	Concrete mix design	Lakshmanan SP	0.15
82.	Dr.R.Ambalavanan	Investigations on construction materials including concrete mix design	Saravana Constructions Pvt. Ltd	0.26
83.	Dr.R.Ambalavanan	Investigations on construction materials and advice	Tamilnadu Housing Board	0.40
84.	Dr.R.Ambalavanan	Investigations on concrete admixtures	Essen Supplements India Ltd	0.10
85.	Dr.R.Ambalavanan	Concrete mix design	National Building Construction Corporation	0.20
86.	Dr.R.Ambalavanan	Investigations on HTS strands	UP State Bridge Corporation Ltd.	0.20
87.	Dr.R.Ambalavanan	Investigations on construction materials and advice	Larsen & Toubro* Ltd	0.25

88.	Dr.R.Ambalavanan	Concrete mix design for bridges and culverts	Highways & Rural Works Department	0.20
89.	Dr.R.Ambalavanan	Investigation of 12.7 mm dia prestressing strands	TATA SSL Ltd	0.50
90.	Dr.R.Ambalavanan	Quality assessment of construction materials	Airports Authority of India	0.25
91.	Dr.R.Ambalavanan	Concrete mix design	S.Arumamiraj Engg. Construction	0.20
92.	Dr.R.Ambalavanan	Concrete mix design	S.P.Lakshmanan	0.60
93.	Dr.R.Ambalavanan	Investigation of materials	Advance Construction Co. Ltd.	0.50
94.	Dr.R.Ambalavanan	Concrete mix design	Highways & Rural Works Dept.	0.30
95.	Dr.R.Ambalavanan	Concrete mix design	National Highways Division I	0.30
96.	Dr.R.Ambalavanan	Investigation on construction materials and advice	Hindustan Steelworks Construction Ltd	0.60
97.	Dr.R.Ambalavanan	Concrete mix design for under water concreting	Sathiapal (India) Ltd.	0.40
98.	Dr.R.Ambalavanan	Advice on suitability of materials (sponsorships and concrete mix design) for Andaman Harbour Works	Andaman Harbour Works, Govt. of India	0.72
99.	Dr.A.Boominathan Dr.S.R.Gandhi	Dynamic testing of piles at IOCL - DHD's Unit of Haldia, W.B.	Larsen & Toubro Ltd., Mumbai	0.50
100.	Dr.A.Boominathan Dr.N.R.Krishnaswamy	Dynamic testing of piles at IOCL - Sulphur recovery unit at Haldia, W.B.	Stork Engineers and Contractors, Mumbai	2.80
101.	Dr.A.Boominathan Dr.K.Rajagopal	Geotechnical investigation work at Rajaji Salai, Chennai	P.T.L.C.N.Trust, Chennai	0.72
102.	Dr.A.Boominathan	Piling works at Raheja Regency, Santhome, Chennai	Raheja Group of Hotels and Estates	0.25
103.	Dr.A.Boominathan	Vibration measurement at HVL premises, Greames Road, Chennai	Consolidated Construction Consortium	0.20
104.	Dr.A.Boominathan	Dynamic tests on piles at PPN combined cyclic power plant at Pillaipermai nallur	Larsen Toubro (ECC Construction Group)	0.60
105.	Dr.A.Boominathan	Block vibration tests at Sujana Power Plant, Tuticorin site	Gee Engineers, Chennai	0.60
106.	Dr.A.Boominathan Dr.N.R.Krishnaswamy Dr.R.Ambalavanan	Modification of design for foundation of wind turbine	Asian Wind Turbines, Chennai	1.20
107.	Dr.A.Ramachandraiah	Design of auditorium (Acoustic)	Neyveli Lignite Corporation	0.30
108.	Dr.A.Ramachandraiah	Design of studio	Sterling	1.00
109.	Dr.A.Ramachandraiah	Studies on absorption, insulation and insulation loss	Viprab, Indian MRTS etc	0.55
110.	Mr.K.Gopalakrishna	Design of sewage treatment plant, NLC Township Neyveli	NLC Neyveli.	1.45
111.	Dr.Devdas Menon Dr.P.K.Aravindan	Testing of structural soundness of Horton's sphere supporting structure at Goa	Zuari Industries Limited	2.60

112.	Dr.Devdas Menon Dr.P.K.Aravindan	Repair of damaged car shed structure at LPG Bottling Plant, Ennore	Indian Oil Corporation Ltd	0.30
113.	Dr.Devdas Menon Dr.P.K.Aravindan Dr.S.R.Gandhi	Repair of test track at Ennore	Ashok Leyland	0.26
114.	Dr.Devdas Menon Dr.P.K.Aravindan Dr.A.Meher Prasad	Design of Perambur Flyover at Chennai	Chennai Corporation	8.00
115.	Dr.Devdas Menon	Review of structural design of two wharfs at Andamans	NIOT	1.00
116.	Dr.Devdas Menon Dr.P.K.Aravindan Dr.S.R.Gandhi	Structural design of foundation for horizontal boring machine	KCP Limited	1.00
117.	Dr.Devdas Menon Dr.P.K.Aravindan	Rehabilitation and rectification of concrete structures in distress at various locations in Refinery	HPCL, Vishakhapatnam	4.00
118.	Dr.Devdas Menon Dr.P.K.Aravindan	Design of bridge across River Pamba at Thakazhi	Kerala State Construction Corporation	6.00
119.	Dr.Devdas Menon Dr.N.Rajagopalan	Design of prestressed concrete railtrack sleepers	Mysore Structurals Limited	1.00
120.	Dr.V.Kalyanaraman Dr.S.R.Satish Kumar	Preparation of Teaching Resource Material on Design of Steel Structures	INSDAG India	0.33
121.	Dr.S.R.Satish Kumar	Analysis of bulk storage tank	M/s. Arun Fabircators	0.10
122.	Dr.S.R.Satish Kumar Dr.A.Meher Prasad	Ground antenna system design	NRSA Hyderabad	2.90
123.	Dr.K.Ananthanarayanan	Survey work in connection with 220 MW barge mounted power project.	SIMPLEX	0.50
124.	Dr.K.Ananthanarayanan Mr.M.Subbi Reddy	Contour survey of the Kinmerasam Project Dam	KPTS Paloncha	2.00
125.	Dr.K.Ananthanarayanan Dr.Sundaravadivelu	Bathe Mathe survey work in Nuagara Project	Fisheries Dept, Orissa	4.00
126.	Dr.K.Ananthanarayanan Mr.M.Subbi Reddy	Levelling of Machine Mounting Pads	Hydro Systems	0.30
127.	Dr.K.Ananthanarayanan Dr.V.Sunder	Sea wall work at Madras Harbour	Kampsax	3.75
128.	Dr.K.Ananthanarayanan Dr.V.Sunder	Ennore-Manali road improvement project	Kampsax	7.00
129.	Dr.K.Ananthanarayanan Mr.M.Subbi Reddy	Field surveys and managing	APGENCO SPIC	3.00
130.	Dr.Koshy Varghese Dr.J.S.Mani	Assistance for development of coastal zone management plans for Chennai	Resource Analysis (Netherlands)	1.40
131.	Dr.H.Achyutha	Deflection Characteristics of springs	M/s Myrics Pipings System Pvt. Ltd.,	0.16
132.	Dr.H.Achyutha	Relaxation tests on prestressing wires and strands	Bureau of Indian Standards (various branches)	0.75
133.	Dr.A.Mehr Prasad Dr.K.N.Satyanarayana	Andhra Pradesh cyclone mitigation project - wind damage modeller		1.15

5.3 RBIC Projects:

Sl.No	Name of Faculty	Title	Industry	Amount (in lakhs)
1.	Dr. S.R. Gandhi	Development of in-situ test device and calibration.	Defence Research Development Organisation, Pune.	3.50
2	Dr.S.Mohan	Long duration of artificial recharge by injection wells in Neyveli	NLC Ltd.	6.50
3	Dr.S.Mohan	Water quality analysis and modelling in Neyveli	NLC Ltd.	17.00
4	Dr.S.Mohan	Geographic Information based regional micorlevel hydrological model for assessment of ground water recharge	NLC Ltd.	6.50
5.	Dr.S.Mohan	Studies on rainfall - runoff relations in large /medium reservoirs and in selected tanks / tank chains	IWS, PWD	6.78
6	Dr.S.Mohan	Application of System Models for planning and management of water allocation	Krishnan Associates, Chennai	8.10
7.	Dr.K.N.Satyanarayana Dr.A.Meher Prasad Dr.L.S.Ganesh Dr.C.Rajendran Dr.Koshy Varghese Dr.Devadas Menon	Andhra Pradesh Hazard Mitigation and Emergency Cyclone Recovery Project - R	Government of Andhra Pradesh WL/Delft Hydraulics	11.05
8	Dr.K.N.Satyanarayana Dr.Koshy Varghese Dr.L.S.Ganesh Dr.S.K.Ramesh	Development of Software for Decision Support System required in the preparation of ICMAM plans for Goad and Gulf of Kutch - Department of Ocean Development	ICMAM Project Directorate	16.50
9.	Dr.A.Meher Prasad Dr.R.Satishkumar	Structural and mechanised design of 6.4 m antenna ground station	NRSA. ISRO	2.90

5.4 Retainer Consultancy:

S.No.	Name of the Faculty	Title	Industry	Amount (in lakhs)
1.	Dr. S.R. Gandhi	For L&T ECC	L&T ECC	0.12
2.	Dr. S.R. Gandhi	For Fichtner Consulting Engineers	Fichtner Consulting Engineers	0.06

5.5 Exchange programme with other Universities:

1. Under DAAD Sandwich Program, Mr. Somasekara Reddy, MS student was sent to Germany from June 1999 to February 2000.
2. Under DAAD Exchange Program, a B.Tech student from University of Hamburg Mr. Schluter, is working on his project.
3. Another UG student, Mr.Fako Herrmann, who has come from Technical University of Hamburg, Germany, on an Exchange Programme is working on his project.

5.6 Journal Editorial Boards:

Sl.No	Name of Faculty	Level	Journal
1	Dr.B.S.Murthy	Editorial Board	ISH Journal of Hydraulic Engineering
2	Dr.B.S.Thandaveswara	Editorial Board	ISH Journal of Hydraulic Engineering

6 Research Publications

a) No of papers published in :

Refereed National Journals : 5
 Refereed International Journals : 10

b) No of papers presented in:

National Conference : 18
 International Conference : 27

Refereed National Journals

1. Achyutha, H, K.Radhakrishna and S.Santha Kumar, " An experimental facility to investigate blast loading on structures", Journal of the Institution of Engineers (India) - Civil Engineering, Vol.80, May 1999, pp.30-32.
2. Ambalavanan,R and S. Suryanarayanan, "Statistical modelling of construction labour productivity", NTCMAR Journal of Construction Management, Vol.XIV, Oct.-Dec. 1999, pp.329-337.
3. Sufhakar,P.V.N, S.Surya Rao, S.Murty Bhallamudi, "Impliciit two-dimensional storage routing of floods in a river with flood plains", Journal of Institution of Engineers (Ind.)m Vol.80, Nov.1999 pp.105-109.
4. Ananthanarayanan,K and P.T.Abilash, " Resource constrained scheduling techniques for multiple projects - A Review, Journal of the Institution of Engineers (India) Vol.80, May 1999 pp.33-36.
5. Thamizh Arasan V and V.Chinamu Naidu, "Estimation of delay to mixed traffic at signalised intersections; An empirical approach", Indian Highways, Vol.27, No.5, May 1999, pp.31-43.

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1. Srinivasan,K and V.V.Srinivas, "Discussion of paper "Application of Gamma Autoregressive model to analysis of dry periods". By Cigizoglu and Bayazit, Journal of Hydrologic Engineering, ASCE, January 2000, pp. 107-109.
2. Annamalai. Vr, C.S.Krishnamoorthy and V.Kamakoti, "Adaptive finite element analysis on a parallel and distributed environment", Parallel Computing Journal, Special Issue on High Speed Applications in Automotive Industry, Vol.25, 1999, pp.1413-1434.
3. Krishnaswamy,N R, K Rajagopal and Madhavi Latha, " Behaviour of sand confined within single and multiple geocells", Journal of Geotextiles and Geomembranes, 17, No.3, 1999, pp.171-184,
4. Rajagopal ,K, N.R.Krishnaswamy and Madhavi Latha, " Model Studies on Geocell supported embankments constructed over a soft clay foundation", ASTM Geotechnical Testing Journal, Vol.23, No.1, March 2000, pp45-54.
5. Murali Krishnan,J and V.R.Rengaraju, "Air voids of asphalt concrete - a continuum approach", International Journal of Fracture, Vol.97, 1999, pp.337-354.
6. Kurian,N.P. and M.Sridevi, "Nonlinearisation of the Winkler Model for the analysis of shells on elastic foundations", Journal of the International Association for Shell and Spatial Structures, Vol. 40, 1999, pp.93-102.
7. Ali, Y A - Z and R.Ambalavanan, "Flexural behaviour of reinforced concrete beams repaired with styrene butadiene rubber latex, silica fume and methyl cellulose repair formulations", Magazine of Concrete Research Vol.51, No.2, April 1999, pp.113-120.
8. Sivanandan,R, D.Nanda and E.D.Arnold Jr, "Method to enhance the performance of syntheric origin destination Trip-Table Estimation models", Transportation Research Record, 1676, pp.124-135. Transportation Research Board (TRB) National Research Council, Washington D.C. USA 1999.
9. Srinivasan,K, T.R.Neelakantan, P.Shyam Narayan and C.Nagarajukumar, "Mixed integer programming model for reservoir performance optimisation", Journal of Water Resources Planning and Management, ASCE, 125(5), 1999, pp.298-301.
10. Sankaranarayanan, A and K.Srinivasan, "Investigation and comparison of sampling properties of L-moments and conventional moments", Journal of Hydrology, Elsevier Publ., Netherlands, Vol.218, 1999, pp.13-34.

National Conference:

1. Kalyanaraman, V and M.A.Rajeev, "Object-oriented method for the design of plate girder railway bridges, National Conference on Advances and Innovations in Bridge Engineering (AIB '99), IIT Madras, August 1999, pp.103-120.
2. Mohan, S and V.Jothiprakash, "Conjunctive use opportunities and challenges in water resources development", Proc. National Conf. On Planning and Development of Groundwater Resources in India". A Perspective for the 21st century, Dec. 17-18, 1999, pp.17-23.
3. Mohan, S and V.Jothiprakash, "Stochastic dynamic programming model for conjunctive use", Proc, Seminar on Mathematical Methods and Applications, 22nd Dec.1999, IIT Madras, Chennai, p.11-12,1999.

4. Mohan, S, "Ground Water Management : Issues and Potentials", Workshop on Monitoring of Groundwater Regime in Hard Rock Terrain", Accomplishments, Constraints and Future Trends, 28th Dec.1999, pp.11-18.
5. Mathews, M.S and A.K.Kasthurba "Restoration of architectural heritage monumnets - National Art Gallery - A Case Study", National Conference of Institution of Engineers Calicut, Dec.1999.
6. Thamizh Arasan, V and M. Dharmendra Kumar, " Appropriate methodology for modelling mixed traffic flow", Proceedings of Conference on, 'Road Infrastructure Management in the New Millennium', pp 106-115, March 10-11, 2000, Bangalore University, Bangalore.
7. Rajagopal, K and S.Jeyalakshmi, "Finite element evaluation of the behaviour of reinforced soil retaining walls", Indian Geotechnical Conference, Calcutta, Dec. 17-20, 1999, 151-154.
8. Rajagopal,K, "Ground improvement in compaction and preconsolidation:", Proc. of National Workshop on Ground Improvement. Thanjavur, November, 26-28, 1999.
9. Boominathan, A and S.Hari, "Static and cyclic shear strength characteristics of fly ash", Proc. of National Seminar on Fly Ash characterisation and Geotechnical Applications, Allied Publishers, Bangalore, 1999. pp.27-32.
10. Boominathan, A, "Measurement of dynamic properties of soil", Proc. of Workshop on Case Studies in Geotechnical Engineering", Visakapatnam, Oct.2-3, 1999 pp 3.1-3.11.
11. Boominathan, A, "Modification of contaminated soils by lime column technique", Proc. of Symposium on the Impact of Waste on Ground Contamination and the Role of Civil Engineers, Anna University, Chennai, Oct. 1999, pp.88-97.
12. Boominathan, A and S.Hari, "Behaviour of fly ash under static and cyclic loading". Proc. of Indian Geotechnical Conference, Calcutta, Dec.1999, New Age International (P) Ltd, Vol.1, pp.324-326.
13. Ramachandraiah, A, et.al., "Experimental studies on structure borne sound radiation", Proc, of MIRC, Acoustical Society of America, August 1999 pp.95-97.
14. Ravindranath, M and A.Ramachandraiah, "Analytical study on the performance of noise reducing acoustical enclosures of various shapes", Proc, of MIRC, Acoustical Society of America, pp.103-109, August 1999.
15. Gopalakrishna, K," Studies on treatment of textile waste water using eco-friendly natural coagulants", Proc. of NWE Conference, New Delhi, Oct.1999.
16. Devdas Menon, Improved prediction of along-wind response of RC Chimneys. Proc. of the National Seminar on Wind Engineering 1999. Kharagpur, Dec. 1999. pp 15-23.
17. Murthy, B.S, "Numerical and physical considerations in hydraulic routing", Proc. of the National Workshop on Hydrologic and Hydraulic Routing in Alluvial Streams, Roorkee, November 1999 pp.1-10.
18. Gandhi, S.R., A.K.Dey and S.Selvam, "Densification of pond ash by blasting", American Society of Civil Engineers Geotechnical and Geoenvironmental Journal, Vol. 125, No.10, 1999, pp.889-899.

International Conferences:

1. Achyutha, H, V.Paramasivam, K.Hari, K.Sree Harsha, P.C. Koteswara Rao and C.Sivathanu Pillai, " Constitutive law for reinforced / prestressed concrete linear

- members subject to uniaxial tension", 15th Intl. Conference on Structural Mechanics in Reactor Technology, Seoul, August 15-20, 1999, Paper No H03/2.
2. Paramasivam, V, H.Achyutha, K.Sree Harsha, K.Hari, P.C.Koteswara Rao and C.Sivathani Pillai, "Nonlinear finite element analysis of prestressed concrete Nuclear Containments under internal pressure", 15th Intl. Conference on Structural Mechanics in Reactor Technology, Seoul, Aug.15-20, 1999, Paper No.H09/1.
 3. Achyutha, H, K.Radhakrishna and S.Satha Kumar, "Response of micro-concrete panels to simulated blast loading", International Congress on Creating with Concrete, Dundee, Sept. 6-10, 1999, Conference 3 / Theme 3.
 4. Boominathan, A. and T. Lakshmi, "Dynamic characteristics of pile groups under vertical vibrations", Proceedings of 12th World Conference on Earthquake Engineering, Auckland, New Zealand, Jan.30 - Feb 4, 2000, Vol.6, p.053(1-7).
 5. Boominathan, A. P.C.Koteswara Rao, C.Sivathani Pillai and S. Hari, "Measurement of dynamic properties and evaluation of liquefaction potential of a 500 MW Prototype Fast Breeder Reactor site located in South India". Proc. of 12th World Conference on Earthquake Engineering, Auckland, New Zealand, Jan.30 - Feb.4. 2000, Vol2, p964 (1-8).
 6. Krishnamoorthy, C S, Structural optimization in practice: Potential application of genetic algorithms (Invited Paper). Computational Mechanics for the Next Millenium (Ed) C.M.Wang, K.H.Lee, K.K.Ang, Elsevier, 1999, pp 1201 - 1208.
 7. Prasad, M.V.K.V. and C.S.Krishnamoorthy, - Computational model for discrete crack growth in reinforced concrete, Proceedings, Computational Mechanics for the Next Millenium (Ed) C.M.Wang, K.H.Lee, K.K.Ang, Elsevier, 1999. pp 323 - 332.
 8. Annamalai, V.R., C.S.Krishnamoorthy and V.Kamakoti, "Mesh generation and adaptive finite element analysis in Hyper Computing Environment, Proceedings, Computational Mechanics for the Next Millenium (Ed) C.M.Wang, K.H.Lee, K.K.Ang, Elsevier, 1999, pp 1201 - 1208.
 9. Rajagopalan, N, Holistic approach for design of cable stayed bridges", - Cable Stayed Supported and Suspension Bridges". Indian Institute of Bridge Engineers, Proc. of the International Conference. 19-21 Nov. 1999, Hyderabad,pp 372-381.
 10. Rajagopalan, N, N.Lakshmanan and C.Antony Jeysehar, "Damage assessment of reinforced concrete beam using dynamic response". Our World in Concrete & Structures". Proc. of 24th International Conference, August 25-26, 1999, Singapore, pp.333-340.
 11. Rajagopalan, N, K.Ramamurthy and S.S.Ragunath, "Inadequacies in the modelling of prestressed concrete shell structures - An overview , Proc. of International Conference on Structural Engineering, Sept. 23-25, 1999, Ghaziabad, pp. 711-719 India Phoenix Publishing House Pvt. Ltd., New Delhi 110 002.
 12. Kalyanaraman, V , "Smart control of instability of struts", Proc. International Conference on Smart Materials, Structures and Systems, Ninth National Seminar on Aerospace Structures, July 7-10, 1999, Bangalore, pp.343-348.
 13. Madhavi Latha, G, K.Rajagopal and N.R.Krishnaswamy, "Geocells for construction of embankments over soft marine clays", Proc. of the Int. Conference on Offshore & Nearshore Geotech. Engg. Bombay, Dec.2-3, 1999, pp.449-454.
 14. Mathews, M.S, and T.C.Shaji, "Ultrasonic Pulse Velocity techniques for inspection and evaluation of timber in historic buildings", International Workshop on Ultrasonics, Delhi Dec.1999.

15. Arasan, V.T. and S.B.Pattnaik, "Notable features of the public transit system in Chennai City ", Proc. of the International Conference on Urban Public Transportation Systems, ASCE, March 1999.
16. Rajagopal, K and Sreesha, "Finite element solutions for some bearing capacity problems", Proc. 11th Asian Regional Conference on Soil Mech. and Geotech Engg. Seoul, Korea, 16-20, August, 1999, pp. 213-216.
17. Ramamurthy, K and K.S.Gumaste, "Behaviour of prisms with recycled aggregate concrete". Proc. of the International conference on Waste and By Products as Secondary Resources for Building Materials", Organised by BMTPC, New Delhi, 13-16, April 1999, pp.266-275.
18. Ramamurthy, K and N.Narayanan, "Influence of fly ash on the properties of aerated concrete", Proc. of the International Conference on Waste and BY Products as Secondary Resources for Building Materials", Organised by BMTPC, New Delhi, 13-16, April 1999, pp.276-282.
19. Rao,G, Koshy Varghese, N.Ramesh Babu,, and K.N.Satyanarayana, "Design of Object Oriented Environment for planning Mobile Crane Lifts", International Symposium on Auotmation and Robotics in Construction - LSARC 1999, Madrid, Spain, September 23-26, 1999.
20. Menon, D, Review of Codal safety provisions for RC chimneys subject to wind loading, Tenth International Conference - Wind Engineering into the 21st Century, Vol.1, Balkema June 1999, pp.133-140.
21. Nagesh, H. S, D. Menon, M.P.Chandrasekharan and T.M.M.Pillai, "Finite element analysis of Ilizarry Fixators", International Conference on 'Advances in Structural Engineering & Mechanics', - Seoul, Proceedings ASEM 99, Vol.2, August 1999, pp.1537-1542.
22. Nambudiripad, K. B. M and D. Menon, "A simple viscoelastic model for human skin and its application to Dermotaxis", International Conference on 'Advances in Structural Engineering & Mechanics', Seoul, Proc. of ASEM 99, Vol. 2, , August 1999, pp.1525-1531,.
23. Saravanan, P, A.Meher Prasad and C.S.Krishnamoorthy, "Dynamic substructuring in frequency domain using load dependent Ritz vectors", Proc. International Conference on Structural Engineering, New Delhi, September 1999, pp.653 - 661,.
24. Jaya, K P and A.Meher Prasad, "Impedance functions of horizontally excited embedded foundations in stratified soil", Proc. of International Conference on Advances in Structural Engineering, New Delhi, 26-28, September 1999, pp.579-590.
25. Gandhi, S.R. and A.K.Dey, "Liquefaction potential of pond ash", Proc. of 15th International Conference on Solid Waste Technology & Management, Philadelphia, 1999, pp.4D7 to 4D14.
26. Sivakumar,P.L., Koshy Varghese and N.Ramesh Babu, "Path planning of construction manipulators using Genetic Algorithm", International Symposium on Automation and Robotics in Construction, Madrid, Spain, September 23-26, 1999.
27. Govind Rao, Koshy Varghese, N,Ramesh Babu and K.N.S.Kalanidhi, "Design of object oriented environment for plannign mobile crane lifts", International Symposium on Automation and Robotics in Construction (ISARD '99), Madrid, Spain, September 1999.

7 Distinguished Visitors to the Department:

Sl.No	Name of the Visitor and Designation	Date of Visit	Purpose of visit
1.	Dipl.Ing,Gerd.Demmy Institut fur Hydraulic Engg. & Water Resources Management RWTH, Aachen, Germany	April 5-11, 1999	Discussed with research students who are gong to Germany in May 1999 on a DAAD sandwich scholarship
2.	Prof.Dr.Simon A Parsons	January 2000	Collaborative research
	Prof,Dr.Ing.Geiger University of Essen Germany	January 31 2000	Collaborative research

7.1 Other Activities:

Dr.Nainan P Kurian has been nominated by the Govt. of Kerala as Member of a High Power Commission to review the Technical Education Sector in the State and submit recommendations for qualitative changes in the field.

4.6 DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

1. Introduction:

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

2. Academic Programmes:

2.1 Students on Roll :

Programme	I Year	II Year	III Year	IV Year	V Year	Total
B.Tech	33	41	32	32	-	138
M.Tech	39	32	-	-	-	71
M.S.	19	20	14	-	-	53
Ph.D.	5	7	1	-	5	18
Total	96	100	47	32	5	280

2.2 Number of Scholarship/Fellowship holders:

Programme	Institute Scholarship	Others	Total
B.Tech.	2	-	2
M.Tech.	32	-	32
M.S.	29	2	31
Ph.D.	7	2	9
Total	74	4	74

2.3 Number of Degrees Awarded in the Last Convocation:

Sl.No.	Programme	No.
1.	B.Tech	31
2.	M.Tech	49
3.	M.S.	18
4.	Ph.D.	4
Total		102

2.4 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	M.Sakthi Balan	M.S	National conference on Discrete Mathematics & Applications.	M.S.Univ., Tirunelveli Feb 11 & 12
2	Vanam Srilakshmi	M.S	ISMMS 2000	Calcutta Mathematical Society January 2000
3	M.Sreekanth	M.S	NCOOT 99	Anna Univ., Chennai Oct 21 – 23
4	K.Arthi	M.S	ADCOM 99	Univ of Roorkee Roorkee, Dec 20-22
5	K.Arthi	M.S	National Conf. on Discrete Mathematics	M.S. Univ., Tirunelveli Feb 11 & 12
6	A.Vijay Srinivas	M.S	ADCOM 99	Roorkee, Dec 20-22
7	J.Y.Siva Rama Krishna	M.S	SPCOM 99	IISc, Bangalore July 21 – 25
8	Jyotsana Balleada	M.S	SPCOM 99	IISc Bangalore July 21 - 25

3. Faculty and their development:

3.1 Faculty:

Name of Faculty

Specialisation

PROFESSORS

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

Computer Networks, Distributed Systems, Operating Systems, Performance Evaluation.

Kalyana Krishnan.R, Ph.D (Yale)

Computer Architecture, Computer System Design, Microprocessors, Digital Electronic systems, Computer Graphics, Statistical Signal Processing.

Kamala Krithivasan, Ph.D (Madras)

Theoretical Computer Science, Computational Geometry, Languages and Automata Theory

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

Software Engineering, Computer Architecture, Distributed and parallel systems, Object Oriented Systems and databases.

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

Algorithms, Parallel and VLSI algorithms, Graph Theory, Computational Geometry, Randomised Algorithms, Computational Learning theory.

Raghavan S.V., Ph.D (IIT, Madras)

Research and development related to computer network and Protocols with emphasis on OSI and multimedia systems.

Yegnanarayana B., Ph.D (IISc)

Digital Signal Processing, Speech and Vision, Voice Input/Output Systems, Neural Networks.

ASSOCIATE PROFESSORS

Raman S., Ph.D (IIT Madras)

Computer System Design, Microprocessor based peripherals, Natural language processing, Multimedia.

Siva Ram Murthy C., Ph.D (IISc)

Parallel computing, Distributed systems, Software engineering, Real time systems, Architecture for High Performance computing, Dependable computing.

ASSISTANT PROFESSORS

Deepak Khemani, Ph.D (IIT Bombay)

Artificial Intelligence, Knowledge based systems, Natural Language Processing and Neural Networks

Hema A Murthy Ph.D (IIT Madras)

Speech processing, Computer Graphics and pattern recognition.

Janaki Ram D, Ph.D (IIT Delhi)

Distributed computing, Distributed Systems, Software Engineering, Object Oriented Systems, Database and CAD/CAM

Sreenivasa Kumar P, Ph.D (IISc)

Graph Theory, Algorithms, Parallel Computations, Data Mining and Data Bases.

Sukhendu Das, Ph.D (IIT Kharagpur)

Computer Vision, Image processing and pattern recognition, Graphics, Neural Networks, Digital and Analog Systems.

Sundar R, Ph.D (IIT Madras)

Digital Electronics, Microprocessor based design, Speech Signal Processing, Parallel Processing.

LECTURER

Chandra Sekhar C., Ph.D (IIT Madras)

Speech recognition, Neural Networks, Digital Systems.

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

S.No.	Coordinator(s)	Title of the Workshop/Seminar/ Symposium	Period
1.	Dr.S.V.Raghavan	E-Commerce	Dec 22 – 23, 1999
2.	Dr.C.Pandu Rangan	Workshop on Software Engineering practices in IT industries (in collaboration with Infosys Ltd.,)	Oct 7-9, 1999
3.	Dr.Janaki Ram	NCOOT 99 (in collaboration with Anna University)	Oct 21 – 23, 1999
4.	Dr.C.Pandu Rangan	FSTTCS 99	Dec 11 – 15, 1999
5.	Dr.C.Pandu Rangan	ISAAC 99	Dec 16 - 19, 1999

3.3 Special lectures delivered by the faculty in other Institutions:

S.No.	Name of faculty	Topic of lecture	Venue & Date
1	Dr.C.Pandu Rangan	Conference on Recent Trends in Advanced Computing	M.S.Univ., Tirunelveli Feb. 11-14, 2000
2	Dr.C.R.Muthukrishnan	Symposium on The emergence of India as a knowledge superpower"	29.1.2000, IIT Madras
3	Dr.C.Pandu Rangan	Seminar on Maths-Net-Reaching 21 st Century	Meenakshi College 21.12.99
4	Dr.C.Pandu Rangan	Inaugral address	A.M.Jain College 6.1.2000
5	Dr.S.V.Raghavan	Invited Lecture in CSI Convention Meeting	1.11.99, Bombay
6	Dr.S.V.Raghavan	I + IT = IIT	29.10.99, IIT Madras

3.3 Visits abroad by faculty

S.No.	Name of faculty	Country visited	Date	Purpose of visit
1	Dr.C.R.Muthukrishnan	USA	Sep. 20 – Dec 24	Exchange visitor
2	Dr.B.Yegnanarayana	USA	May 15 – July 11 1999	Visiting Professor
3	Dr.B.Yegnanarayana	Washington	July 12 – July 16 1999	Conference
4	Dr.C.Pandu Rangan	Switzerland	June 16 – 28, 99	Academic Guest
5	Dr.S.V.Raghavan	Malaysia	Sep. 8 – 10, 99	To present a paper
6	Dr.C.Siva Ram Murthy	Switzerland	June 19 – July 18 1999	To present a paper
7	Dr.S.Raman	USA	Aug 23 – 27	To visit M/s. Boeing Corporation
8	Dr.D.Janaki Ram	Japan	Dec 4 – Dec 12, 99	Workshop
9	Dr.P.Sreenivasa Kumar	USA	June 6 – Aug 8, 99	Computer Training Programme

3.4 Honours and Awards:

S.No.	Name of faculty	Honours/Awards	Awarded by	Date
1.	Dr.C.Siva Ram Murthy	Best Paper Award	Program Chair of 6 th IEEE Intl. Conference- On High Performance Computing.	Dec 17-20,99
2.	Dr.C.Pandu Rangan Mr.M.Yujendra Mr.A.Srinath Reddy Mr.K.L.Karthik,	Certificate of Achievement B.Tech students	ACM International Collegiate IIT, Kanpur Programming Contest	Dec 7, 99

3.5 Books, Monographs published:

S.No.	Name of faculty	Title	Publisher
1	Dr.C.Siva Ram Murthy & Dr.V.Rajaraman, IISc	Parallel Computers: Architecture and Programming	Prentice Hall of India

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

Prof.B.Yegnanarayana was elected as Fellow as Indian National Science Academy.

4 Research and Consultancy:

4.1 Sponsored projects

S.No.	Title	Period	Funding Agency	Amount	Coordinator(s)
1.	Trends in Data Processing	1999-2000	TCS	Rs.5 lakhs	Dr.C.Pandu Rangan
2.	Adaptive error Correcting codes over ATM	1998-2000	DST	Rs.21.6lakhs	Dr.C.Pandu Rangan Dr.S.V.Raghavan Dr.Kamala Krithivasan
3.	Application of Formal Languages in Computing environments	1999-2001	DST	Rs.9.35 lakhs	Dr.Kamala Krithivasan Dr.SV Raghvan Dr R Raman
4.	Development of Techniques for Classification of Urban Features from Remote Sensed Data for use In GIS Application : A Multi-disciplinary Approach	1997-2000	ISRO	Rs.4.5 lakhs	Dr.B.Yegnanarayana Dr.Sukhendu Das
5.	Information Recovery from Partial Data for Image Processing Application	1997 – 2000	ONR,USA	Rs.18.9 lakhs	Dr.B.Yegnanarayana Dr.Sukhendu Das
6.	High Performance Architectures and Algorithms for Scientific and Engg Applications	1998 - 2000	HRD	Rs.10 lakhs	Dr.C.Siva Ram Murthy
7.	Tools for course	1998 - 2000	DST	Rs.10.6 lakhs	Dr.D.Janaki Ram

4.2 RBIC

S.No.	Name of investigator/ Co investigator	Title	Value in lakhs
1.	Dr.B.Yegnanarayana Dr.C.R.Muthukrishnan	Case Based Expert System for manufacturing	13.50
2.	Dr.Hema A Murthy Dr.T.A.Gonsalves Dr.B.Ramamurthi Dr.A.Jhunjunwala	Wireless Local Loop	\$ 775,000
3.	Dr.Hema A Murthy Dr.T.A.Gonsalves Dr.A.Jhunjunwala, Dr.B.Ramamurthi Dr.Devendara Jalihal Dr.R.Aravind, Dr.K.Giridhar	Direct Internet Access System	65.00
4.	Dr.C.Chandra Sekhar Dr.B.Yegnanarayana Dr.Hema A Murthy Dr.Sukhendu Das	Development of Phonetic Engine for Speech in Indian Languages	60.00
5.	Dr.C.Chandra Sekhar Dr.Hema A Murthy	Development of Software Tools for DSP Platforms	7.70
6.	Dr.C.Chandra Sekhar Dr.B.Yegnanarayana	Speaker Recognition for Access Control	8.00
7.	Dr.C.Chandra Sekhar Dr.B.Yegnanarayana	Speaker Recognition	12.00

Research Publications:

a) No. of papers published in:

Refereed National Journals : 1
Referred International Journals : 15

b) No. of papers presented in:

National Conference : 12
International Conference : 17

In Refereed National Journals:

1. C.Chandra Sekhar and J.Y.Siva Rama Krishna Rao, Reordering network as postprocessor in modular approach based neural network architecture for recognition of Consonant-Vowel (CV) utterances, *Journal of Indian Institute of Science*, vol.79, no.3, pp.197-206, May-June 1999.

In Refereed International Journals:

1. K.Krithivasan, M.Sakthi Balan and P.Harsha, Distributed Processing in Automata, *International Journal of Foundations of Computer Science*, Vol.10, No.4, 1999, pp. 443-464.
2. Ajith Tom P. and C.Siva Ram Muthy, "Optimal Task Allocation in Distributed Systems by Graph Matching and State Space Search", *Journal of Systems and Software*, vol.46, no.1, pp. 59-75, 1999.
3. Samphel Norden, S.Balaji, G.Manimaran and C.Siva Ram Murthy, "Deterministic Protocols for Real-time Communication in Multiple Access Networks", *Computer Communications*, vol.22, no.2, pp. 128-136, 1999.
4. G.Mohan and C.Siva Ram Murthy, "Efficient Algorithms for Wavelength Rerouting in WDM Multi-fiber Unidirectional Ring Networks", *Computer Communications*, vol. 22, no.3, pp. 232-243, 1999.
5. G.Mohan and C.Siva Ram Murthy, " A Time Optimal Wavelength Rerouting Algorithm for WDM Networks", *IEEE/OSA Journal of Lightwave Technology*, vol.17, no.3, pp. 406-417, 1999.
6. I.Santosh Kumar, G.Manimaran, and C.Siva Ram Murthy, " A pre-run-time Scheduling Algorithm for Object-based Distributed Real-time Systems", *Journal of Systems Architecture*, vol. 45, no.14, pp. 1169-1188, 1999.
7. B.Rama Subramanian and C.Siva Ram Murthy, "Application Semantics and Seamlessness based Admission Control Policy for Multimedia Mobile Networks", *Journal of Multimedia Tools and Applications*, vol.9, no.1, pp. 7-28, 1999.
8. R.Sriram, G.Manimaran, and C.Siva Ram murthy, "A Rearrangeable Algorithm for the Construction of Delay-Constrained Dynamic Multicast Trees", *IEEE/ACM Trans. on Networking*, vol.7, no.4, pp. 514-529, 1999.
9. K.K.Varghese Panicker, C.Siva Ram Murthy, and Ravi Mittal, "A New Algorithm for Virtual Path Network Design in ATM Networks", *Computer Communications*, vol.22, no.15-16, pp. 1481-14192, 1999.
10. G.Manimaran, Hariharan Shankar Rahul, and C.Siva Ram Murthy, " A New Distributed Route Selection Approach for Channel Establishment in Real-time Networks", *IEEE/ACM Trans. on Networking*, vol.7, no.5, pp. 698-709, 1999.
11. G.Mohan and C.Siva Ram Murthy, "Wavelength Rerouting in WDM Single-fiber and Multi-fiber Networks with and without Wavelength Conversion", *Journal of High Speed Networks*, vol.8, pp.149-171, 1999.
12. Girish Keshav Palzhukar and Deepak Khemani, "Diagnosing Dynamic Systems using Trace patterns", *Pattern Recognition Letters*, vol. 20, no.7, pp. 741-753, 1999.
13. Hema A Murthy, Francoise Beaufays, Larry P. Heck, Mitchel Weintraub, "Robust Text Independent Speaker Identification over Telephone Channels," *IEEE Trans. on Speech and Audio Processing*, Vol.7, No.5, pp.554-568.
14. P.Satyanarayana Murthy and B.Yegnanarayana, Robustness of group-delay-based method of extraction of significant instants of excitation from speech signals *IEEE Trans. on Speech and Audio Processing*, vol.7, no.6, pp.609-619, Nov., 1999.

15. B.Yegnanarayana, C.Avendano, H.Hermansky and P.Satyanarayana Murthy, Speech enhancement using linear prediction residual, *Speech Communication*, vol.28, no.1, pp.25-42, May, 1999.

In Proceedings of National Conferences:

1. S.V.Ramasubramanian and K.Krithivasan, Weighted Finite Automata, Digital Images and Image Compression, Satellite Conference on Image Analysis in Materials and life Sciences, Nov. 1999, Kalpakkam, India.
2. V.Kamakshi Prasad, Hema A Murthy and C.Chandra Sekhar, "Connected Digit Recognition Using Minimum Phase Group Delay Functions," *Proc.IRIL-99*, Hyderabad, pp. 15.1 – 15.5, Nov. 12-14, 1999.
3. Jyotsana Ballea and Hema A Murthy, "Spoken Language Identification System for Indian Languages" *Proc.IRIL-99*, Hyderabad, pp.20.1 – 20.4, November 12-14, 1999.
4. Jyotsana Ballea, S.Vela and Hema A Murthy, "A New Model for Speaker identification using Affine Transformation," *Proc.SPCOM-99*, IISc, Bangalore, India, pp.121-124, July 21-24, 1999.
5. J.Y.Siva Rama Krishna Rao and C.Chandra Sekhar, Hierarchical and modular architecture for recognition of Consonant-Vowel (CV) utterances, International Conference on Advances in Pattern Recognition and Digital Techniques, Calcutta, pp. 401-405, Dec. 1999.
6. J.Y.Siva Rama Krishna Rao, C.Chandra Sekhar and B.Yegnanarayana, Neural network based approach for detection of vowel onset points, International Conference on Advances in Pattern Recognition and Digital Techniques, Calcutta, pp.316-320, Dec. 1999.
7. C.Chandra Sekhar and J.Y.Siva Rama Krishna Rao, Neural network models for recognition of Consonant-Vowel (CV) utterances, National Symposium on Information Revolution and Indian Languages, Hyderabad, pp.22.1-22.6, Nov. 1999.
8. C.Chandra Sekhar and J.Y.Siva Rama Krishna Rao, Reordering network as postprocessor in modular approach based neural network architecture for recognition of Consonant-Vowel (CV) utterances, Conference on Signal Processing and Communications (SPCOM'99), Bangalore, pp.109-104, July 1999.
9. C.Chandra Sekhar and J.Y.Siva Rama Kirshna Rao, Multiple modular networks for recognition of utterances of Consonant-Vowel units, Proceedings of the National Conference on communication, Kharagpur, pp. 157-162, January 1999.
10. Hema A Murthy, C.Chandra Sekhar and B.Jyotsana, Identifying the Location of Digits in a Connected Digit Sequence using Minimum Phase Group Delay functions, Proceedings of the National Conference on Communication, Kharagpur, pp. 179-183, January 1999.
11. Hemant Misra, Shajith Ikbai and B.Yegnanarayana, Spectral mapping as a feature for speaker recognition, *Proc. National Conference on Communication*, IIT Kharagpur, pp. 151-156, Jan. 29-31, 1999.
12. D.Devaraj, T.V.S.N.L.N.Murthy and B.Yegnanarayana, A fuzzy system model for plant condition monitoring, *Proc. International AMSE Conference on Computer Modelling, Simulation and Communication*, Jaipur, Dec. 1-3, 1999.

In Proceedings of International Conferences:

1. V.Radhakrishnan, V.T.Chakravarthy, K.Krithivasan, Some Properties of Matrix grammars, Sixth International Workshop on Parallel Image Analysis – theory and Application, Jan. 1999, pp. 213-335.
2. S.V.Ramasubramanian and K.Krithivasan, Finite Automata Principles for 2D image and 3D object representation, Sixth International Workshop on Parallel Image Analysis – Theory and Application, Jan. 1999, pp.94-110
3. K.Krithivasan, S.V.Raghavan, and K.Arthi, Applications of Formal Languages in Global Positioning Systems, ADCOM'99, Dec. 1999, Roorkee, pp.307-315.
4. Anita Mittal, G.Manimaran, and C.Siva Ram Murthy, "Dynamic Real-time Channel Establishment in Multiple Access Networks", in Proc. 7th IEEE International Workshop on parallel and Distributed Real-time Systems, San Juan, Puerto Rico, April 12-13, 1999.
5. Indranil Gupta, G.Manimaran, and C.Siva Ram Murthy, "Fault-tolerant Dynamic Scheduling of Object-based Tasks in Multiprocessor Real-time Systems", in Proc. IEEE International Workshop on Fault-tolerant Parallel and Distributed Systems, San Juan, Puerto Rico, April 16, 1999.
6. D.Antony Louis Piriya Kumar, Paul Levi, and C.Siva Ram Murthy, "Optimal Scheduling of Iterative Data-flow Programs onto Multiprocessors with Non-negligible Inter-Processor Communication", in Proc. High Performance Computing and Networking Conference, Delft, 1999.
7. G.Mohan and C.Siva Ram Murthy, "Routing and Wavelength Assignment for Establishing Dependable Connections in WDM Networks", in Proc. 29th IEEE International Symposium on Fault-Tolerant Computing, Wisconsin, USA, June 15-18, 1999.
8. Indranil Gupta, G.Manimaran, and C.Siva Ram Murthy, "Primary-Backup Based Fault-Tolerant Dynamic Scheduling of Tasks in Multiprocessor Real-time Systems", in (Fast Abstracts) Proc.29th IEEE International Symposium on Fault-Tolerant Computing, Wisconsin, USA, June 15-18, 1999.
9. R.Sriram, G.Manimaran, and C.Siva Ram Murthy, "An Integrated Scheme for Establishing Dependable Real-time Channels in Multihop Networks", in Proc. 8th IEEE International Conference on Computer Communications and Networks, Boston, USA, October 12-15, 1999.
10. S.Balaji, G.Manimaran, and C.Siva Ram Murthy, "Unit-oriented Communication in Real-time Multihop Networks", in Proc. 6th IEEE International Conference on High Performance Computing, Calcutta, December 17-20, 1999.
11. S.Raman and V.Usha, "Natural Language-Oriented Retrieval of Multimedia Data" Proc. 7th International Conference on Advance Computer and Communciation – ADCOM99- pp. 97-101, Dec. 20-22, 1999.
12. B.Yegnanarayana, Speech processing for diagnostic applications, Proc. International Conference on Medical Diagnostic Techniques and Procedures, pp. 348-357, Dec.15-17, 1999.
13. S.P.Kishore and B.Yegnanarayana, Identification of handset-type using autoassociative neural networks, Proc. International Conference on Advances in Pattern Recognition and Digital Techniques, Calcutta, pp. 353-356, Dec.27-29, 1999.
14. J.Y.Siva Rama Krishna Rao, C.Chandra Sekhar and B.Yegnanarayana, Neural Networks based approach for detection of vowel onset points, Proc. International Conference on Advances in Pattern Recognition and Digital Techniques, Calcutta, pp. 316-320, Dec. 27-29, 1999.
15. M.Mathew, B.Yegnanarayana and R.Sundar, A neural network-based text-dependent speaker verification system using suprasegmental features, Proc. European Conference on Speech Communication and Technology, Budapest, Sept. 5-9, 1999.
16. Bayya Aruna and B.Yegnanarayana, Noise invariant representation for speech signals, Proc. European Conference on Speech Communication and Technology, Budapest, Sept. 5-9, 1999.

17. M.S.Ikbal, H.Misra, and B.Yegnanarayana, Analysis of autoassociative mapping neural networks, Proc. International Joint Conference on Neural Networks, Washington, July 12-16, 1999.

5. Distinguished Visitors to the Department:

S.No.	Name of the Visitor and Designation	Date of Visit
1.	Dr.Ramesh Govindan Univ of Southern California, Los Angeles	23.9.99
2	Mr.Bobby Vandalore, Ph.D Candidate Ohio State University	27.9.99
3	Dr.Dileep Bhandarkar, Director Intel Corporation, USA	5.11.99
4	Mr.Murali Aravamudan, CTO Converged Network Solutions, USA	15.11.99
5	Dr.Premkumar Devanbu University of California, Davis	29.11.99
6	Dr.Ramesh Krishnamurti, Professor Simon Fraser Univ., Canada	24.12.99
7	Dr.Vivek De, Principal Engineer Intel Corporation, USA	10.1.2000
8	Prof.Krishna Sivalingam, Assistant Professor Washington State University	12.1.2000
9	Dr.Rama Mohan Pathuri Univ. of California, San Diego	19.1.2000
10	Dr.M.Damodaran, Professor University of Houston USA	28.3.2000
11	Dr.Peter Stress, Professor Tech. Univ., Munich, Germany	Jan 3 – 12
12	Mr.Shankar Subramanian, CEO American Megatrend Inc., Norcross, GA	4.4.2000

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.

1. Communication Systems Laboratory

- DSP Laboratory
- Microwave Laboratory, Antenna Laboratory
- Telematics Laboratory
- Communication Laboratory

2. Circuits and Instrumentation Laboratory

- Digital Systems and VLSI Laboratory
- Measurements and Instrumentation Laboratory

3. Power System machines and Drives Laboratory

- Control and Robotics Laboratory
- Electrical Machines and Drives Laboratory
- Power Systems Laboratory
- High Voltage Engineering Laboratory

4. Micro Electronics Laboratory

- Amorphous Semiconductor Laboratory
- MicroElectronics 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:

- I. Communication Systems Engineering
- II. Energy Systems Engineering
- III. Microelectronics
- IV. Control, Guidance and Instrumentation Systems

Integrated M.Tech. Degree

From last year we have started five year integrated M.Tech. Programme in two different streams

- I. Communication systems and
- II. Microelectronics.

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 Communication, 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

Programme	I year	II year	III year	IV year	V year	Total
B. Tech	107	99	94	81	-	381
M.Tech	54	38	-	-	-	92
M.S.	13	15	45	-	-	73
Ph.D.	3	2	3	3	6	17
Total	177	154	142	84	6	563

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

Sl.No.	Particulars	Place of visit/ Date
1.	Ravi Kumar Reddy and Shehanai Nissar Begum X Instl.Workshop on Physics of Semi-Conductors	New Delhi/ Dec 1999
2.	S.Ramachandran, Ph.D student attended the 13th International Conference on VLSI Design	Calcutta Jan 3-7, 2000
3.	Mr. Harish N. Maller, M.S. student attended the National Conference on Communications (NCC-2000)	IIT Delhi Jan 28-30
4.	Mr. K. Venkateswara Reddy (M.S. scholar), 10th International Workshop on Physics of Semiconductor Devices	New Delhi/ Dec. 1999
5.	Mr. Kishore K.V.S.R (M.S. scholar) 10th International Workshop on Physics of Semiconductor Devices	New Delhi Dec 1999

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|----|---|----------------------------|
| 6. | Mr.Kishore K.V.S.R (M.S. scholar)COPEN 2000, | IIT Madras,
Chennai |
| 7. | Mr. R.Navin Kumar ,COPEN 2000, | IIT Madras,
Chennai. |
| 8. | Ms. P. Jagathi, Attended a short term course on finite element analysis | IIT Bombay
July4-5,1999 |
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2.3 Number of Degrees awarded in the Last convocation

Programme	No.	Total
B.Tech	64	64
M.Tech	46	46
M.S.	14	14
Ph.D.	4	04
Total		128

2.4 Number of Scholarship/Fellowship holders

Programme	Institute Scholarship	Others	Total
B.Tech.	6	-	6
M.Tech.	71	-	71
M.S.	39	-	39
Ph.D.	4	-	4
Total	120	-	120

3 Faculty and their Development

3.1. Faculty

S.No	Name and Qualification	Major area of Specialisation
Professors		
1	Ashok Jhunjhunwala,, Ph.D.(Maine) [Head]	Communication Networks, Fibre Optics, Surface Acoustic Wave Devices
2	M.V.Chalapathi Rao,, Ph.D.(IIT Madras)	Control Theory
3	C.Eswaran,, Ph.D.(IIT Madras)	Networks, Digital Filters, Microprocessors
4	P.A. Janakiraman,, Ph.D.(IIT Madras)	Robotics,, Control Systems, Instrumentation, Image Processing
5	M.S.Narasimhan,, Ph.D.(IIT Bombay)	Antenna Engineering,, Applied Electromagnetics

6	K.Narayana Bhat,, Ph.D. (IIT Madras)	Semiconductor Fabrication
7	K.M.M. Prabhu, Ph.D. (IIT Madras)	Signal Processing
8	K.Radhakrishna Rao,, Ph.D.(IIT Kanpur)	VLSI,, Analog and Digital IC's
9	K. Ramar,, Ph.D.(IIT Madras)	Power Systems, Computer Applications
10	P. Sankaran, Ph.D.(IIT Madras)	Networks, Magnetic Materials
11	G. Sridhara Rao,, Ph.D.(IIT Madras)	Machines, Power Electronics, Simulation
12	S. Srinivasan,, Ph.D.(IIT Madras)	Digital design, DSP architecture and applications, VLSI design
13	V. Venkata Rao, Ph.D. (Iowa)	Digital Signal Processing,, Communications
14	C. Venkateshaiah,, Ph.D.(IIT Madras)	High Voltage, Power Systems
Associate Professors		
15	Bhaskar Ramamurthi, Ph.D. (California)	Digital Communication and Communication networks, Signal processing
16	C. Dattatreyan, Ph.D. (Sheffield)	Microwaves
17	V. Jagadeesh Kumar, Ph.D. (IIT Madras)	Measurements, Instrumentation
18	P. Sasidhara Rao, Ph.D. (IIT Madras)	Electrical Machines
Assistant Professors		
19	Amitava Dasgupta, Ph.D. (IIT, Kharagpur)	Si and GaAs Devices, Technology and Simulation
20	M. Antony Reddy, Ph.D. (IIT Kharagpur)	Electronic Circuits
21	Enakshi Bhattacharya, Ph.D. (TIFR Bombay)	Semiconductor material and Devices, Amorphas silicon, Poran silicon
22	S. Karmalkar, Ph.D. (IIT Madras)	VLSI, Semiconductor Devices
23	M. Krishnamurthi, M.Tech. (IIT Madras)	Power Systems
24	P.C. Majhee, M.Tech. (IIT Madras)	Measurements, Instrumentation
25	G.T. Manohar, M.Tech. (IIT Madras)	Microprocessors, computers, control systems
26	Nandita Dasgupta, Ph.D. (IIT Madras)	Si and III-V Semiconductor Devices, Tech., Simulation
27	T.J. Vitto, Ph.D. (IIT Madras)	Semiconductors
28	C. Mathiazhagan, Ph.D. (Univ. California)	RF SP, Analog Circuits for Telematics
29	Vinita Vasudeven, Ph.D. (IIT Bombay)	Devices, CAD for VLSI
30	Devendra Jalihal, Ph.D. (Duke)	Statistical Signal Processing
31	R. Aravind, Ph.D. (California)	Signal Processing
32	K. Giridhar, Ph.D. (California)	Communication and Signal Processing

- 33 T.G. Venkatesh, Ph.D. (IISc.) Computer Architecture and Networks
 34 Krishna Vasudevan, Ph.D.(IIT Madras) Power Electronics
 35 R. Sarathi, Ph.D. (IISc.) High Voltage Engineering
 36 Srinivas Chakaravarthy Ph.D (Austin) Neural networks, handwritten characterisation
 37 K. Shanthi Swarup Ph.D (IISc) Power systems, Intelligence system and energy management systems.

Principal Scientific Officer

- 38 P.R. Vaya, Ph.D (IIT Madras) Semiconductor Devices

Senior Design Engineers

- 39 P. Ramaseshagiri Rao, M.S. (IIT Madras) Semiconductor Fabrication

Scientific Officers

- 40 T.V. Gopal, M.S. (IIT Madras) Measurements, Computer System Management
 41 K. Ponnuraju, Ph.D. (IIT Madras) Solid State Electronic Devices, Semiconductor Technology
 42 H. Renganathan, M.S. (IIT Madras) DSP. Microprocessor Systems

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

Sl.No.	Co-ordinators	Title	Period
1	S. Srinivasan	Mixed mode IC design	October 25-30 1999
2	Dr. V. Jagadeesh Kumar	National Symposium and exposition on Modern Instrumentation	February 27-28, 1999
3	Dr. R. Aravind Dr. D. Jalihal	Multimedia Communications	Nov. 24 - Dec. 4, 1998
4	Dr. V. Jagadeesh Kumar	International Conference on Medical Diagnostic Techniques & Procedures	Dec. 15 - 17, 1999
5	Bhaskar Ramamurthi	System Software and Communications, STC for Usha Martin, Calcutta	May 3 - 14, 1999
6	Ashok Jhunjunwala	Int. conf. On affordable telecom and IT solutions for developing countries	28.02.2000 to 02.03.2000
7	Ashok Jhunjunwala	International workshop on equity diversity and information technology (EDIT), National Institute of Advanced studies, Bangalore	3 rd -4 th Dec.1999
8	Bhaskar Ramamurthi	System Software and Communications, STC for Usha Martin, Calcutta	Aug.9 - 17, 1999

**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/Durati on
1	Ashok Jhunjhunwala, B. Ramamurthi, R. Aravind, K. Giridhar and D. Jhalihal.	National conference on Communications	IIT Kharagpur	1999
2	S. Srinivasan	International symposium on Circuits and Systems	Florida, USA	May31st- till June 2 nd 1999.
3	S. Srinivasan	VLSI Design 99, 12 th International conference on VLSI design,	Calcutta	Jan 3-7 , 2000
4	S. Srinivasan	2 days workshop on DSP	Texas Instruments	Dec2-3, Bangalore
5	Amitava Dasgupta	International Conference on Smart materials, structures and Systems		July 99, Bangalore
6	Amitava Dasgupta	10 th Int. workshop on Physics of semiconductor devices	IIT Delhi	New Delhi, Dec 1999
7	Nandita Dasgupta	Copen 2000	IIT Madras	Jan.2000
8	Amitava Dasgupta	Copen 2000	IIT Madras	Jan 2000
9.	V. Jagadeesh Kumar	A session on "Skin- perfusion sensing and applications" - International Conference on Medical Diagnostic Techniques & Procedures	IIT Madras	Dec. 15, 1999

3.4 Special Lectures Delivered by the faculty in other Institutions:

Sl.No.	Name of Faculty	Topic of Lecture	Place and Date
1	V. Jagadeesh Kumar	Indian Wave Energy Programme	ANERT, Government of Kerala, Trivandrum
2	K.N. Bhat	MicroElectroMechanical Systems (MEMS)	S.R.M. Engineering College
3	S. Srinivasan	VLSI Design workshop	REC, Warangal
4	K.N. Bhat	'Porous silicon as a sensor material' at Analog Devices	Cambridge, USA.
5	V. Jagadeesh Kumar	'Pulse Oximetry' at the Workshop on Optical Technologies in Medicine and Surgery	SRMC College Dec. 8, 1999

6	Ashok Jhunjhunwala	New Millenium Lecture on towards 100-200 Million telephones and internet connections in India in 87 th Indian Science Congress.	03.01.2000, Pune University, Pune
7	Ashok Jhunjhunwala	Integrated Access Solution for telephone and Internet Connection in India in a seminar on Telecom options in New Millenium	09.01.2000, DID exchange, Franchise Association, New Delhi
8	Ashok Jhunjhunwala	Globalisation Development	11.01.2000, NIAS Bangalore.
9	Ashok Jhunjhunwala	"Indian R&D WILL & Internet Technologies", International Seminar - Pune IT.COM'99	27 th October'99, Pune
10	Ashok Jhunjhunwala	"Towards Hundred Million Telecom and Internet Connections - How can Media help?", Keynote Address at Chameli Devi Award Function, India International Centre	August 1999, New Delhi
11	Ashok Jhunjhunwala	"Towards Hundred Million Telephones and Internet Connections in India", Engineers Day Function, Indira Gandhi Research Centre for Atomic Research	15 th September'99 Kalpakkam
12	Ashok Jhunjhunwala	Keynote Speaker on "Telecom Technologies for India", Venkateswara Engineering College	8 th July, 1999, Sriperambudur
13	Ashok Jhunjhunwala	Towards 100-200 million telephones and internet connection in National conference in communication-2000	29-01-2000, IIT Delhi.
14	Ashok Jhunjhunwala	Keynote Speaker on "Telecom R&D. in India", Crescent Engineering College	2 nd September, 1999, Chennai

3.5.1 Visits Abroad by Faculty

Sl.No.	Name of Faculty	Country visited	Date	Purpose of visit
1	K.N. Bhat	University of Washington Seattle (USA)	Jan 1999 - Dec 1999	Sabbatical
2	K. Ramar	University of Malaysia	Aug 1999 onwards	Sabbatical
3	M.V.Chalapathi Rao	Botswana, Africa	Aug 1999	Sabbatical
4	Ennakshi Bhattacharya	Cambridge, USA	October, 1999	Sabbatical
5	S. Karmalkar	University of California, Santa Barbara	Jan 2000- Dec 2000	Sabbatical
6	S.Srinivasan	Sabbatical at San Jose State University California, USA	Aug 1998- June 1999	Sabbatical

7	V. Jagadeesh Kumar	Asian Institute of Technology, Bangkok	Between Sep. and Nov. 1999	Visiting Faculty
8	Ashok Jhunjunwala	Florida	March 5 th - 15 th 2000	Conference
9	P. Sankaran	Second Nagano-Magel International Symposium in Japan,	from 20.10.99 to 22.10.99	Attended Conference

3.6 Honours and Awards obtained:

Name of Award/Honour	Awarded by	Awarded for	Date of Award
For the Sake of Honour Award 1998-99 by Ashok Jhunjunwala	Rotary Club of Madras Central	Achievements in the field of Electronics, & Telecommunications	May 1999
Awarded Dr. Vikram Sarabhai Research Award Ashok Jhunjunwala	Physical Research Laboratory, Ahmedabad	Contributions and achievements in the field of Electronics, Informatics, Telematics & Automation	July 1999
Selected for Distinguished Alumnus Award by Ashok Jhunjunwala	Indian Institute of Technology, Kanpur	Distinguished Alumnus	September 1999
Selected for Millennium Medal by Ashok Jhunjunwala	Indian Science Congress, CSIR, New Delhi	Achievements in the field of Science & Technology	October 1999

3.7 Books/Monographs Authored or Co-authored

Name(s) of Author(s)	Title of Text Book/Monographs	Publisher
Ashok Jhunjunwala	Chapter on "Indian Telecom & Internet tangle- what is the way out?", in Emerging Communication Technologies and Society, P No.s 29-42, Edited by N. Balakrishnan of INSA	Narosa Publishing House, New Delhi

3.8 Fellowships of Academics and Professional Societies

Name of the Academy/Professional Society	Level	Year of admission
Fellow of Indian National Science Academy (INSA), New Delhi, Ashok Jhunjunwala	Fellow	1999
Fellow of The National Academy of Science, Allahabad, Ashok Jhunjunwala	Fellow	1999
Governor, International Council for Computer Communications, Inc., (ICCC), Ashok Jhunjunwala	Fellow	1999
Fellow of Indian National Academy of Engineering (INAE), New Delhi, Ashok Jhunjunwala	Fellow	1999
Fellow of Indian National Science Academy, INSA, New Delhi, Bhaskar Ramamurthi	Fellow	1999
Indian National Academy of Engineers, INEA, New Delhi	Fellow	1999

4. Design and Development Activities:

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

1. PCs provided for all faculty
2. Networking of the department completed
3. Setup of pulse electroplating of semiconductor and other substrates
4. Semiconductor parametric analyser
5. Electron Beam evaporation unit
6. Installed ETAP software in Power system laboratory pcs.
7. Design and implementation of FPGA encoder

4.2 Setup of Intel Laboratory

Principle Investigator : Prof. Ashok Jhunjunwala
CoInvestigator : Dr. T. G. Venkatesh

The Intel Laboratory has been funded by Intel corporation.

The Intel laboratory is involved in research and development activities related to internet applications. The current focus of the laboratory is on "Instruction on Demand" based distance learning and on developing an internet access terminals for developing countries. The laboratory also provides facility for the B.Tech, M.Tech and M.S students, for their project works.

5. Research and Consultancy:

5.1 Sponsored Research Projects:

Title of the Project	Sponsoring Agency	Value (Rs in Lakhs)	Coordinator/ Co-Investigators,
Special Manpower development in VLSI Design	DOE	100.00	Dr. S. Srinivasan
FPGA Lab	MHRD		Dr. S. Srinivasan
Telematics	MHRD	10.00	Dr. Timothy A. Gonsalves Dr. B. Ramamurthi

5.2 Industrial Consultancy:

Title	Industry	Amount (in Lakhs)	Name of the Faculty
RIV testing of Rigid Bus Coupler & Terminal connectors	Best & Crompton Engg. Ltd., Madras 98	0.30	Dr. C. Venkateshaiah
Impulse voltage testing of 33 kV single phase, epoxy moulded potential transformer	Kappa Electricals, Madras 15	0.90	Dr. C. Venkateshaiah
Impulse voltage testing of 500 kVA, 11/0, 433 kV Transformer	Andrew Yule & Co. LTd., Madras 96	4.57	Dr. C. Venkateshaiah

Impulse voltage testing of 24/32/40 MVA, transformer	Indo Tech Transformers Ltd., Madras 6	5.78	Dr. C. Venkatasessaiah
Impulse voltage testing of 31.5 MVA/110/11KV power transformer	Hackbridge Hewittic & Easun Ltd., PB No.2281, Madras 19	1.52	Dr. C. Venkatasessaiah
Impulse voltage testing of 24 kV Three phase gang operated Indoor Vacuum circuit breaker	N.S.R. Elkemet Pvt. Ltd., Madras 32	0.50	Dr. C. Venkatasessaiah

5.3 RBIC

Title	Industry	Value (in lakhs)	Co-ordinator/ Co-Consultants, if any
Busbar Protection System	Easun Reyrolle Ltd. Hosur	12.00	Dr. V. Jagadeesh Kumar Prof. A. Kuppurajulu
Development of variable speed constant frequency brushless generator	CVRDE, Avadi,	4.60	Dr. P. Sashidara Rao
Development of brushless Induction generator for automotive applications	For Lucas TVS , padi ,chennai,	2.50	Dr. P. Sashidara Rao
Wireless in Local Loop	ADI,USA	97.0*	Dr.Bhaskar Ramamurthi Dr.T.A.Gonsalves Dr.C.Mathiazhagan Dr.R.Aravind Dr.Devendra Jalihal Dr.K.Giridhar
Fibre in Local Loop	HFCL, New Delhi	10.0*	Dr.Bhaskar Ramamurthi Dr.T.A.Gonsalves Dr.C.Mathiazhagan Dr.R.Aravind Dr.Devendra Jalihal Dr.K.Giridhar
Design of LANfone System	BPL Telecom Ltd., Bangalore	1.30*	Dr.Bhaskar Ramamurthi Dr.Timothy A.Gonsalves Dr.K.Giridhar Dr.Devendra Jalihal Dr.R.Aravind

ELECTRICAL 1999-00.

Study of Development of Simulation for Multi-carrier Satcom Modem	ISRO, Ahmedabad	2.00	Dr.Bhaskar Ramamurthi Dr.Timothy A.Gonsalves Dr.K.Giridhar Dr.Devendra Jalihal Dr.R.Aravind Dr.C.Mathiazhagan
Co-channel Signal Recovery	Ericsson, USA	8.00	Dr.Bhaskar Ramamurthi Dr.Timothy A.Gonsalves Dr.K.Giridhar Dr.Devendra Jalihal Dr.R.Aravind Dr.C.Mathiazhagan
Speed studies in electric locomotives through development of a microcontroller based speed measurement system	Southern Railway	2.50	Dr. Krishna Vasudevan

6 Publications

(a) No. of papers published in:

Refereed National Journals	:	1
Refereed International Journals	:	10

(b) No. of papers presented in:

National Journals	:	18
International Journals	:	24

Refereed National Journals:

1. Ashok Jhunjunwala, "Looking Beyond NTP '99", Journal of Bitcom India, Vol.I, No.1, January 2000, New Delhi

Refereed International Journals:

1. E. Bhattacharya, P. Ramesh and C. Suresh Kumar, Studies on gold/porous silicon/crystalline silicon junctions, J. of Porous Materials (Kluwer), 7(2000)p299-301.
2. S.Bose,G.Sridhara Rao,S.S.Yegnanarayanan,"Determination of optimum inertia and control strategy for a wave energy operated system" International journal of Power and Energy Systems,Vol.20,No.1, 2000.pp.44-49.
3. S. Ramakrishna and S. Karmalkar, IEE Proceedings- Circuits device & Systems, pages 211-214, April 1999.
4. S. Karmalkar, IEEE Trans. on Education, pages 323-328, Nov. 1999.
5. S. Karmalkar, IEEE Trans. on Education, Pages 329-331, Nov. 1999.
6. S. Karmalkar and Girish R., IEEE Trans. Electron Devices, Pages 11-23, Jan. 2000.

7. Vishwanath Krishna Bhat. K.N Bhat and A. Subrahmanvam "Effect of pre-oxidation surface preparation on the growth of ultrathin oxides of silicon." *Semiconductor science and Technology*, 14,8,705-709,1999
8. Vishwanath Krishna Bhat. M.Pattabiraman, K.N Bhat and A. Subrahmanvam "The growth of ultrathin oxides of silicon by low temperature wet oxidation technique" *Materials research Bulletin*, 34,10-11,1797-1803,1999
9. V.K.Bhat. K.N Bhat and A. Subrahmanvam "Electrical characterization of Ultrathin oxides of silicon growth by N₂O Plasma assisted oxidation." *Journal of Electronic materials*, 29, 4, 399-404,2000
10. V.K.Bhat. K.N Bhat and A. Subrahmanvam "Electrical characterization of extremely thin (2.7 nm) Oxynitride and oxide of silicon growth by N₂O Plasma wet oxidation at low temperatures "A comparison japanese journal of Applied Physics Part 2, 39, L159-L162,2000

Proceedings of National Conferences:

1. Bhattacharya and K. Ravikiran, Plasma parthilation of Porous Silicon , Symposium on Semiconductor Materials and Devices Hyderabad, March 5to 7, 1999.
2. Vishwanath krishna Bhat. K.N. Bhat and A.Subrahmanvam "Effect of pre-oxidation surface preparation on the growth of ultrathin oxides of silicon. " *Semiconductor Science and Technology*, 14,8, 705-709, 1999
3. Vishwanath Krishna Bhat, M. Pattabiraman, K.N. Bhat and A. Subrahmanyam " The growth of ultrathin oxides of silicon by low temperature wet oxidation technique " *Materials Research Bulletin*, 34, 10-11, 1797-1803, 1999
4. V.K.Bhat, K.N.Bhat and A.Subrahmanyam " Electrical characterization of ultrathin oxides of silicon growth by N₂O plasma assisted oxidation." *Journal of Electronic Materials*, 29, 4, 399-404, 2000
5. V.K. Bhat, K.N. Bhat and A.Subrahmanyam " Electrical Characterisation of Extremely Thin (2.7nm) Oxynitride and Oxide of Silicon Growth by N₂O Plasma and Wet Oxidation at Low Temperatures " A comparison Japanese Journal of Applied Physics Part 2, 39, L159-L162, 2000
6. Ashok Jhunjunwala, S.Durgesh, "Interconnecting corPBX to Existing Wireless PBX, NCC'99, 31st Jan. 1-2 Feb.'99, IIT Kharagpur. 1-2 Feb.'99, IIT Kharagpur.
7. Ashok Jhunjunwala, "R&D Tasks for Indian Telecom Scientists", NCC'99, 31st Jan. 1-2 Feb.'99, IIT Kharagpur.
8. Ashok Jhunjunwala, "Access Technologies for Telecom Expansion in India", Seminar on Emerging Communication Technologies and the Society, INSA, 15-16 March'99, New Delhi (*Invited Talk*).
9. Ashok Jhunjunwala, S.Durgesh, Dr.Timothy A.Gonsalves, and Prakash B.Khawas, "Interconnecting corPBX to Existing Wired PBXs", NCC'99, 31st Jan.1- 2 Feb.'99, IIT Kharagpur (*Invited Talk*)
10. Ashok Jhunjunwala, "NTP'99 and Beyond", Workshop on Telecom Policy Initiatives; The Road Ahead 28-29, August, 1999, IIM, Ahmedabad (*Invited Talk*)

11. Ashok Jhunjunwala, "WLL-corDECT", Seminar on Subscriber Access Technology, BRBRAITT, 8-9 Sep., 1999, Jabalpur (*Invited Talk*)
12. Ashok Jhunjunwala, "Development of Network for Digital Information Resource Sharing", READIT'99, Indira Gandhi Centre for Atomic Research, 28th- 29th Oct.'99, Kalpakkam (*Invited Talk*)
13. Ashok Jhunjunwala, "Towards Hundred Million Telephones & Internet Connections for everyone", National Seminar by AICTE at Shunmuga Engg College, 30th Oct.99, Thanjavur.
14. Ashok Jhunjunwala, "Affordable Telecom Technologies from India", Seminar on Technologies from India, DST, 18th to 19th Nov.'99, New Delhi (*Invited Talk*)
15. Ashok Jhunjunwala, on "Future of Indian HIPC R&D", HIPC'99, 17th - 20th Dec., Calcutta
16. Bhaskar Ramamurthi, "Telecom Expansion in India : Low Cost access is the Key", Symposium on Advanced Technologies, Central Research Laboratory, 16-19th, Nov., 1999, Bangalore.
17. Bhaskar Ramamurthi and K.Rama Sudha Mohan, "A DSP-based DTMF Detector for Universal Application" National Conference on Communications (NCC-99), IIT, 29-31st January, 1999, Kharagpur.
18. Bhaskar Ramamurthi, R.Ravikumar and G.V.Rangaraj, "Internet Access on corDECT WLL", National Conference on Communications (NCC-99), IIT, 29-31st January, 1999, Kharagpur

Proceedings of International Conferences:

1. Venkatesh and S. Srinivasan, An efficient method of computing inverse DCT for pruned cosine transforms, ICASSP'99
2. Murthy, S. ramachandran and S. Srinivasan, Parallel complementation of @D-Discrete cosine transform using EPLDs, 12th Int. Conf. On VLSI design, Jan 1999.
3. Vishwanath Krishna Bhat, K.N.Bhat and A.Subrahamanyam Frequency dependence of accumulation capacitance of MOS structure with ultrathin oxide layer. Tenth International workshop on Physics of Semiconductor Devices, New Delhi Dec. 14-18, 1999.
4. K.N.Bhat, " Stable GaAs MIS Capacitors and MISFETS by the (NH4)2 S2 treatment and hydrogenation using PECVD silicon nitrate gate insulator ", presented in the International Conference on Emerging Microelectronics and Interconnection Technologies (EMIT 2000), Bangalore, Feb 21-24, 2000.
5. Porous silicon as a potentiometric biosensor, R. Ravi Kumar Reddy, A Chadha and E. Bhattacharya, Proc. X Intl. Workshop on Physics of Semiconductors, New Delhi, Dec, 1999
6. Measurement and optimization of Gummel-Poon model dc parameters of BJT, S.N. Begum, E. Bhattacharya and V. Vasudevan, Proc. X Intl. Workshop on Physics of Semiconductors, New Delhi, Dec, 1999
7. Effect of hydrogen dilution on a-Si:H TFTs, E. Bhattacharya and S. Sreeraman, Proc. X Intl. Workshop on Physics of Semiconductors, New Delhi, Dec, 1999

8. D.V.R. Murthy, S.Ramachandran and S.Srinivasan, Parallel Implementation of 2D-Discrete Cosine Transform using EPLDs, 12th International Conference on VLSI Design, Goa, Jan 1999
9. S.Ramachandran, S.Srinivaan and R.Chen, EPLD based architecture of real time 2D-Discrete Cosine transform and Quantization for Image Compression International Symposium on Circuits and Systems (ISCAS 99), Orlando, Florida, USA, May-June 1999.
10. T.G.Venkatesh and S.Srinivasan, A pruning based fast rate control algorithm for MPEG coding, 3rd International Conference on Computational Intelligence and Multimedia Applications, New Delhi, Aug. 99.
11. K.Gopalakrishna Prabhu, K.Mothiram Patil, S.Srinivasan, V.B. Narayanamurthy and R.Parivalavan, Early detection of neuropathy in diabetic feet by processing of pedobarographic images, International Conference on Medical Diagnostic Techniques and Procedures, Madras, Dec. 1999
12. Aravind and Harish N. Maller: "A simulation study of a discrete multitone modem", at NCC-2000.
13. A.DasGupta, S.Vaishnav, V.Pradeep Reddy & N.DasGupta, "A new unified analytical model for I-V characteristics of HEMTs", Proc 10th International Workshop on Physics of Semiconductor Devices, New Delhi, Dec. 1999, pp. 467-474.
14. K.Venkateswara Reddy and A.DasGupta, "An analytical model for conduction and valence band edge profiles of nonuniformly doped, bandgap graded and displaced heterojunctions", *ibid*, pp.641-644.
15. V.Naveen Kumar, K.V.S.R.Kishore, P.R.S.Rao, A.DasGupta and N.DasGupta, "A passivation study for low dark current InGaAs/InP PIN diode", *ibid*, pp.617-620.
16. S.Rajkumar, I.K.Tejaswi, K.V.S.R.Kishore, V.Naveen Kumar, A.DasGupta & N.DasGupta, "Bulk-micromachining of InP substrate for self-aligning single mode fibre with InGaAs/InP PIN detector", Proc. COPEN 2000, IIT Madras, pp. 315-320, Jan.2000.
17. R. Navin Kumar, S. Kareemulla, A.DasGupta, N.DasGupta, P.R.S.rao and K.N.Bhat, "Low temperature pressure assisted silicon bonding for micromechanical applications", *ibid*, pp.321-326.
18. Prof. P. Sankaran & Dr. V. Jagadeesh Kumar, Nagano magel '99 Conference - 20th - 22nd, October 1999, University of Shinsu, Nagano, Japan.
19. Ashok Jhunjunwala, "Affordable Fibre Access Network for Developing Countries, OFC'99 & IOOC, San Diego Convention Centre, 21-26th Feb., 1999, San Diego, California.
20. Dr.Ashok Jhunjunwala, "Looking Beyond NTP'99", International Conference on Equity Diversity and Information Technology (EDIT), IISc., 3rd - 4th Dec.'99, Bangalore
21. Ashok Jhunjunwala, "Indian R&D WILL & Internet Technologies", International Seminar - Pune IT.COM'99, on 27th October'99, Pune (*Invited Talk*)
22. R. Sarathi and A.V. Saradhi, IEEE Int. Conference on Electrical Insulation and dielectric phenomena, pp 619 - 622, USA.
23. Venkatesh and S. Srinivasan, An efficient method of computing inverse DCT for pruned cosine transforms, ICASSP '99.
24. Bhaskar Ramamurthi, Ashok Jhunjunwala and R. Sivan, "Relay Base Station for DECT Based Wireless in Local Loop to Serve Sparse Rural Areas", International Conference on Personal Wireless Communications (ICPWC'99), 17-19th February, 1999, Jaipur, India.

Distinguished Visitors to the Department:

Sl.No	Name of the Visitor and Designation	Date of visit
1.	Mr.Sanjeev Das Mahopatra, Texas Instruments, USA	April 7,1999
2.	Mr.Sam G.Pitroda, WorldTel, UK	April 13,1999
3.	Dr.Rajeev Sangal, IIIT Hyderabad	April 19,1999
4.	Mr.Ajay Sawhney, Special Officer, Addl. Sec. AP Govt.	April 20,1999
5.	Mr.Kewal Khanna, Hewlett Packard, Bangalore	April 21,1999
6.	Mr.Swami Krishnan, Tata Teleservices, Hyderabad	June 2,1999
7.	Mr.Rajagopalan, Chairman, MTNL, New Delhi	June 8,1999
8.	Mrs.Lakshmi G.Menon, CMD, HTL, Chennai	June 9,1999
9.	Mr.Rajeev Jain, President, Vindhya Telelink, Chennai	June 10,1999
10.	Mr.V.Parthasarathy, IT, AP Govt.	June 11,1999
11.	Mr.B.K.Jhawar, Usha Martin Group, Calcutta	June 12,1999
12.	Dr.Chaturvedi, Logic Plus, New Delhi	June 21,1999
13.	Dr.Raguvir Tomar, Nortel, Canada AUGUST	June 23,1999
14.	Prof.Kenneth Keniston, MIT, USA.	September 13 - 14
15.	Mr.Ray Stata, CEO, ADI, USA	September 24 - 25
16.	Mr.Prashant Jhawar, Usha Beltron, Calcutta	October 22
17.	Dr.Ashok Chandra, Dy. Wireless Advisor, New Delhi	November 20
18.	Dr.Keshav Nori, TCS, Bombay	November 26
19.	Prof. V. Blazek, Prof. H.J. Schmitt, Germany	December 8-18, 1999
20.	Sri. P.S. Saran telecom commision-New Delhi	Jan.7 th , 2000
21.	Sri. B. Choudri, Deputy wireless advisor to the govt. of india Dr. Ravindra, Cirrus Logic USA.	Feb.2000, 2000
22.	Shri N.K.Sinha, Member Telecom, visited for Commspere Conference	March 2, 2000
23.	Talk on Role of Fibre Access network for the Developin WorldOFC'2000 Conference, Baltimore, USA.	March 10, 2000
24.	Prof. Arokia Nathan, University of Waterloo	Dec. 1999
25.	Seminar By Dr. Sanjay Mittal, CTO, Selectia Inc., on Next Generation configuration tools for the web transaction	March 2000
26.	Prof. Javorka, St. Martins University, Zilina, Slovakia and Prof. Grebe, Compeignius Univ. France	March 22 nd . 2000
27.	Prof. V. Blazek, Prof. H.J. Schmitt, Germany	December 8-18, 1999

4.8 DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES

1 Introduction

The Department of Humanities and Social Sciences has existed from 1959, when the Institute was established. This was in tune with the recommendations of the Niranjan Sarkar Commission which designed the format of the IITs. In 1969, the Department introduced two Postgraduate Programmes (M.Tech) in Industrial Engineering and in Industrial Management. The Industrial Engineering Programme was merged with the Industrial Management Programme in 1981. The Department offers research programmes (Ph.D) in the various disciplines of Humanities and Social Sciences and in the major functional areas of Management. In addition, the Department offers a masters' level research programme (MS) in Management. The major areas of teaching and research of the Department are:

- Undergraduate courses in Humanities and Social Sciences
- M.Tech Programme in Industrial Management
- M.S. Programme in Production and Operations Management, Applied Decision Analysis, Materials Management, Systems Analysis and Modelling, Financial Management, Business Policy/Strategic Management, Marketing Management, Organisational Behaviour, Personnel Management and Industrial Relations, Technology Management, Science and Technology Policy Studies.
- Ph.D Programme in New Literatures in English, Linguistics, 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, Production and Operations Management, Technology Management and Science and Technology Policy Studies.

2 Academic Programmes:

2.1 New Courses Introduced:

Sl.No	Course No.	Title	Faculty
1	HS 621	International Finance	Dr L V L N Sarma Dr M Durgaprasada Rao Dr M Thenmozhi Dr R Madhumathi

2.2 Students on Roll:

Program	I Year	II Year	IIIYear	IV Year	V Year	Others	Total
M.Tech	26	24	-	-	-	-	50
M.S.	6	3	4	-	-	-	13
Ph.D.	4	2	4	1	8	-	19
Total	36	29	8	1	8	-	82

2.3 Number of Scholarship/Fellowship holders

Programme	Institute Scholarship	Others	Total
M.Tech	44	-	44
M.S.	8	-	8
Ph.D.	9	-	9
Total	61	6	67

2.4 Number of Degrees Awarded in the last Convocation:

Sl.No.	Programme	Total
1.	M.Tech	15
2.	M.S.	4
3.	Ph.D.	3
		22

3 Faculty and their Development

3.1 Faculty

Name and Qualifications

Major Area of Specialisation

Professors

R.N. Anantharaman, Ph.D (Bangalore)	Organisational and Consumer Behaviour, Human Resources Management Psycholinguistics
Shreesh Chaudhary, Ph.D (CIEFL Hyderabad)	Theoretical Linguistics, ELT & Need Based Courses in English
L.S.Ganesh, Ph.D (IIT Madras)	Technology Management, Project Management, Applied Systems Aanalysis and Decision Analysis
T.T.Narendran, Ph.D. (IIT Madras) (Head)	Operations Management, Decision Support Systems, Group Technology

R. Rajagopalan, Ph.D. (IIT Kanpur)

Science and Technology Policy,
Computer Applications,
Production Management,
Group Technology

L.V.L.N.Sarma, Ph.D (IISc)

Financial Management, Business
Policy & Corporate Strategies.

Associate Professors

Elizabeth Nainan Kurian, Ph.D (IIT Madras)

American Fiction

Evangeline Manickam, Ph.D (Madras)

American Literature, English, French

S. Jayachandran, Ph.D (IIT Madras)

Marketing Management

Malathy Duraisamy, Ph.D (Madras)

Applied Economics/Econometrics
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

B.Subramanian, Ph.D (Karnataka)

German and Philosophy

Assistant Professors

M.Durgaprasada Rao, M.B.A. (Andhra)

Management Accounting, General
Management

T.J.Kamalanabhan, Ph.D (Madras)

Industrial Psychology,
Organisational Behaviour

R Madhumathi, Ph.D (Madras)

Financial Management and Accounting

S. Mohan, M.A. (Madras)

English, Science Fiction,
Technical Report Writing

G. Srinivasan, Ph.D (IIT Madras)

Group Technology, Production
Management, Operations Research

M. Thenmozhi, Ph.D (Madras)

Financial Management, International Business

D. Veeraraghavan, Ph.D (IIT Madras)

Social and Economic History,
Labour Movements

DAAD Visiting Faculty

R.G. Koeckritz

German, Communication Strategies

Visiting Faculty

Dr.(Mrs.) Devaki Reddy

English

Dr. B.Krishnamurthy

English

(Mrs.) Zoya Abraham

German

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

s.n.	Co-ordinator	Title	Period
1	Dr.B.Subramanian	Goethe – Colloquium	Sept 26-30 1999
2	Dr.S.Jayachandran Dr.G.Srinivasan	SIMAP – Small Industries Management Program	June-Sept.1999
3	Dr.G.Srinivasan (jointly with Aspire Systems)	Workshop on Simulation	July 23-24, 1999
4	Dr.G.Srinivasan	Managing Operations in Small Industry	Feb 2-4, 2000
5	Dr.C.Rajendran Dr.C.S.Krishnamurthy	Regional Training Course on Simulation Models in Engineering Technology	25 Oct. – 5 th Nov. 1999
6	Dr.M.Thenmozhi	International Business: A Strategic Management Perspective	24-28 May 1999

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

S.No	Name of Faculty	Title	Institution	Period Duration
1	Dr.T.J.Kamalanabhan	Organisation Health	Univ. Manchester	June'99
2	Dr.G.Srinivasan	ISO 9000	CII	Oct.'99
3	Dr.M.Thehmozhi	FDP on International Business:	JCFAI, Hyderanba	May '99
		Workshop on Technology Enhanced learning WoTEL-99	Carnegie Mellon & IIT Chennai	May '99
4	Dr.C.Rajendran	International Conference of Production Research	Ireland Univ.	Aug.9- Aug 12- 1999
5	Dr.C.Rajendran	International Conference on Intelligent, Flexible , Autonomous Manufacturing Systems	Coimbatore	Jan 10 – Jan.12, 2000

3.4 Special Lectures delivered by the faculty in other Institutions:

S.No.	Name of Faculty	Topic of Lecture	Venue and Date
1	Dr.T.J.Kamalanabhan	HRM (Telekom Malaysia)	Ma;aysia July 5-6, 1999
2	Dr.T.J.Kamalanabhan	HRM (Siemens, Malaysia)	Oct.15-16, 1999
3	Dr.R.Madhumathi	Security Analysis and Portfolio Management.	S.V.University Tirupati 7-9 th Jan.2000
4	Dr.D.Malathy	Women, Work and Welfare	Meenakshi College For Women, Chennai Jan.25, 2000
5	Dr.B.Subramanian	Modernisation and Postmodernisation	School of Architecture Anna Univ., July 1999
6	Dr.B.Subramanian	Goethe & Herder	SSUS, Kalady, Dec. 1999
7	Dr.B.Subramanian	Rhetoric of Translation	-do-
8	Dr.G.Srinivasan	Operations Research Applications in Production Management	Meenakshi College March 2000
9	Dr.G.Srinivasan	Job Shop Scheduling	Thyagarajar College Madurai

3.5 Visits Abroad by Faculty:

S.No.	Name of Faculty	Country Visited	Date	Purpose of Visit
1	Dr.T.J.Kamalanabhan	Malaysia	Nov.'98 – Jan 2000	EOL
2	Dr.T.J.Kamalanabhan	U.K.(Manchester)	June 1999	To present a paper. In a conference
3	Dr.B.Subramanian	Thailand	October 1999	DAAD Regional Conference
4	Dr.G.Srinivasan	USA	26 March – 9 April 2000	To participate in the World Symposium on Cellular Manufacturing In San Juan, Puerto, Rico
5	Dr.C.Rajendran	Germany	June 20-Aug 19, 1999	Indo-German Project

3.6 Honours and Awards obtained:

S. N.	Name of Faculty	Name of Award	Awarded by	Awarded for	Date
1	Dr.T.J.Kamalanabhan		DAAD	1998	July 1998

3.7 Books/Monographs authored or co-authored

S.No.	Name(s) of Author(s)	Title of Text Book / Monograph	Publisher
1	Dr.G.Srinivasan Dr.T.T.Narendran	Matrix methods for clustering in Cell Formation	Wiley International

4. Design and Development Activities:

4.1 New facilities added or major equipment procured through project funds:

A Multimedia Language Laboratory, a gift from the DAAD is operational since April 2000 in the Department. It has a file server with six nodes besides other computer peripherals. German language learning software is intended to encourage self-study, particularly by our students leaving for Germany on the DAAD Sandwich Programme. We shall soon provide access to German language learning materials and documentation on Germany through our file server to the campus network.

5 Research and Consultancy:

5.1 Sponsored Research Projects:

S. N.	Title	Period	Funding Agency	Amount (in lakhs)	Coordinators
1	A Study on Personality Characteristics of Entrepreneurs	1994-95	IC&SR,IIT	Rs,50,000	Dr.T.J.Kamalanabhan
2	Child Schooling and Child Work in India	4Months	National Council Of Applied Eco. Research	0.8 lakhs	D. Malathy
3	Schooling of Disabled Group in Tamilnadu	9 months	State District District Primary Edn. Prog.	0.57 lacs	D.Malathy
4	Software for Synchronous Manufacturing	1998-2000	Indo-German BMBF Project		Dr.C.Rajendran Dr.G.Srinivasan

5.2 Industrial Consultancy

S. N.	Name of Faculty	Title	Industry	Amount (in Lakhs)
1	Dr.T.T.Narendran Dr.G.Srinivasan	Manpower Assessment for Production units	Brakes India Ltd. Madras	0.46

5.2 Journal Editorial Boards:

S. N.	Name of Faculty	Level	Journal
1	Dr.T.J.Kamalanabhan	Member in Editorial Board	Journal of Psychology
2	Dr.B.Subramanian	Editor	Yearbook, Goethe Society of India

5.6 Research Publications

a) No of papers published in:

Refereed National journals : 9
Refereed International journals : 11

b) No of papers presented in:

National Journals : 1
International Journals : 13

In Refereed National Journals:

1. R.N.Anantharaman and K. Venkateswara, "Life Change Events as Precedents to Industrial Accident" Journal of Psychological Researchers, Vol.43, No.2, pp.49-54. 1999.
2. R.N. Anantharaman and Md. Zalid Abdul Rashid, "Human Resource Management Practices" Journal of Management and Change, Vol.3, No.2, pp.191-197, 1999.
3. I.R.Nagaraja and T.J.Kamalanabhan, "Factors affecting Job Satisfaction, Journal of Psychological Researchers, Vol.43, No.1, pp.71-75, 1999
4. Malathy D, "Employment and Earnings of Men and Women in the Scientific and Technical Labour Market in India", Manpower Journal, Vol.XXXV, No.1, pp.13-26, 1999.

5. Malathy D and P. Duraisamy, "Women in the Professional and Technical Labour Market in India: Gender Discrimination in Education, Employment and Earnings", *Indian Journal of Labour Economics*, Vol.42, No.4, pp.599-612, 1999.
6. Malathy D, "Gender Differences in Human Capital Formation in India: The Educational Dimension", *Journal of Experiments in Education*, Vol.XXVII, No.1, pp. 9-15, 1999.
7. Malathy D, "Costs, Quality and Outcome of Primary Schooling in Rural Tamil Nadu: Does School Management Matter? , *Indian Educational Review*, Vol.35, No.3, pp.63-80, 1999.
8. M.Thenmozhi, "Shift in Working Capital Finances", *Business Mandate*, Vol.XXVII, No.7, p.12, Jan.2000.
9. M.Thenmozhi, "Forfeiting a vehicle for Financing Exports", *Business Mandate*, July 1999 p.8 and August 1999, p.9.

In Refereed International Journals:

1. I.N. Joseph, C. Rajendran, T.J. Kamalanabhan and R.N. Anantharaman, "Organisational Factors and Total Quality Management: An Empirical Study, *International Journal of Production Research*, Vol.37, No.6, pp. 1337-1352, 1999.
2. T.J. Kamalanabhan and J. Uma, "A Delphi Study of Motivational Profile of Scientists in R&D Organisations, *International Journal of Psychological Reports, USA*, Vol.85, pp. 743-749, 1999
3. N. Joseph, C. Rajendran and T.J. Kaamalanabhan. "An Instrument Measuring Total Quality Management Implementation in Manufacturing Based Business Units in India, *International Journal of Production Research*, Vol.37, No.10, pp.2201-2215, 1999
4. Thenmozhi, M, Market Value Added and Share Price Behaviour: An Empirical Study of BSE Sensex Companies, *Delhi Business Review – An International Journal of Society for Transformation and Research*, Vol.1, No.1, pp.83-92, Jan.2000.
5. Rajendran, C., "Formulations and Heuristics for Scheduling in a Kanban Flowshop to Minimize the Sum of Weighted Flowtime, Weighted Tardiness and Weighted Earliness of Containers". *International Journal of Production Research*, Vol. 37, No. 5, 1137-1158 (1999).
6. Rajendran, C, and Holthaus, O, "A Comparative Study of Dispatching Rules in Dynamic Flowshops and Jobshop", *European Journal of Operational Research*, Vol.116, 156-170 (1999).
7. Chakravarthy, K and Rajendran, C, "A Heuristic for Scheduling in a Flowshop with the Bicriteria of Makespan and Maximum Tardiness Minimization", *Production Planning and Control*, Vol.10, 707-714 (1999).
8. Oliver, O and Rajendran C, "Efficient Jobshop Dispatching Rules: Further Developments", *Production Planning and Control*, Vol.11, 171-178, 2000.

9. Jayamohan, M S and Rajendran, C, "New Dispatching Rules for Shop Scheduling: A Step Forward", *International Journal of Production Research*, Vol.38, 563-586 (2000)
10. S.V. Bhaskara Reddy, M.S. Shunmugam and T.T. Narendran, "Operation Sequencing in CAPPP Using Genetic Algorithms" *International Journal of Production Research*, Vol. 37, No.5, pp 1063-1074, 1999.
11. G. Jayakrishnan Nair and T.T. Narendran, "ACCORD: A Bicriterion Algorithm for Cell-formation Using Ordinal and Ratio Level Data", *International Journal of Production Research*, Vol.37, No.3, pp. 539-556, 1999.

In Proceedings of National Conferences:

1. Thenmozhi, M, "Electronic Commerce and Integrated Supply Chain Management", XXII Annual Convention 1999 – Supply Chain Management, Proceedings, Indian Institute of Materials Management, Nov.1999.

In Proceedings of International Conferences:

1. T.J. Kamalanabhan, "Organisational Health – A Comparative Study, Proceedings of Internatinal Conference on Human Resources and Development, University of Manchester, U.K., June 27-30, 1999.
2. T.J. Kamalanabhan, Dr. Ali Khatibi, "A Study on Information and System in Malaysia, Proceedings of Asia Pacific Symposium on Information and Telecommunication Technology, Mongolian Technical University, Mongolia August 30-31, 1999.
3. T.J. Kamalanabhan, Dr. Ali Khatabi, "A Study on E-Commerce Business for Telekom Malaysia, Proceedings of Asia Pacific Symposium on Information and Telecommunication Technology, Mangolian Technical University, Mongolia, Aug.30-31, 1999.
4. R.Madhumathi, "Information Quality for Investment Service, Delivering Service Quality, Managerial Challenges for the 21st Century, Ed. M.Raghavachari and K.V. Ramani, pp.457-463, 1999.
5. Sanjiv, E. S and Srinivasan, G, "Minimizing Completion Time Variance in Multimachine Scheduling Problems, IFAMS 2000 Conference at Coimbatore, Jan.2000
6. Viswanath Kumar and Srinivasan G, "Taboo Search Based Algorithms for Static Jobshop Scheduling, International Conference on Operation Research and Game theory, Madras, January 2000.
7. Srinivasan G, "An Improved Search Algorithm to Minimize Inter Cell Moves in Cellular Manufacturing, World Symposium on Cellular Manufacturing, Puerto Rico, March 2000.
8. Thenmozhi M, Private Sector Finance for Infrastructure Project: Issues and Challenges in the Indian context – with particular reference to transport sector, South Asia Management Forum 2000: Advantage to South Asia: Opportunities and Challenges for Management Development, March 23-25, 2000, Conference Proceedings pp.319-342.

9. Thenmozhi M and Shanthi R, "EDI Application in Financial Markets, Second International Conference on Business and Management, Ahmedabad, Jan 3-6, 2000, Conference Proceedings, pp.196-203.
10. Thenmozhi, M, "Chaos and Non-linear Dynamics: Application to Indian Stock Market", International Conference on Mathematical Modeling of Nonlinear Systems, December 9-11, 1999, Proceedings, Vol.I, pp.134-148.
11. Pugazhendhi, S., Rajendran, C., and Thiagarajan, S., "Relative Performance Evaluation of Permutation and Non-permutation Schedules in Flowline-based Manufacturing Systems". Proceedings of the 15th International Conference on Production Research, University of Limerick, Ireland, 341-344 (1999).
12. Kshirsagar, A.C., and Rajendran, C., "Determination of the Number of Containers and Kanbans, and Scheduling in Kanban Flowshops to obtain the Sequence of Containers with Maximum Part-type Mix". Proceedings of the 15th International Conference on Production Research, University of Limerick, Ireland, 499-502 (1999).
13. Jayamohan, M. S., and Rajendran, C., "An efficient dispatching rule to minimize aggregated costs in dynamic job shops: A simulation study". Proceedings of the International Conference on Intelligent Flexible Autonomous Manufacturing Systems, Tata McGraw-Hill Publishing Company Limited, New Delhi, 589-596 (2000).

6. Distinguished Visitors to the Department:

S.No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1	Dr.A.Ravindran, Chairman, Department of Industrial Engg. The Pennsylvania State Univ.		Guest lecture
2	Prof.Hans Fregler, Dean, Univ. of Passacs, Germany	December 1999	Seminar Talk and Research Collaboration
3	Dr.Nagen Nagarur, Associate Prof. Industrial and Systems Engg., Asia Institute of Technology Bangkok	January 4, 2000	Guest lecture
4	Mr. Ramjei Narasimhan, Head Business Growth Facilities Tata Consultancy Services	March 14, 2000	Guest lecture
5	Dr.Srinivasan Ramaswamy, Department of Computer Science Tennessee Technological Univ.	March 15, 2000	Seminar talk
6	N.Ravichandran, Vice President Lucas TVS	April 25, 1999	Guest Lecture
7	Mr. Prateep Philip, IPS, Principal Police Training College, K.K.Nagar	July 30, 1999	Guest lecture

Other Activities

1. A Team of faculty from Windesheim University, Netherlands visited the Department. A LoU was signed between the two Institutes
2. The Department organised a one-day seminar on "Technological and Social Change" on 6.12.1999 in connection with the 40th year celebrations of the Institute.
3. Paper titled "Building Ethics and Human Values in Corporate Finance Function" was given the best research paper award at the Conference of the Association of Indian Management Schools (AIMS) held in April 1999.
4. Under MoU with Hochschule Bremen the Department invited Prof. Dr.Hans G.Jansen and Dr. Ronald Monch, faculty members from Centre for International Management, Hochschule Bremen, University of Applied Sciences, Bremen, Germany to enable them to see in person our M.Tech (IM) students for their project placement in Bremen.

4.9 DEPARTMENT OF MATHEMATICS

1 Introduction:

The Department of Mathematics was established in 1959 along with the Institute. It offers Ph.D and M.Sc. programmes in Mathematics and M.Tech. programme in Industrial Mathematics and Scientific Computing [IMSC]. In addition, the Department has taken the responsibility of teaching Mathematics courses to B.Tech., M.Tech (other than IMSC). and Ph.D students of the Institute. The major areas of research of the department are:

1	Algebra and its applications	14	Inventory and Reliability
2	Applied Probability	15	Mathematical Logic & Applications
3	Approximation Theory	16	Mathematical Modelling
4	Computational Fluid Mechanics	17	Mathematical Physics
5	Continuum Mechanics	18	Nonlinear Analysis
6	Coding Theory	19	Numerical Analysis
7	Complex Analysis	20	Operations Research
8	Data Networks	21	Operator Theory
9	Differential Equations and Ill-Posed Problems	22	Queueing Theory
10	Fluid Mechanics	23	Statistical Quality Control
11	Functional Analysis	24	Stochastic Processes & their applications
12	Fuzzy Sets and Systems	25	Theoretical Computer Science
13	Graph Theory and Combinatorics	26	Data Networks

2. Academic Programmes :

2.1 New Courses introduced:

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

Sl.No.	Course No.	Title
M. TECH CORE COURSES		
1.	MA 571	Mathematical Modelling in Industry
2.	MA 572	Numerical Analysis of Differential Equations
3.	MA 573	Modelling Workshop I
4.	MA 574	Software Lab.
5.	MA 575	Applied Statistics
6.	MA 576	Discrete Mathematics
7.	MA 577	Modelling Workshop II
8.	MA 578	Simulation Lab.
M.TECH ELECTIVE COURSES		
9.	MA 586	Techniques of Applied Mathematics
10.	MA 587	Dynamical Systems
11.	MA 588	Wavelets and Applications
12.	MA 589	Numerical Linear Algebra
13.	MA 590	Applied Fuzzy Logic and Fuzzy Sets
14.	MA 591	Data Structures and Scientific Computing
B.TECH MINOR STREAM		
15.	MA 691	Computability
16.	MA 692	Science of Programming

2.2 New discipline introduced:

A new M.Tech. Programme in Industrial Mathematics and Scientific Computing (IMSC) with academic and financial assistance from the University of Kaiserslautern and DAAD respectively, was introduced from July 1999, with an intake of 10 (5 with HTTA and 5 without HTTA). The course was inaugurated by Prof R Natarajan, Director, IIT Madras on 19.7.1999. Prof M.S. Ananth, Dean, Academic Courses gave the introductory talk.

2.3 Students on Roll:

Programme	I Year	II Year	III Year	IV Year	V Year	Total
M.Tech	9		-	-	-	9
M.Sc	34	32	-	-	-	66
Ph.D.	7	5	4	4	5	25
Total	50	37	4	4	5	100

2.4 Number of Scholarship / Fellowship holders:

Programme	Institute Scholarship	Others	Total
M.Sc.	25	--	25
M.Tech.	5	--	5
Ph.D.	15	3	18
Total	45	3	48

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

Sl. No.	Name of the Student / Scholar	Name of the Conf./ Seminar / Symposia	Date and Venue
1.	P. Pramodh (M.Sc.)	87 th Indian Science Congress - 2000	3-7 January, 2000 University of Poona, Pune.
2.	Anitha V. (M.Sc.)		
3.	Kamala R. (M.Sc.)		
4.	Praseetha V.R. (M.Sc.)		
5.	Yasmin Sultana S. (M.Sc.)		
6.	Kalpana M , (II M.Sc.)	International Symposium on Maths and Mathematical Sciences Topic " Note on Parameterized Communicating L-Systems"	January 22-24, 2000 Calcutta Mathematical Society, Calcutta.
7.	Mr.N. Selvaraju (Ph.D. Research Scholar)	Workshop on Modelling Real Systems : A Hands-on First Encounter with Industrial Mathematics	September 27- October 22, 1999 Abdus Salam International Centre for Theoretical Physics, Trieste, Italy.
		International Conference on Operations Research and Game Theory.	January 3 - 7, 2000, I.I.T. Madras.

8.	Mr.R. Balasubramanian (Ph.D. Research Scholar)	Satellite Conference on Image Analysis in Materials and Life Sciences	November 7-10, 1999 IGCAR Kalpakkam, Tamil Nadu.
		International Conference on Mathematical Modelling of Nonlinear Systems	December 9-11, 1999 IIT Kharagpur
9.	Ms. C. Vani (Ph.D. Research Scholar)	Presented a paper entitled "Wavelets as a regularization technique for inverse problems" at the National Conference on Applications of Fourier and Wavelet Analysis in Engineering and Technology.	May 19-21, 1999 S.J.C.I.T., Chickballapur, Karnataka, India.
		Delivered two invited talks on "Wavelet Transforms and Applications" at Training course on Computational Fluid Dynamics Software FLUENTS 5.0 and GAMBIT	July 19-22, 1999 Fluent India Pvt. Ltd. , Pune, India
		Gave Invited lecture on "Applications of wavelets to certain partial differential equations" at International Instructional Workshop on Wavelets and Applications.	August 16-27, 1999 Delhi University, Delhi.
		Attended a workshop on "Functional Analysis: Current Directions".	December 20-24, 1999 I.I.T. Guwahati, India.
		Delivered a talk on "Multigrid and Wavelets" at International Workshop on Fluid Mechanics".	January 11-15, 2000 I.I.T. Madras, India.
10.	Mr. R. Ravindran (Ph.D. Research Scholar)	Attended a 4-day training course on Computational Fluid Dynamics Software FLUENTS 5.0 and GAMBIT	19.07.99 to 22.07.99 FLUENT INDIA Pvt. Ltd. Pune.
11.	Ms. B. Uma (Ph.D. Research Scholar)	Attended a 4-day training course on Computational Fluid Dynamics Software FLUENTS 5.0 and GAMBIT	19.07.99 to 22.07.99 FLUENT INDIA Pvt. Ltd. Pune.
12.	Ms. P. Vimala (Ph.D. Research Scholar)	Attended a 4-day training course on Computational Fluid Dynamics Software FLUENTS 5.0 and GAMBIT	19.07.99 to 22.07.99 FLUENT INDIA Pvt. Ltd. Pune.
13.	Dr. N.V. Kalpakam (Research Associate)	Second International Workshop on Planar Harmonic Mappings.	January 7-13, 2000 Technion - Israel Institute of Technology, Haifa, Israel.

2.6 Number of Degrees Awarded in the last Convocation:

Sl.No.	Programme	Number Awarded
1.	M.Sc	27
2.	Ph.D.	5

3 Faculty and their Development:

3.1 Details of Faculty:

Name and Qualifications	Major Area of Specialisation
Professors	
A. Avudainayagam, Ph.D (IIT Madras) [Head]	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 (Annamalai)	Applied probability and Stochastic Models, Mathematical Ecology, Operations Research, Statistical Inference, Communication networks
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)	Fixed Point Theory/Analysis
Associate Professors	
S.A. Choudum, Ph.D (IIT Madras)	Graph Theory, Combinatorics
S.G. Kamath, Ph.D (IIT Delhi)	Theoretical Physics, Elementary Particle Physics
A. Rangan, Ph.D. (IIT Madras)	Probability Theory, Stochastic Processes, Operations Research, Applications to Biological Sciences, Neural Method 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
S. Ponnusamy, Ph.D. (IIT Kanpur)	Complex Analysis, Function spaces, Special functions and Conformal Geometry
(Mrs.) R. Rama, Ph.D (Anna Univ)	Theoretical Computer Science, L-Systems, Formal Languages Automata Theory
Y.V.S.S. Sanyasiraju, Ph.D. (IIT Madras)	Computational Fluid Dynamics, Numerical Analysis

Satyajit Roy, Ph.D. (IISc. Bangalore)	Computational Fluid Dynamics, Boundary Layer Theory
(Mrs.) W.B. Vasantha, Ph.D (Madras)	Algebra, Coding Theory, Fuzzy Sets and Systems, Application of Algebra
V. Vetrivel, Ph.D. (IIT Madras)	Non-smooth Analysis, Optimization Theory, Fixed Point Theory

Senior Scientific Officer (Gr.I)	
K. Swaminathan, Ph.D (Agra)	Fluid Dynamics, Ship Hydro-Dynamics, Systems Simulations and Development of Software for Control Systems
CSIR Research Associates	
Dr.R. Esther Grace Dr. N.V. Kalpakam Dr Sushma N. Agarwal Dr. Yedidi Narasimha Murty	

Dr. P. Bhattacharyya, Professor of this Department was relieved on 10.06.99 A.N. consequent on his appointment as Vice-Chancellor, Tezpur University.

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

Sl. No.	Title	Date	Co-ordinator(s)
1.	Mathematics Training & Talent Search (MTTS) Programme	May 17, 1999 to June 12, 1999	Prof. S.H. Kulkarni & Dr. P. Veeramani

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

Sl. No.	Name of Faculty	Title	Institution	Period
1.	Dr.(Mrs.) R. Rama [with Dr.Arindama Singh and S. Sridevi]	"On Distributed K-Systems"	14 th Annual Conference of Ramanujan Society at Indian Institute of Science, Bangalore	7.06.99 to 9.06.99
	Dr.(Mrs.) R. Rama [with Dr.Arindama Singh]	"Second order Arithmetic for Distributed Finite Automata"	14 th R.M.S. Annual Conference, I.I.Sc. Bangalore	June 1999
2.	Dr. Arindama Singh	"On Computational Logic"	14 th Annual Conference of Ramanujan Society at Indian Institute of Science, Bangalore	7.06.99 to 9.06.99
	[with Dr.(Mrs.) R. Rama and S. Sridevi]	"On Distributed K-Systems"	14 th Annual Conference of Ramanujan Society at Indian Institute of Science, Bangalore	7.06.99 to 9.06.99
		Logic Colloquium	Calcutta University	24.06.99 to 30.06.99

3.	Dr. A. Rangan	Optimal Repair and Replacement of Deteriorating Systems	National Conference on Optimization Techniques at Ramanujan Institute of Math Sciences, Chennai	2.03.2000 to 4.03.2000
4.	Prof. P.R. Parthasarathy	On an Inverse Problem in Cauer Networks	The International Conference on Rational Approximation held at University of Antwerp, Belgium.	June 11, 1999
		Queueing Theory in Industry	International Conference on Operations Research and Game Theory at I.I.T Madras.	January 4, 2000
		Stochastic Analysis of Multimedia Synchronization	International Conference on Operations Research and Game Theory at I.I.T Madras.	January 6, 2000
5.	Dr. Y.V.S.S. Sanyasiraju	Modern methods in Numerical Linear Algebra	Department of Mathematics, University of Kaiserslautern, Germany	30.8.1999 to 5.09.1999
6.	Dr. Satyajit Roy	Two Dimensional Numerical Simulation of Boundary Layers	The National Seminar on Application of Mathematics in Social and Industrial Sectors in Next Millennium held at Birla Institute of Tech. Mesra, Ranchi	October 26-27, 1999
7.	Dr. K. Swaminathan	Analytical Formulations for Reconstruction of a line in 3-D space from two arbitrary perspective views	The Satellite Conference on Image Analysis in Materials and Life Sciences held at IGCAR, Kalpakkam, Tamil Nadu	November 7-10, 1999
8.	Dr. Y.V.S.S. Sanyasiraju	Mathematical modelling of real world problems	Department of Mathematics, University of Kaiserslautern, Germany	13.9.1999 to 19.9.1999
9.	Dr.(Mrs.) R. Rama [with Jayabharathi Saravanan]	"Note on parallel communicating OL Array systems"	IGCAR, Kalpakkam	November 1999
10.	Dr. P. Veeramani [with Prof. H. Raman-CE and Dr.K. Abranantham - CE]	Fuzzy dynamic Programming model for optimal irrigation scheduling	The International Conference on Mathematical Modelling of Nonlinear Systems held at IIT Kharagpur	December 9-11, 1999
11.	Dr.(Mrs.) R. Rama	Distributed PAC Automata	The National Conference on Discrete Mathematics and its Applications held at Manonmaniam Sundaranar University, Tirunelveli	January 5-7, 2000
12.	Dr. Satyajit Roy	--	International Symposium on Computations on Internal Flows organised by CFD Centre, IIT Madras	January 7-8, 2000
13.	Dr. S. Ponnusamy	--	International Conference on New Trends in Mathematics and Computing, Utkal University, Bhuvaneswar, Orissa.	March 11-12, 2000

3.4 Special Lectures delivered by the faculty in other Institutions:

Sl. No.	Name of Faculty	Topic of Lecture	Delivered at	Date
1.	Prof. U.N. Srivastava	Refresher Course in Mathematics	Bharathiar University	26.05.99 to 27.05.99
2.	Dr. M.Thamban Nair	Approximate solution of ill-posed Problems	University of Kaiserslautern, Germany	June 18 - 23 1999
3.	Dr. Arindama Singh	SAT and Hypergraphs [5 Lectures]	Calcutta University	24.06.99 to 30.06.99
4.	Prof. PR Parthasarathy	Transient Analysis of Real-Time Communications	University of Linz, Austria	1.06.99
		Stochastic Analysis of Multimedia Synchronization	University of Hagen, Germany	8.07.99
		Time-dependent Analysis of Multimedia Synchronization Problems	Ecole Polytechnique Federale de Lausanne, Switzerland	2.09.99
5.	Dr. M. Thamban Nair	On Morozov's method for Tikhonov regularizations	Technical University of Berlin.	July 6, 1999
6.	Dr. S.A. Choudum	Algorithmic Complexity	College of Science & Technology, Andhra University, Vizag	4.09.99
7.	Prof. P.R. Parthasarathy	Industrial Mathematics in Europe	Dept. of Mathematics, IIT Madras	16.09.99
8.	Prof. S.N. Majhi	Engineering Mathematics	Liquid Propulsion Systems Centre, Trivendrum	29.09.99 to 2.10.99
9.	Prof. PR Parthasarathy	Industrial Mathematics	Key-note address at the One-day Seminar on "Applications of Maths in Engineering", at Anna University at MIT Campus, Chennai.	30.09.99
10.	Dr. R. Rama	Contextual Array splicing systems	String Processing and Information retrieval (SPIRE '99), Mexico	September 1999
11.	Prof. S.N. Majhi	Modelling and Simulation in Engineering and Technology	International School sponsored by UNESCO at IIT Madras	October 26-27, 1999
12.	Dr. A. Rangan	Radiation Damage Repair and Survival of Cells - A Stochastic Study	International Conference on Stochastic Processes and their Applications at Cochin University of Science & Technology, Kochi.	December 17-20, 1999

13.	Prof. S.N. Majhi	Prof PL Bhatnagar Memorial Endowment Talk on "Blood – A Complex Fluid"	44 th Congress of Indian Society of Theoretical and Applied Mechanics, at REC, Warangal	December 22-25, 1999
		Mathematical Modelling of Blood Flow	87 th Meet of the Indian Science Congress Association at the University of Poona, Pune.	January, 3-7, 2000
14.	Prof. S. Kalpakam	Perishable Inventory Systems	The International Conference on Stochastic Processes and their Applications at Cochin University of Science & Technology, Kochi.	December 17-20, 1999
		Stochastic Inventory Systems: Operating Characteristics and optimization	Third International Conference on Operations Research and Game Theory with Economic and Industrial Applications (ICORGT-2000) at Chennai.	January 3-7, 2000
15.	Dr. S.A. Choudum	A Catalogue of Network Problems	National Conference on Discrete Maths and its Applications held at Manonmaniam Sundaranar University, Tirunelveli	January 5-7, 2000
16.	Prof. S.N. Majhi	Mathematical Modelling of Hemodynamics	International Workshop on Fluid Mechanics Organised by the Engineering Science Group of IIT Madras	January 13, 2000
17.	Prof. S.H. Kulkarni	Motivation to Functional Analysis	Gave 4 Lectures, at P.G. Centre, SIDHDHARTH Academy, Vijayawada.	January 21-22, 2000
18.	Dr.R. Rama	Note on parameterized communicating L-systems	International Symposium on Mathematics and Mathematical Sciences (ISMMS – 2000) Calcutta	January 2000
19.	Dr. V. Vetrivel	Optimality Conditions in Vector Optimization	University of Washington, Seattle	28.2.2000
20.	Dr. Satyajit Roy	Mass Transfer in Boundary Layer Flows	BIT, Mesra, Ranchi	February 8, 2000
21.	Dr. P.Veeramani	Real Analysis	Mathematics Training and Talent Search Programme (MTTS), at I.I.T. Madras	May-June 1999 (for Four weeks)
		Fuzzy Distance	Kandaswamy Kander's College, Velur, Namakkal. (UGC Seminar)	24.3.2000
22.	Dr.S. Ponnusamy	Role of Special functions in Function Spaces	Utkal University, Bhubaneswar, Orissa	March 12, 2000

3.5 Visits Abroad by Faculty:

Sl. No.	Name of Faculty	Country Visited	Date	Purpose of Visit
1.	Prof. P.R. Parthasarathy	Germany	15.05.99 to 16.07.99	To work with Prof. Stadje, University of Osnabrueck, on the Indo-German project entitled "Queueing Models of Computer Performance".
			27, 28, 29 June, 1999	To discuss with Prof.H.Neunzert, University of Kaiserslautern, about the newly started M.Tech. (IMSC) Programme.
			22.06.99	To collaborate with eminent scholars at University of Bielefeld.
		The Netherlands	July 12-15, 1999	To collaborate with eminent scholars at Twente University, The Netherlands.
		Switzerland	16.07.99 to 07.09.99	To work with Prof.S.Morgenthaler at Ecole Polytechnique Federale de Lausanne, Switzerland.
		Belgium	September 7-11, 1999	To attend International Conference on Rational Approximation.
2.	Dr. M. Thamban Nair	Germany	13.06.99 to 13.07.99	Professional Visit
3.	Prof. A. Avudainayagam	Denver, Colorado, U.S.A.	July 18-23, 1999	Presented a paper entitled, "Wavelets in the domain decomposition method for transient heat conduction equation", in SPIE's international symposium on 'Wavelet application in Signal and Image Processing VII'.
4.	Dr. Satyajit Roy	Germany	August 29-September 24, 1999	Attended Summer School on Modelling at University of Kaiserslautern under the partnership programme with DAAD.
5.	Dr. Y.V.S.S. Sanyasiraju	Germany	-do-	-do-
6.	Dr.V. Vetrivel	U.S.A.	December 15, 1999 - March 03, 2000	Visited University of Washington, Seattle, as Visiting Assistant Professor and worked with Professor R.T. Rockafellar on Optimization Theory.
7.	Dr.S. Ponnusamy	Finland	January 12-February 2, 2000	To give a talk in the Departmental Seminar at the University of Helsinki; to discuss with Prof.Matti Vuorinen and other faculty of the Dept. of Maths and to complete and communicate a paper.

		Member	1. American Mathematical Society 2. European Mathematical Society 3. Institute of Mathematical Statistics. 4. Bernoulli Society.
4.	Dr.(Mrs.) R. Rama	Member	European Association of Theoretical Computer Sciences
5.	Dr. Y.V.S.S. Sanyasiraju	Member	Aeronautical Society of India
6.	Dr.M. Thamban Nair	Life Member	1. Indian Mathematical Society (IMS). 2. Ramanujan Mathematical Society (RMS).
		Member	American Mathematical Society (AMS).
7.	Prof.P.V. Subrahmanyam	Editor	J. Analysis
8.	Dr. S. Ponnusamy	Member	Mathematics News Letter

5.3 Research Publications:

a) No of papers published in:

Refereed National Journals	1
Refereed International Journals	29

b) No of papers presented in:

National Conference	4
International Conference	6

In Refereed National Journals:

1. Kulkarni S.H. (with Thamban Nair M.), "A Characterization of Closed Range Operators" Indian Journal Pure Applied Math., Vol. 31 (4), (2000).

In Refereed International Journals:

1. Kamath S.G., Operator regularization, Scale and conformal anomalies for the Landau problem, Mod. Phys.Lett. Vol. A14, 1391-1396 (1999).
2. Satyajit Roy, "Non-Uniform slot injection (suction) into a compressible flow", Acta Mechanica, Vol.139, No.1, 43-56, (2000).
3. Choudum S.A. (with Kayathri K.), "An extension of Vizing's adjacency lemma", DISC. MATH, Vol. 206, 97-98 (1999).
4. Choudum S.A. (with Ponnusamy B.) "Ramsey numbers of transitive tournaments", DISC. MATH, Vol. 206, 119-129 (1999).
5. Choudum S.A. (with Kishore S.P.M.), "Graceful labellings of union of paths and cycles", DISC. MATH, Vol. 206, 105-117 (1999).
6. Choudum S.A. (with Priya N.) "Tenacity of Complete graph products", NETWORKS, Vol. 34, 192-196 (1999).

7. Veeramani P. (with Sadiq Basha S.), "Best Proximity Pair Theorems' for Multifunctions with Open Fibres", *J. Approximation Theory*, Vol. 103, 119-129 (2000).
8. Thamban Nair M., , "On Morozov's method for Tikhonov regularization as an optimal order yielding algorithm", *Z. Anal. Anwed.* Vol. 18, 37-46, (1999).
9. Parthasarathy P.R (with Lenin R.B.), "Exact busy period distribution of discrete queue with quadratic rates", *Intern. J. Computer Math.*, Vol. 71, 427-436, (1999).
10. Parthasarathy P.R (with Stadjje W.), "On the convergence to stationarity of the many-server Poisson queue", *J. Appl. Prob.*, Vol.36, 546-557, (1999).
11. Parthasarathy P.R (with Dharmaraja S., and Manimaran G.), "Transient solution of multiprocessor systems with state-dependent arrivals", *Intern. J. Computer Math.*, Vol. 73, 313-320, (1999).
12. Parthasarathy P.R (with Selvaraju N. and Manimaran G.), " A paired queueing system arising in multimedia synchronization", *Mathl. Comp. Modell.*, Vol.30, 133-140, (1999).
13. Parthasarathy P.R (with Dharmaraja S.), " Exact transient solutions of kinetics of first-order reactions with end-effects", *J. Math. Chem.*, Vol.25, 281-294, (1999).
14. Parthasarathy P.R (with Lenin R.B.), " On an inverse problem in birth and death processes", *Comp. Math. Appl.*, Vol. 38, 33-40, (1999).
15. Parthasarathy P.R (with Van Assche W. and Lenin R.B.), " Spectral representation of certain finite birth and death processes", *Math. Scientist*, Vol. 24, 105-112, (1999).
16. Parthasarathy P.R (with Lenin R.B. and Matis J.H.), " On the numerical solution of transient probabilities of a stochastic power law logistic model", *Nonlinear analysis*, Vol. 37, 677-688, (1999).
17. Rangan A., "Bivariate Optimal Repair Replacement policy for a deteriorating System", *OPSEARCH*, Vol.36, No.4, 325 - 334, (1999).
18. Avudainayagam A. (with Vani C.), "Wavelet Galerkin Solutions of Hyperbolic equations" *Communications in Numerical Methods in Engineering*, Vol.15, 589-601, (1999).
19. Avudainayagam A. (with Vani C.), "Wavelet Galerkin method of integro-differential equations" *Applied Numerical Mathematics*, Vol.32, 247-254, (1999).
20. Rama R. (with Krishna S.N.), "A variant of P-Systems with Active membranes; solving NP complete problems", *Romanian J. of Information Tech.*, (December, 1999).
21. Rama R. (with Kamala Krithivasan and Sakthibalan M.), "Array in Contextual Grammars", *Commemorative Volume of 75th Birthday of Prof. S. Marcus*, (January, 2000).
22. Rama R. (with Uma Raghavan), "Splicing Array Systems", *intern. J. of Comp. Math.*, Vol.73, 167-182, (1999).
23. Ponnusamy S. (with Kim Y.C.), "Sufficiency for Gaussian hypergeometric series to be uniformly convex", *International J. Math. & Math. Sciences*, Vol.22(4), 765-773, (1999).
24. Ponnusamy S. (with Ronning F.), "Geometric properties for Convolutions of hypergeometric functions with the derivative in a half plane", *Integral transforms and Special Functions*, Vol.8(1-2), 121-138, (1999).
25. Ponnusamy S. (with Ronning F.), "Integral transforms of functions with the derivative in a half-plane", *Israel J. of Mathematics*, Vol. 144, 177-188, (1999).
26. Kulkarni S.H. (with Limaye B.V.), " Boundaries and Choquet Sets for Real Subspaces of $C(X)$ ", *Mathematica Japonica*, Vol. 51 (3), 1-14, (2000).
27. Usha R. (with Prema K.), "Pulsatile Flow of Particle - Fluid Suspension with Body Acceleration", *ZAMP*, Vol.50, 1-18 (1999).
28. Usha R. (with Vimala P.), " Magnetohydrodynamic Squeeze Film Characteristics between parallel circular plates containing a single Central Air Bubble in an inertial Flow Regime", *ASME Transactions - Journal of Applied Mechanics*, Vol.66, 1021-1023 (1999).
29. Usha R. (with Vimala P.), " Inertia Effects in Circular squeeze film containing a central Air Bubble", *Fluid Dynamics Research*, Vol.26, 149-155 (1999).

In Proceedings of National Conference:

1. Arindama Singh, "Calculational Logic", Annual Conference of Ramanujan Mathematical Society, Bangalore, June 1999.
2. Arindama Singh (with Sridevi S. & Rama R.), "Distributed K-Systems" Annual Conference of RMS, Bangalore, June 1999
3. Arindama Singh, "SAT & Hypergraphs, in Logic Colloquium", Calcutta University, Calcutta, June 1999.
4. Rama R. (with Arindama Singh & Sridevi S.), "Distributed K-Systems" Annual Conference of RMS, Bangalore, June 1999.

In Proceedings of International Conference:

1. Veeramani P. (with Abranantham K. and Raman H.), "Fuzzy Dynamic Programming Model for optimal irrigation scheduling, Proc. Int. Conf. Mathematical Modelling of Nonlinear Systems, IIT Kharagpur, Vol. II, 78-85 (1999).
2. Parthasarathy P.R., "On an Inverse Problem in Cauer Networks", International Conference on Rational Approximation (ICRA), Antwerp, Belgium, 11.06.1999.
3. Parthasarathy P.R., "Stochastic Analysis of Multimedia Synchronization Problems", International Conference on Operation Research and Game Theory, IIT Madras, 06.01.2000.
4. Rangan A., "Optimal Inspection and Maintenance Policies for a deteriorating System Subject to General Repair", Proceedings of the International Conference on Stochastic Processes and Their Applications, 156-163, (1999).
5. Kalpakam S., "Stochastic Inventory Systems: A Perishable Inventory model", Proceedings of the International Conference on Stochastic Processes and their applications, Narosa, 246-253, (1999).
6. Kalpakam S. (with Shanthi S.), "Optimal Inventory Policies for a Perishable System with General leadtimes", Proceedings of the International Conference on Stochastic Processes and their applications, Narosa, 270-278, (1999).

6. Distinguished visitors to the Department:

Sl. No.	Name of the visitor and Designation	Date	Purpose of visit
1.	Dr. Jacques Lemorrdant Institut IMAG University de Grenoble France	08.04.1999	Special Seminar
2.	Prof. Krishnaswami Alladi University of Florida U.S.A.	22.07.1999	Special Seminar
3.	Dr. G.P. Youvaraj Emporia State University U.S.A.	18.08.1999	Special Seminar
4.	Prof. Sriraman Sridharan University of Perpignan France	19.08.1999	Special Seminar
5.	Prof. Samuel Segum Okoyo Dept. of Mathematics Obafemi Awolowo University Nigeria	23.09.99	Special Seminar

6.	Mr. A.V.L. Narasimha Rao Senior Manager HRD Larsen & Toubro Ltd., Chennai.	30.09.1999	Special Seminar
7.	Prof. Martin J. Beckmann Technical University of Munich, Germany And Brown University, U.S.A.	January 17- February 27, 2000	Series of lectures on "Operations Research"
8.	Prof. S.R.S. Varadhan Courant Institute of Mathematical Sciences New York University, New York U.S.A.	4.01.2000	Special Seminar
9.	Prof. Eugen Grycko University of Hagen Germany	10.01.2000	Special Seminar
10.	Prof. S. Swaminathan Dalhousie University Halifax, N.S. Canada	12.01.2000	Special Seminar
11.	Prof. Casten Poppinga University of Hagen Germany	13.01.2000	Special Seminar
12.	Mr. A.K. Kaul Manager (Engg.) Living Media (India Today) Chennai	20.01.2000	Special Seminar
13.	Prof J. Van Der Jaugt University of Ghent Belgium	28.01.2000	Special Seminar
14.	Mr. T.J. Harikrishnan Senior Engineer Lucas - TVS, Chennai	12.02.2000	Special Seminar
15.	Prof. Heinz W. Engl Chair for Industrial Mathematics Johannes - Kepler University Linz - Austria	February 21-25, 2000	Course of lectures on Inverse Problems
16.	Prof. M. Kannan Dept. of Chemical Engineering IIT Bombay, Mumbai	24.02.2000	Special Seminar
17.	Mr. Kishore Padmanabhan Vice-President, Tata Consultancy Services, Chennai - 600 058.	2.03.2000	Special Seminar
18.	Prof. Sriraman Sridharan University of Perpignan France	9.03.2000	Special Seminar
19.	Dr. Parameswaran Sankaran Chennai Mathematical Institute Chennai - 600 017.	30.03.2000	Special Seminar

7. Other Activities:

a) Weekly Seminar :

Under the auspices of Mathematics Department, a seminar talk is 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.Y.V.S.S. Sanyasiraju.

b) PROGRAMME FOR GIFTED YOUTH

The faculty of the Department participated in the 3-week Programme for Gifted Youth arranged jointly by the Bharatiya Vidya Bhavan and IIT Madras during April 26-May 15, 1999. Twentyfive students selected from the Bharatiya Vidya Bhavan schools from all over the country were given intensive training in Mathematics and Computer Science involving lecture, tutorials and laboratory classes and individual projects.

c) MATHEMATICS TRAINING AND TALENT SEARCH (M.T. & T.S.) PROGRAMME 1999

The Programme has been going on since 1993, every summer at different places. The Programme is funded by the National Board of Higher Mathematics (NBHM). It was held in the Department of Mathematics, IIT Madras in 1997, 1998 and 1999. It will be held in 2000 also.

The aims of the programme are:

1. To teach mathematics in an interactive way rather than the usual passive presentation.
2. To promote independent thinking in mathematics.
3. To provide an opportunity for the talented students to interact with the experts in the field.

In 1999 the Programme was held during May 7- June 13 with Prof.S. Kumeresan, Department of Mathematics, University of Mumbai, as the Director and Prof. S.H. Kulkarni, and Dr. P. Veeramani, Associate Professor, Department of Mathematics, IIT Madras as the Local Organizers of the Programme. 35 candidates participated in the programme.

Resource persons included Dr. Ramakrishnan from Mehta Research Institute, Allahabad; Dr. Vijay from Institute of Mathematical Sciences, Chennai; Dr. K.C. Sivakumar and Dr. R. Radha from Anna University, Chennai apart from Prof. S.H. Kulkarni and Dr. P. Veeramani of our Department. The Programme was highly appreciated by the participants.

d) INSA VISITING FELLOWSHIP 1999-2000

Under the INSA Visiting Fellowship 1999-2000 Award, Dr. Manju Rani Agarwal of the Institute of Advanced Study in Science and Technology, Guwahati, was in the Department as a Visiting Fellow from 22.06.1999, the duration of the Fellowship being two months.

e) VISITING FACULTY

Dr. Iskander Nezhmetdinov, Faculty of Mechanics and Mathematics, Kazan State University, Russia joined the Department of mathematics in October 1999 on a six month Fellowship, under the Visiting Professors Scheme of the National Board for Higher Mathematics, Government of India.

f) M.Tech. (IMSC) INDUSTRIAL SEMINAR

- (i) As part of the M.Tech. (Industrial Mathematics and Scientific Computing) curriculum, Mr. N.R. Patnaik, General Manager, Pronet Systems Private Ltd., Chennai gave an Industrial Seminar on 23rd September, 1999. He explained the production line and areas for scope of improvement of his system. The M.Tech. (IMSC) students visited the factory on 25th September 1999 and identified areas for mathematical modelling.
- (ii) Mr. Rolland J. Enoch, Banyan Networks, Chennai, gave an Industrial Seminar on the 4th of November, 1999. The theme of the seminar was to describe the features and traffic characteristics of "Internet Telephony" with reference to the Internet architecture. The Seminar also dealt with the problems faced by the implementation of Internet Telephony such as loss of packet, long delay, variation in delay, etc. and finally concluded with a suggestion as to how these problems could be minimized.

g) M. TECH. (IMSC) STUDENTS INDUSTRIAL TOUR

Industrial tour is an important component of the M.Tech. (IMSC) programme. The students were taken on an industrial tour to GEM Spinners India Ltd., near Sriperumbudur.

The students had an opportunity to observe the function of the production line of the factory and understand the problems encountered by the industry amenable for mathematical analysis.

h) RAMANUJAN DAY

The department organised a "One Day Symposium on Mathematical Methods and Applications" on 22nd December, 1999, the day of the 111th birth anniversary of Sri Srinivasa Ramanujan, the great Indian Mathematician. The day's events were inaugurated by Prof. P.V. Arunachalam, Vice-Chancellor, Dravidian University, Kuppam, Andhra Pradesh. This was followed by two invited key note addresses in the forenoon. In the afternoon, parallel paper presentation sessions on Pure Mathematics, Applied Mathematics and Stochastic Processes

were held. Prof. K. Srinivasa Rao, Institute of Mathematical Sciences, Chennai, presided over the valedictory function.

j) IMSC CLUB

To focus on the academic activities with respect to the newly started M.Tech. Programme on "Industrial Mathematics and Scientific Computing" from July 1999 semester, an Industrial Mathematics & Scientific Computing Club has been formed. Prof. M.S. Ananth, Dean Academic Courses, inaugurated this Club on 21.01.2000 and gave a talk on the main theme of this Club.

j) TECHNOLOGY APPRECIATION PROGRAMME

Under the Industrial Associateship Scheme of the Institute, the Centre for Industrial Consultancy and Sponsored Research has been organising the Technology Appreciation Programme to highlight the state-of-the-art of Technology on emerging areas. Under the auspices of the Department of Mathematics, a Technology Appreciation Programme on "**Simulation and Computing for Industrial Applications**" with the objective to provide the state-of-the-art simulation and computing techniques relevant to industry was organised on Thursday the 24th February, 2000 between 9.00 a.m. and 5.00 p.m. in the IC & SR Building, with Prof. P.R. Parthasarathy, Department of Mathematics, I.I.T. Madras, Chennai as the Co-ordinator.

More than 50 industries participated in this programme. The resource persons in this programme were from the Institute, Indian Statistical Institute and from Industries like Larsen and Tubro Ltd., Larsen and Tubro Machines, ONGC and Sundaram Fasteners. Prof. Heinz W. Engl, Chair for Industrial Mathematics, Johannes Kepler University, Linz, Austria presented an invited talk in this Programme.

k) CO-SPONSORING OF INTERNATIONAL CONFERENCE

This Department, with the Indian Statistical Institute, New Delhi, co-sponsored an International Conference on "Operations Research and Game Theory with Economic and Industrial Applications" [ICORGT-2000] held in I.I.T.(M), Chennai during January 3-7, 2000.

l) FORAYS – 2000

Forays 2000, an intercollegiate mathematics festival was held on 19th and 20th of February, 2000. The function was inaugurated by the Director Prof.R. Natarajan and a Souvenir was released.

Apart from various events such as Crossword, Dumb Charades, Quiz, Olympiad and Seminar Presentation for students, there were two invited talks, one by Dr. K. Srinivas from Institute of Mathematical Sciences on "Golden Theory of Gauss" and other by Dr. S. Kumaresan from University of Mumbai on "Curvatures". Also, there was a Panel Discussion on "Teaching and Learning of mathematics". Professor S.N. Venkatarangan (Retired Professor, Dept. of Mathematics from IIT Madras), Professor K. Parthasarathy (Ramanujan Institute), Professor S. Kumaresan (University of Mumbai) and Professor Ranganathan (Vivekananda College) were the panelists.

The Co-ordinator of Forays 2000 was Dr. M. Thamban Nair.

4.10 DEPARTMENT OF MECHANICAL ENGINEERING

1. Introduction:

The Department of Mechanical Engineering established in the year 1959. The department offers Ph.D., M.S., Mtech 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 & Combustion.

The Design Stream consists of the Machine Design Section.

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
1.	ME 323	Internal Combustion Engines
2.	ME	Energy & Environment
3.	ME 418	Automobile Engineering

2.2 Students on Roll

Programme	I Year	II Year	III Year	IV Year	V Year	Others	Total
B.Tech.	112	98	95	88	-	-	393
M.Tech.	104	86	-	-	-	-	190
M.S.	17	15	35	-	-	-	67
Ph.D.	23	8	9	4	29	-	73
Total	256	207	139	92	29	-	723

2.3 Number of Scholarship/Fellowship holders

Programme	Institute Scholarship	Others	Total
B.Tech.	16	-	16
M.Tech.	105	-	105
M.S.	27	-	27
Ph.D.	24	-	24
Total	172	-	172

2.4 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 and Venue
1.	S. Anil Lal	Ph. D. (QIP)	26 th FMFP Conference	15-17 Dec. 1999.
2.	S. Anil Lal	Ph. D. (QIP)	Fluent Inc. Training	19-23 July, 1999.
3.	A.V.Sita Rama Raju	Ph.D.	International Conference on Small Engines - their Fuels and The Environment (SEFE '99)	April 22-24, 1999 Universiti Teknologi, Malaysia
4.	K.A. Subramanian	Ph.D.	XVI National Conference on I.C. Engines & Combustion	Jan. 20-22, 2000 Jadavpur University, Calcutta
5.	M. Senthilkumar	Ph.D.	XVI National Conference on I.C. Engines & Combustion	Jan. 20-22, 2000 Jadavpur University, Calcutta
6.	T.Nageswara Rao and Subramanya S Katte	Ph.D. Ph.D.	15th National Heat and Mass Transfer Conference, 2000	11-14, January 2000 IAT, Pune
7.	Sri S.Saravanan	M.S.	Conf. COPEN-2000	Jan.12-13, IITM
8.	Sri Senthil Vinayagam	M.Tech	Conf. COPEN-2000	Jan.12-13 IITM
9.	Sri N.Vijay Anand	B.Tech	Conf. COPEN-2000	Jan.12-13 IITM
10.	Sri H.P.Raju	Ph.D	Conf. COPEN-2000	Jan.12-13 IITM
11.	Sri S.Pugazhenth	Ph.D	Conf. COPEN-2000	Jan.12-13 IITM
12.	Sri S.Madhavan	M.S.	Conf. COPEN-2000	Jan.12-13 IITM
13.	Sri Manoj & Sri S.Somasekar	B.Tech Ph.D (Proj.)	Conf. COPEN-2000	Jan.12-13 IITM

2.5 Number of Degrees Awarded In the last convocation:

Sl.NO.	Programme	Total
1.	B.Tech.	85
2.	M.Tech.	91
3.	M.S.	11
4.	Ph.D.	17
Total		204

3 Faculty and their Development

3.1 Faculty

Professors:

Ajit Kumar Kolar, Ph.D (IIT Madras)

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

Bhaskaran, K.A., Ph.D.(IIT Madras)

Ganesan, V., PhD (IIT Madras)

Gopinath, K., PhD(IIT Madras)

Krishnaiah Chetty, O.V.,Ph.D(IIT Madras)

Krishnamoorthy, R., Ph.D(IIT Madras)

Kumaraswamy, S., Ph.D(IIT Madras)

Madhusudana Rao. M., PhD(IIT Madras)

Nagarajan. T., Ph.D(IIT Madras)

Natarajan, R., PhD(Waterloo)

(Director, IIT Madras)

Philip, P.K., PhD(IIT Madras)

Pramod S Mehta, PhD(Loguhborough,UK)

Premananda Shet. U.S.,PhD(IIT Madras)

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

Raman.R., Ph.D(IIT Madras)

Shunmugam.M.S., Ph.D(IIT Madras)

Singaperumal, M.,PhD(IIT Madras)

Siva Prasad, N., PhD(IIT Madras)

Sriramulu, V., PhD(IIT Madras)(Head)

Srinivasa, Y.G., Ph.D(IIT Madras)

Srinivasa Rao, P., PhD(IIT Madras)

Area of Specialisation

Fluidized bed combustion

Hydroturbomachines

Combustion and Propulsion

I.C Engines

Machine Design, Tribology and Powder

Metallurgy

Conventional and Unconventional machining,

FMS, CIM, Scheduling Petrinets

Metal cutting, Grinding, Unconventional

Machining Ceramics

Hydroturbomachines

Mechanical Handling, Materials Handling

Robotics, Pneumatics, Medical Instruments

Heterogeneous Combustion, Energy Conservation

Rocket and Ramjet Combustion, Thermo-

dynamics, Analysis of Energy systems

Material removal processes, CAD/CAM, Fluid

Power, Tool Design

I.C.Engines

Combustion and Propulsion, Computational Fluid

Metrology, Automation, Grinding, .CIM

Precision Engineering, Mechanical Measurement

Metrology, BTA, Gear Machining, Grinding, EDM,

Statistical Quality Assurance, Automation,

Computer Aided Manufacturing Systems &

Control

Fluid power, Electro-hydraulic servo-systems,

Low-cost automation, Modelling & Simulation.

Mechatron

CAD, FEM, Machine Design, Computer Graphics

Combustion and Propulsion

Instrumentation & Control, Active noise control,

Active suspensions

I.C Engines

Srinivasa Murthy. S., Ph.D(IIT Madras)

Sundararajan, T.,PhD(Pensylvania)

Venkatesh, A., Ph.D.(IIT Madras)

Venkatesan,S.P., PhD,(IISc)

Vijay R Ragavan, PhD(IIT Madras)

Associate Professors:

Govardhan, M.,PhD(IIT Madras)

KrishnaKumar,R., Ph.D(IIT Madras)

Krishnamurthy, S.,PhD(IIT Madras)

Mani, A., Ph.D(IIT Madras)

Muthuveerappan,G.,(IIT Madras)

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

Prasad. B.V.S.S.S., PhD(IIT Kharagpur)

Raju Sethuraman. R., PhD(IIT Bombay)

Ramamoorthy, B., PhD(IIT Madras)

RameshBabu. N., Ph.D(IIT Madras)

Vijayaragavan,L., Ph.D.(IIT Madras)

Assistant Professors:

Babu, V. Ph.D.(Ohio)

Balaji, C. Ph.D.(IIT Madras)

Gnanamoothy, R., PhD(IIT Madras)

Gopalan, K.N., PhD(IIT Madras)

Mayuram, M.M.,PhD(IIT Madras)

Prakash M Maiya, Ph.D

Ramalingaeswara Rao, D.V. M.Tech(IIT Madras)

Refrigeration & Airconditioning, Thermal Energy conservation, Heat and Mass Transfer, Food Processing, Solar Energy Utilisation

Dynamics & Heat Transfer

Solar Energy Utilization

Heat Transfer

Heat exchangers and Cooling towers, Heat Recovery and conservation

Thermal turbomachines

Non-linear and linear finite elements, CAD, Fracture Mechanics

Machine Design, Tribology

Refrigeration & Air conditioning

Machine design, Vibrations

Precision Engg, Manufacturing methods in the Field by Precision Engg Metrology

Turbo Machines, Fluid Mechanics, Heat Transfer

Machine Design, Fracture Mechanics

Metrology, CAI/sensors/Mfg. Eng./ Quality control

CNC, CAM, LBM, Grinding, PLC Applications

Metal Cutting, CAD, Grinding, Condition

Monitoring & Surface technology

Combustion and Propulsion

Heat Transfer - Computational Heat Transfer

Natural Convection, Radiation, Cooling of

Electronic Equipment, Energy Systems Design

Machine design , Materials Technology

Analysis, Simulation & Dynamics

Machine Design & Surface Engg.

Refrigeration & Air conditoning

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

Venkatarathnam, G.,Ph.D(IIT Kharagpur)

Cryogenic Engineering

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

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.V.Ganesan Organising Secretary	International Symposium on Challenges and New Directors in Computation of Internal Flows	Jan. 7-8, 2000
2	Prof.R.Krishnamurthy	Five days AICTE short term course on Quality Assured Manufacturing.	20 th to 24 th December 1999.
3	Dr.S.P.Venkateshan	National Heat & Mass Transfer Conference	Jan. 12-15, 2000.
4	Dr.A.Manj	Refrigeration and Airconditioning	Dec.6-10, 98
5	PEI Lab.	First National Conference on Precision Engg.	12-13 Jan. 2000

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

S.N.	Name of Faculty	Title	Institution	Period/Duration
1	Dr. M. Govardhan	DLR-NAL Workshop	National Aerospace Laboratories	January 2000
2	Dr. B.V.S.S.S. Prasad	26 th FMFP Conference	IIT Kharagpur	15-17 Dec. 1999
3	Dr. B.V.S.S.S. Prasad	15 th National & 4 th ISHMT ASME Heat & Mass Transfer Conference	IAT Pune	12-15 Jan. 2000
4	Dr. V. Ganesan	International Symposium on Challenges and New Directions in Computation of Internal Flows	IIT Madras Chennai	Jan.7 -8, 2000
5	Dr. Pramod S Mehta	XVI National Conference on I.C. Engines & Combustion	Jadavpur University, Calcutta	Jan. 20-22, 2000
6	Dr. V.Ganesan	National Seminar cum Workshop on Hydrogen Energy	Banaras Hindu University, Varanasi	Mar. 25, 2000
7	Dr.M.M.Mayuram	Intl.Conf.on Industrial Tribology	TSI and BHEL	Dec.1-4,1999
8	Dr.N.Siva Prasad	SAMPE Conf. California, USA		23.5. - 21.6.99
9	Dr S P Venkateshan	15th National Heat & Mass Transfer Conference, 2000	IAT, Pune	12-15, January 2000
10	Dr S.K.Das	15th National Heat & Mass Transfer Conference, 2000	IAT, Pune	12-15, January 2000

11	Dr A.K. Kolar	15th National Heat & Mass Transfer Conference, 2000	IAT, Pune	12-15, January 2000
12	Dr C Balaji	15th National Heat & Mass Transfer Conference, 2000	IAT, Pune	12-15, January 2000
13	M.P.Maiya	Twentieth International Congress of Refrigeration	Sydney	September 19 - 24, 1999
14	Dr.G.Venkata-rathnam	13th National Heat and Mass Transfer Conference	Institute of Armament Technology, Pune	January 10-14, 2000
15	Dr.G.Venkata-rathnam	18th International Cryogenic Engineering Conference	IIT Mumbai	Feb.21-25, 2000
16	Dr.A.Mani	ACREX 1999, Chennai	Chennai	Jan. 10-14, 1999
17	Prof.Y.G.Srinivasa	National Symposia Conf.	BHU, Varnasi	Dec.1999
18	Prof.Y.G.Srinivasa	COPEN-2000	IIT Madras	Jan.2000
19	Prof. R.Raman	COPEN-2000	IIT Madras	Jan.2000
20	Prof.T.Nagarajan	COPEN-2000	IIT Madras	Jan.2000
21	Prof.M.Singaperumal	COPEN-2000	IIT Madras	Jan.2000
22	Dr.K.Narayanasamy	COPEN-2000	IIT Madras	Jan.2000
23	Mr.D.V.R.L. Rao	COPEN-2000	IIT Madras	Jan.2000

3.4 Special Lectures Delivered by the faculty in others Institutions:

S.No.	Name of Faculty	Topic of Lecture	Venue and Date
1	Dr. A. Ramesh	ISTE	PES College Mandhya, Sep. 24, 1999
2	Prof. V. Ganesan	IC Engines & Air Pollution	National Institute of Technology & Science, HCE Campus, Padar, Chennai Dec. 13, 1999
3	Prof. V. Ganesan	Air Pollution for Engines - Its Origin and Control	Hindustan College of Engineering, Padar, Chennai, Dec. 17, 2000
4	Prof. V. Ganesan	Engine Management System, Design & Alternative Fuels	International SAE 2000 India Mobility Conference, New Delhi Jan. 13-15, 2000
5	Prof. V. Ganesan	Step by step approach in the Simulation of SI Engine Processes	Banaras Hindu University Varanasi, March 25, 2000
6	Dr.N.Sivaprasad	Finite Element Analysis in Mechanisms	IISc, Bangalore
7	Dr.B.Ramamoorthy	Invited Lectures-Computer Aided Inspection and Machine Vision	KCE, Coimbatore Aug. 1999
8	Dr.B.Ramamoorthy	-do-	Thiagaraja College of Engg, Madurai. Nov. 1999
9	Dr.B.Ramamoorthy	-do-	Indian Society for NDT Nov.1999
10	O.V.Krishnaiah Chetty	Expert lecture on Petrinets	RVR&JC Engg.College, Guntur
11	O.V.Krishnaiah Chetty	Research on applications of Petrinets	Univ. of Texas, USA - August 1999
12	O.V.Krishnaiah Chetty	Quality and reliability of non-traditional manuf. Processes	ISTE Winter School, Jan.2000
13	Dr.S.K.Das	1. On a New Analogy 2. Numerical simulation in complex geometry	Hamburg (Germany), May 1999 Karlsruhe (Germany), June 1999
14	Dr.A.K.Kolar	Energy	MSSRF, October 1999
15	Dr C Balaji	Heat Transfer	VSSC, Trivandrum, Sept., 1999
16	Dr S P Venkateshan	Heat Transfer	VSSC, Trivandrum, Sept. 1999
17	Dr U S P Shet	Staging Effects on Near Burner Temperature Field in a High Intensity Swirl Burner	Berich Verbrennung Technic Engler Bunte Institute, University of Karlsruhe, Germany 30.6.1999
18	Dr.A.Mani	Solar Cooling Technology	ACCRES 99, Chennai
19	Dr A Mani	New Working Fluids	MIT, Chennai
20	Prof.M.Singaperumal	One day workshop on 'Micro Air Vehicle' sponsored by ARDB at MIT Chennai.	28.8.99 Guest Lecture 'Flapping wing MAV' MIT- Madras
21	Prof.Y.G.Srinivasa	Active Suspension on on Tracking Vehicle	CVRD- Jan. 2000
22	Prof.R.Raman	Instrumentation	Fishery Dept. Dec.1999

23	Mr.D.V.R.L. Rao	Instruments	Thiruvalluvar College Of Engg.Vandavas
24	Prof.T.Nagarajan Prof.M.Singaperumal Dr.K.Narayanasamy Mr.D.V.R.L. Rao	Mechatronic Symposia	Vellore
25	Prof.M.Singaperumal	AICTE-ISTE Short term Training programme on 'Mechatronics' at MIT, Chennai.	4 to 18 July 1999 Guest Lecture on 9.7.99 on 'Mechatronics System Design'
26	Prof.M.Singaperumal Prof. T.Nagarajan Mr. D.V.R.L. Rao	Training programme for 'Merchant Navy Electro-Technical officers' of Academy of Maritime Education & Training, Chennai. (AMET)	Jan.-April 1999 And Sept. -Dec. 1999 Lectures and laboratory session
27	Prof.M.Singaperumal	ISTE Short term Training Programme on 'Robotics for Industrial Applications' Malnd College of Engineering, Hasan.	15-27 March 1999 Guest lecture on 'Robot Modeling & Control'
28	Prof.M.Singaperumal Prof.Y.G.Srinivasa Dr.K.Narayanasamy	AICTE short term course On ~Quality Assured Manufacturing ~at IITM	20.12.99 to 24.12.99 Guest Lecture on 23.12.99 on ~Mechtronics
29	Prof.M.Singaperumal	Seminar on 'Technology Vision for the future' organised by Inst. Of Engr.Tamilnadu Centre	24 th April 1999 Guest Speaker

3.5 Visits Abroad by Faculty:

S.No.	Name of Faculty	Country visited	Date	Purpose of Visit
1	Dr. M. Govardhan	Shenzhen, China	4.12.1999 to 11.12.1999	To attend 8 th Asian Congress on Fluid Mechanics & present paper
2	Prof.Pramod S Mehta	Sweden (Chalmers University of Technology, Cothenberg)	May 14 to June 10, 1999	Project Work
3	Dr N Siva Prasad	USA	23.5 to 21.6.99	SAMPE Conf. And visit to other universities
4	O.V.Krishnaiah Chetty	USA	Aug. 99	10 th American Waterjet Conference, USA
5	O.V.Krishnaiah Chetty	Germany	June 99	DST-DAAD project based performance Exchange Program 1999
6	N.Ramesh Babu	Germany	June 99	DST-DAAD project on Water jet cutting
7	M.S.Shunmugam	USA	Sep.99	International Conference
8	B.Ramamoorthy	Japan	June 99	15 th IMEKO Conference at Osaka
9	Dr S K Das	Germany	May-July 1999	Research project
10	Dr.A K Kolar	Sweden	May- July 1999	Research Project
11	Prof. K.A. Bhaskaraan	Britian	18.7.99 to 23.7.99	To present a paper at the 22nd International Symposium on Shock Waves at Imperial College
12	Prof. K.A. Bhaskaran	Germany	24.7.99 to 1.8.99	To visit Universities at Stuttgart and Duisburg. Delivered a Lecture on Kinetic Modelling at DLR, Stuttgart
13	Dr M P Maiya	Sydney, Australia	Sept. 19-24, 1999	Attending Conference
14	Dr M P Maiya	Singapore	Sept. 26-28, 1999	Discussions at National University of Singapore
15	Prof. U.S.P. Shet	Germany	10.6.99 to 5.7.99	Indo-German Project No. UNI-011/1998 Development of a High Intensity Low NOx Swirl Burner
16	Dr.A.Mani	Germany	June-July 1999	DAAD Short Visit
17	Dr.G.Venkatathnam	University of Karlsruhe, Germany	June-July 1999	DAAD-DST Project
18	Dr Y G Srinivasa	Germany	Nov. 1999	IITM, BMBF Project on active suspension

3.6 Honours and Awards obtained:

S.No.	Name of Faculty	Name of Awarded by	Awarded for	Date
1	Dr M Govardhan	Prof.Venkatrayulu Endowment Prize, IIT Madras	Best Individual M.Tech. Thesis by R.M.Wankhade	1999
2	O.V.Krishnaiah Chetty	Hari Ohm Ashram Prerit Bhaikaka Smarat Trust	Technical Paper	Jan.2000
3	P.K.Philip	National Conference on Intelligent Man.System, Coimbatore	Best paper award	1998
4	B.Ramamoorthy	Best paper award	Precision Engg. AIMTDR, IIT Kharagpur	Dec. 1998
5	Dr S Srinivasamurthy	Indian National Academy of Engineering	Fellow	1999
6	Dr.S.Srinivasamurthy	Commission E2 (Heat Pumps & Energy recovery) of International Institute of Refrigeration	Member	Jan 2000 to Dec. 2003

3.7 Books/Monographs authored or co-authored

S.No.	Name(s) of Author(s)	Title of Text Book / Monograph	Publisher
1	Prof V Ganesan	Gas Turbines	Tata Mc-Graw-Hill Publishing Company, Ltd., New Delhi
2	Prof P Kumar IIT Kanpur	Elements of Fracture Mechanics (Contributed a full length chapter on "Mized mode crack initiation and growth" for the book by Dr.Raju Sethuraman, MDS, ME)	Wheeler Publisher (1999)
3	Dr.S.K.Das	Engineering Heat and Mass Transfer	Dhanpat Rai and Sons
4	Dr K Narayanasamy Prof.Y.G.Srinivasa	Proceedings of I National Conf. COPEN 2000	Narosa, 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 Admission
Prof.V.Ganesan	Indian National Academy of Engineering	Elected as Indian National Fellow	1999
Dr M M Mayuram	Tribology Society of India	Life Member	1999

4.0 Design and Development Activities

A governing system for Biogas diesel dual fuel operation was developed (as a part of a technology development mission project) with M/s. Eicher Tractors Limited.

A two stroke engine design with improved performance was developed (as a part of a technology development mission project) with M/s. LML Limited.

A LPG operated two stroke engine was developed for M/s. TVS Suzuki Ltd.

Development of Mechanical Handling Laboratory activities

Nut cracker type rolling contact fatigue test rig
Reciprocating wear test rig
Gear test rig
A rolling contact fatigue test facility for studying sintered material is designed and fabricated.
Electro-Rheological shock absorbers
Magneto-Rheological Shock absorbers
Half-car load vehicle model-for active suspension - First of its kind in India

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

Jet pump has been developed

Load cell of 50 kN capacity

Software for engine cylinder pressure measurement and analysis using a data acquisition system was developed.

Laboratory Scale Sector model of LMFBR for gas entrainment studies.

Dr Govardhan has developed a software for the Performance Estimation of Cross Flow Fans.

Dr.P.K.Philip - Design and Development of a Portable Metal Disintegrator for Extraction of broken tools based on EDM principle - 1999

Silicon carbide Pressure sensor - Developed through DAAD - students Exchange programme at University of Berlin

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

45 kW pump-motor with 50000 lit. Capacity sump through BRNS project funds.

Developed Cross Flow Fan Set up.

A Chemiluminiscent formeasuring the concentration of No_x in engine exhaust has been procured.

Under water Mining

Accelerometers

IBM PC, Softwares for signal processing and wave-let transform

Hydraulic actuator with 50T capacity has been purchased

Hydraulic Training units - M/s Yuken- Planning, procuring, Installation at Central Workshop - through the PEI lab.

4.3 Details of patents held in the Department with the data of filing:

Patents filed: One patent for jet pump for Under water mining

Dr V Radhakrishnan - A cutting tool insert with a built-in provision for detecting flank wear of a pre determined value

5. Research and Consultancy:

5.1 Sponsored Research Projects :

S.No.	Title	Period	Funding Agency	Amount (in lakhs)	Co-ordinators
1	Modelling of Iso-Thermal and Reacting Flows in After Burners	1998-2001	ARDB	9,085	Dr.V. Ganesan Dr. T. Sundararajan
2	Numerical Prediction of Flow and Combustion in Gas Turbine Combustion system	1997-1999	ARDB	4.83	Dr. V. Ganesan Dr. R. Natarajan
3	Design modification to improve the performance of a two stroke two wheeler SI engine	1996-1999	TDM	7.00	Dr. A. Ramesh Dr. B. Nagalingam Dr. K.V. Gopalakrishnan
4	Development of Engine Systems for Rural Applications using Renewable Gaseous Fuels	1996-1999	TDM	9.00	Dr. A. Ramesh Dr. B. Nagalingam Dr. K.V. Gopalakrishnan
5	Development of Lean Burn CNG SI Engine for Automotive Generator Applications	1995-1999	AICTE	6.00	Dr. B. Nagalingam
6	Investigation of Flow-Combustion Interaction in the Combustion Chamber of Low Emission DI Diesel Engine	1997-2000	DST	6.20	Dr.Pramod S Mehta Dr.B.Nagalingam
7	Design and Development of High Speed reciprocating machine for evaluating piston ring materials	3 □ years	MHRD	6.00	Dr.K.Gopinath Dr.R.Gnanamoorthy
8	Development of underwater ship repair technology	3 years	NRB	22.00	Dr.K.Gopinath Dr.R.Gnanamoorthy
9	Under Water Mining using Jet Pump		NIOT	50.00	Dr.M.Madhusudana Rao Dr.S.Krishnamurthy
10	New sintered bearings - Performance improvements	3 □ years	NIOT	6.00	Dr.R.Gnanamoorthy Dr.K.Gopinath
11	Computer Aided Instruction on Engg. Drawing	3/99 - 3/2000	MHRD	11.00	Dr.N.Siva Prasad Dr.C.R.Muthukrishnan
12	Design of Hybrid Pressure Vessel		ISRO	0.06	Dr.M.M.Mayuram
13	Finishing of ceramic coatings – A Multi parameter monitoring (MPM) approach to performance indexing	2 years	DST	9.00	M.M.Mayuram
14	Quality Improvement of Water Jet Cutting	5/1999 5/2000	DST-DAAD	4.13	N.Ramesh Babu O.V.Krishnaiah Chetty
15	Offline Programming and Simulation for multiple mobile crane lifts	1/2/99 12/1/99	DST	9.57	N.Ramesh Babu Koshy Varghese & Satyanarayana K.N.
16	A study on Centreless grinding using variable stiffness control wheel	8/98 – 8/2000	DST	14.12	N.Ramesh Babu V.Radhakrishnan
17	Petrinets for Project Management	1998-2000	DST	4.86	O.V.Krishnaiah Chetty N.Ramesh Babu

18	Development of Propulsion Integrated System software for launch vehicles	3 years	ISRO	7.763	Dr.K.A.Bhaskaran Dr.T.Sundararajan Dr.S.Kumaraswamy Dr.M.Govardhan
19	Computer Aided Instructional Modules on Turbomachines	1998-2000	AICTE	1.77	Dr.N.Sitaram Dr.M.Govardhan
20	Tip Clearance Flows and Loss Reduction in Turbine Nozzle and Rotor Cascades (Project is approved)	3 years	DST	6.83	Dr.M.Govardhan Dr.BHL Gowda
21	Energy Efficient Cross Flow Fans (Sanctioned)	2 years	MHRD	16.90	Dr.M.Govardhan Dr.N.Sitaram
22	Numerical and Experimental Investigations of local blockages in LMFBR Fuel Sub assembly	1999-2000	BRNS, DAE	24.79	Dr.BVSSS Prasad Dr.BHL Gowda
23	Thermal hydraulic investigations of thermal stripping in the hot and cold pools of LMFBR	Oct. 1999 - April 2001	IGCAR, Kalpakkam	6.12	Dr S K Das Dr C Balaji and Dr T Sundararajan
24	Computer Aided Instructional Module for Conduction and Radiation	Sept. 1998 - Sept. 2000	CCE, IIT Madras	0.96	Prof S P Venkateshan & Dr C Balaji
25	Development of a General purpose computer program for estimation of radiant heat flux in a solid rocket motor	Aug. 99 - Aug. 2000	ISRO	8.14	Prof.S.P Venkateshan Dr. C Balaji
26	Heat Recovery Systems: Heat Pump Assisted Agricultural Dryer (1999)	1999	Planning Commission - MHRD TDM		Dr.S.Srinivasamurthy
27	Vapour Absorption Heat Pump - Chiller (1999)	1999	do --		Dr.S.Srinivasamurthy
28	Vapour Compression Heat Pump - Chiller (1999)	1999	do --		Dr.S.Srinivasamurthy
29	Environmentally Friendly Alternatives to CFCs for Compression Heat Pump Applications (ongoing)		MHRD & DLR Bonn (Indo-German Cooperation)		Dr.S.Srinivasamurthy
30	Studies on Stratification of Cryogenic Liquid Propellents (ongoing)		ISRO		Dr.S.Srinivasamurthy
31	Study of Transient Thermal Response of a Cryogenic Rocket Turbo-Pump Assembly (ongoing)		ISRO		Dr.S.Srinivasamurthy
32	Development of low weight cryogenic refrigerator for on-board cooling of infra-red detectors and other electronics (ongoing)		Naval Research Bureau		Dr.S.Srinivasamurthy
33	Dynamic Modelling of Combustion Process in Liquid Rocket Engines	1999-2001	ISRO	6.61	Prof. K.A. Bhaskaran Prof. T. Sundararajan Prof. S.P. Venkatesan
34	Thermal Hydraulic Investigations of Thermal Striping in the Hot and Cold Pools of LMFBR	1999-2001	IGCAR Kalpakkam	6.12	Prof. T. Sundararajan Dr. S.K. Das Dr. C. Balaji
35	Heat Recovery Systems: Heat pump assisted Agricultural Dryer	1996-1999	Planning commission - MHRD	80.00	Dr S Srinivasamurthy Dr A R Balakrishnan
36	Vapour Absorption Heat Pump - Chiller	1996-1999		120.00	Dr S Srinivasamurthy Dr A R Balakrishnan Dr Sreenivas Jayanthi
37	Vapour Compression Heat pump - Chiller	1997-1999		100.00	Dr S Srinivasa Murthy Dr A R Balakrishnan
38	Studies on Stratification of Cryogenic Propellants	1999-01	ISRO	7.27	Dr.G.Venkatarathnam Prof.S.Srinivasamurthy Dr.BVSSS Prasad
39	Study of Transient Thermal response of a Cryogenic Rocket Turbopump assembly	1999-01	ISRO	7.92	Prof.S.Srinivasamurthy Dr.G.Venkatarathnam Dr.BVSSS Prasad

40	Mixed Refrigerant cycles	1999-01	DAAD-DST	3.20	Dr.G.Venkatathnam
41	Development of low weight cryogenic refrigerator for on board cooling of infrared and other electronics	1999-02	NRB	16.94	Dr.G.Venkatathnam Dr.S.Srinivasamurthy
42	Design and development of solar assisted evaporation system for treatment of tannery effluents	1998-00	UNIPD	6.31	Dr.A.Mani Dr.A.Venkatesh Dr.T.K.Ramanujam
43	Design and Development of Active suspension for vehicles	1999-2000	DST	9.47	Dr Y G Srinivasa Dr K Narayanasamy

5.2 Industrial Consultancy

S.No.	Name of Faculty	Title	Industry	Amount (in lakhs)
1	Dr. B.V.S.S.S. Prasad Prof. S. P. Venkateshan Prof. A. K. Kolar.	Conductivity Type Heat Flux Probes	BHEL, Trichy	3.50
2	Dr. B V S S S Prasad	Performance Improvement of Air Blower	Greaves Ltd., Chennai.	0.18
3	Dr. M. Govardhan	Calibration of Kurz Velocity Meters and Micromanometer	BHEL, Ranipet.	0.30
4	Dr. N. Sitaram	Calibration of Pitot Tube	ABB Ltd., Chennai.	0.05
5	Prof.Pramod S Mehta and Dr.A.Ramesh	Testing of Small Spark Ignition Engine	M/S Southern Agro Engines P. Ltd., Madras	1.50
6	Dr.M.M.Madhusudana Rao	Expert advise in material handling for various equipments	BHEL/Eipro/ HBB etc.	2.00
7	Dr.N.Siva Prasad	Evaluation of Pressure Vessel	Servall Engg. Works, Karamadai, CBE Dt.	0.20
8	Dr.N.Siva Prasad & Dr.M.Shunmugam	Design of Boring Machine	-do-	0.40
9	Dr.N.Siva Prasad & Dr.R.Gnanamoorthy	Design of Hybrid Pressure Vessels	ISRO	3.91
10	Dr.M.M.Mayuram	Testing and Characterization of brake pads	Asian wind turbine Ltd.	0.06
11	L.Vijayaraghavan	Checking of gear parameters of reduction gear with shaft	Wellwin Industry Ltd	0.025
12	L.Vijayaraghavan V.Radhakrishnan	Measurement of bearings	Durga Enterprises	0.025
13	L.Vijayaraghavan V.Radhakrishnan	Checking of profile dimension of valve and shaft balls	Machinery India Ltd.	0.025
14	N.Ramesh Babu O.V.K.Chetty	Abrasive Water Jet Machining of Granite Plates	Gem Granites, Chennai	0.050
15	N.Ramesh Babu V.Radhakrishnan	Calibration of DRO with laser interferometer	Aideos Electronics (P) Ltd	0.050
16	N.Ramesh Babu V.Radhakrishnan O.V.K.Chetty	Design, Development and CNC machining of press tools for manufacture of Bellows	Fluidyne Engineers (P) Ltd, Chennai	30.00
17	O.V.Krishnaiah Chetty V.Radhakrishnan N.Ramesh Babu	CNC Machining of Precision Dies	Fluidine	30.00
18	Dr S K Das	Thermal design of a spiral heat exchanger	Lonestar Industries Chennai - 1	0.010
19	Dr Vijay R Raghavan	Iron Carbide	ISPAT Industries	0.025
20	Dr Vijay R Raghavan	Flow Measurement	BDWT	0.024
21	Dr Vijay R Raghavan	Various	Various	0.030
22	Dr.S.Srinivasamurthy	Thermal Analysis of Liquid Fuel Pumps for Rocket Engine (1998)	LPSC; Indian Space Research Organisation; Trivandrum	
23	Dr.S.Srinivasamurthy	Design and Testing of Grilles for Air Inlet-Outlets (1998)	Air-Breeze HVAC Systems India P.Ltd. Chennai	

24	Dr.S.Srinivasamurthy	Design and Development of Roof Mounted Aircon-ditioning Systems for Railway Coaches (1998)	Srinivas Industries; Chennai	
25	Dr.S.Srinivasamurthy Dr.M.P.Maiya	Evaluation of Vapour Absorption Systems (1999)	Tamil Nadu Newsprint and Papers Ltd. Kagithapuram	
26	Dr.S.Srinivasamurthy	Portable Insulated Refrigerated Boxes for Poultry (1999)	Godrej Agrovet Ltd., Bangalore	
27	Dr.S.Srinivasamurthy	Compartmentalisation of Fruit and Vegetable Cold Store Unit II (1999)	Tamil Nadu Co-operative Marketing Federation Ltd.	
28	Dr.S.Srinivasamurthy	Concentration of Effluents for Environmental Protection (Ongoing)	Coca-Cola India Ltd.	
29	Dr.S.Srinivasamurthy	Performance evaluation of a thermal hydraulic engine (Ongoing)	Deluge Inc, Arizona, USA	
30	Dr M P Maiya Dr S Srinivasamurthy	Enhanced Effluent Evaporation for Chennai Expansion	Coca Cola India Ltd.	0.80
31	Dr G Venkatarathnam Prof S Srinivasamurthy	Portable Insulated Refrigerated Boxes for Poultry	Godrej Agrovet Ltd., Bangalore	0.40
32	Dr.G.Venkatarathnam	Testing of Refrigerant Valves	Autocom Industries, Chennai	0.40
33	Dr.A.Mani	Selection of Refrigeration system	IOCL	0.050
34	Dr.A.Mani	Analysis, Design and development of 2 TR LiBr evaporative cooler	NITL, Vizag	1.15
35	Dr.A.Mani	Development of Cryootempering chamber	Fluid Therm, Chennai	
36	Dr.G.Venkatarathnam	Testing of Neoprene Rubber used in Refrigerant valves	Autocom Industries, Chennai	0.10
37	Prof.T.Nagarajan Sri P.V.Manivannan	Testing of Elastometer	Bridge & Roof (I) Ltd., Chennai	0.08
38	Prof.Y.G.Srinivas & Sri P.V.Manivannan	Soft ware Evolution	PACE Automation	0.30
39	Prof.Y.G.Srinivasa Sri P.V.Manivannan	Testing of Load Cell		0.10

5.3 RBIC (Research Basad Industrial Consultancy)

S.No.	Name of the Investigator/ Co-investigator	Title	Number	Amount (in lakhs)
1	Dr. B V S S S Prasad	Analysis of Secondary Air System for Kaveri Engine	GTRE, Bangalore	5.00
2	Dr. B.V.S.S.S. Prasad Prof. A. K. Kolar	CFD Analysis of Steam and Gas Flow Paths in the Superheater of Heat Recovery Steam Generator	BHEL, Trichy	4.60
3	Prof.V.Ganesan and Dr. A.Ramesh	Modifications to run the TVS Scooter on LPG	TVS Suzuki Hosur	.5.50
4	Prof. Pramod S Mehta	Development of a Model for Combustion, Soot and NOx from a Direct Injection Diesel Locomotive Engine using Oxygen Enriched Air (1996-1999)	Argonne National Lab., USA	US\$ 15,000
5	Dr.M.M.Madhusudana Rao	Technical Advisor	McCread Software Company	
6	Dr.K.Gopinath	Failure analysis of agitator blades	Parry & Co. , Fertilizer Division	.0.62

7	Dr.K.Gopinath	Wear studies on ring rollers	M/s.Lakshmi Ring Travellers, CBE	0.60
8	Dr.K.Gopinath	Failure analysis of epicyclic gear box in sugar crushing mill	Dharani Sugars	.0.70
9	Dr.N.Ramesh Babu	Feasibility studies on Cutting of Non-Metals	V.Radhakrishnan O.V.K.Chetty	2.50
10	V.Radhakrishnan	Improvement in Coir Ratt		0.50
11	Dr K A Bhaskaran Dr T Sundararajan Dr BVSSS Prasad	Modelling of Propellant Management Systems	ISRO	2.78
12	Dr S Srinivasamurthy Dr M P Maiya Dr G Venkatarathnam	Thermal Hydraulic Engine	Deluge Inc.	10.00
13	Prof M Singaperumal	Design consultancy	DRDL	5 .00
14	Prof M Singaperumal Mr DVRL Rao Dr R Krishnakumar	Jet Pipe servo valve	GTRE	20.00
15	Prof M Singaperumal Prof T Nagarajan	Hydraulic power pack simulation	RCI	5 .00
16	Prof Y G Srinivasa and Dr. D K Sharma	Development of digital film recorder	Shabari Foto Products, Ltd. Chennai	10 .00

5.4 Retainer Consultancy (only ongoing)

S.No.	Name of Faculty	Title	Industry	Amount (Lakhs)
1	Dr N Siva Prasad	Development of CAD/CAM software	Technische Software India Ltd.,	0.48
2	Dr.Ramesh Babu	Consultancy on Mfr. Of Bellow	Fluidyne Engrs. (P) Ltd.	6.00
3	Dr.L.Vijayaraghavan Prof.R.Krishnamurthy	Studies on Grinding	Carborundum Universal	2.00
4	Dr.L.Vijayaraghavan Prof.C.S.Krishnamurthy Dr.R.Krishnakumar	Centre for Advanced FEA	Consortium of Industries	27.00
5	V.Radhakrishnan	---	GMT	0.45
6	O.V.Krishnaiah Chetty	Feasibility studies on cutting of non-metals	250	
7	O.V.Krishnaiah Chetty	Development of sheet metal bellows	6	
8	Dr Vijay R Raghavan	Retainer consultancy	Fluidthterm Tech.	0.18
9	Dr Vijay R Raghavan	-do-	NIOT	0.18

5.5 Exchange programme with other Universities:

DAAD - students

Mr.Jacob Franklin (M.S student) -
Mss.R.Raji (M.S. student)

May 1999 - 2000
May 1999 - 2000

5.6 Journal Editorial Boards:

(Editors, Secretary, Treasurer, Membership etc.)

S.No.	Name of the Faculty	Level	Journal
1	Dr N Sitaram	Paper Reviewer	Proc. Inst. Of Mech. Engineers, Part A: J. Power and Energy, Part C: J. Mech. Engg. Sci.
2	Dr O V Krishnaiah Chetty	Member, Editorial Board	Journal of Engg. University of West Indies
3	Dr S K Das	International	International Journal of Heat Exchangers

5.7 Publications:

a) No of papers published in:

Refereed National Journals : 10
 Refereed International Journals : 50

b) No of Papers presented in:

National Conference : 45
 International Conference : 50

In Refereed National Journals:

1. Dr.R.Sethuraman - Fatigue crackgrowth of semi elliptical surface cracks in curved geometrics, Jl. of Structural Engg., V 26. No.1, p.81-86, 1999.
2. N. Sitaram, M. Govardhan and V. T. Murali Krishna, "Loss Reduction by means of Three dimensional Roughness Elements on the Suction Surface of a Linear Cascade", Journal of Aeronautical Society of India, Vol. 52, No. 1, Feb. 2000.
3. Mallikarjuna, J.M. & Ganesan, V.
 The Performance Characteristics of extended expansion four stroke spark-ignition engine numerical prediction and experimental comparison
 National Journal of Institution of Engineers, Vol. 79, 1999, pp 128-133.
4. Raghu, M. & Pramod S Mehta
 Influence of Intake Port Design on Diesel Engine Air Motion Characteristics
 National Journal of Engineering and Material Science, Vol.6, April 1999, pp 53-58.
5. Sita Rama Raju, A.V., Ramesh, A. and Nagalingam, B.
 Experimental Investigations on a Lean Burn Natural Gas SI Engine at Different Compression Ratios, Journal of Institution of Engineers India, 1999.
6. N.Ramesh Babu, A and Ramesh Babu,N. – A two stage genetic approach for nesting of two dimensional irregular parts in an irregular sheet – Journal of Institution of Engineers (India), V.88, pp 21-26, 1999.
7. V.Sajeev, L.Vijayaraghavan, URK Rao, Experimental Investigation into the Parametric Relationships in Internal Broaching, Jl. Of the Inst. Of Engineers (India), V.79, Nov. 1998, pp 68-70.

8. K.J.L.Iyer and L.Vijayaraghavan, Some studies on the fluidised bed boronising of low carbon steel, J. of Tool and Alloy Steels, V.32, No.11, 1998.
9. L.Vijayaraghavan & K.J.L.Iyer, The structure of Boronised steels, J. of Tool and Alloy Steels, V.32, No.12, 1998.
10. P.K.Philip and M.Sreeprakash, "Design, Development and Performance Evaluation of A portable metal disintegrator for extraction of broken tools, J. of Inst. Of Engrs. (India), Vol.81 (2000).

In Referred International Journals:

1. M.Karumbunathan, S.Prasanna and G.Muthuveerappan (2000) Three dimensional mesh generation using the principles of finite element technique Advances in Engineering Software , Vol.31, issue 1, pp.25-34 - 2000
2. Dr.R.Sethuraman - Computational Simulation of fatigue crack growth and demonstration of LBB criterion. Int.Jr. Pressure Vessel and Piping - V76, No.5, pp 331 -338, 1999.
3. S.L.Ajit Prasad, M.M.Mayuram and R.Krishnamurthy - Response of plasma sprayed Alumina - Titanic composites to stratic Indentation processor - Jl. of Materials Letters Vol.41 (1999) pp 234-240
4. R.Gnanamoorthy and .Mutoh - Fatigue crack growth b behaviour of gamma base titanium aluminides at different test conditions, Bulletin of Material Science, 1999, v 22, p 933
5. N. Sitaram, M. Govardhan and V. T. Murali Krishna, "Loss Reduction by means of Two Dimensional Roughness Elements on the Suction Surface of a Linear Cascade", Flow, Turbulence and Combustion, Vol. 62, No. 3, pp. 227-248, 1999.
6. N. Sitaram and T. N. Sridhara, "Review: Recent Investigations on Tip Clearance Flows in Centrifugal Compressors", International Journal of Turbo and Jet Engines, vol. 17, No. 1, pp. 65-78, 2000.
7. Mohan K.Dhulipati, Ganesan, V., & Herbert Heitland
CAE Analysis of fluid flow & fuel spray in an Internal Combustion Engine Cylinder in a thermo-dimensional approach - International Journal of KONES-Internal Combustion Engines Vol 6, No.12, pp 23-33.
8. Pooria, M.P., Ramesh, A. and Gaur, R.R.
Experimental Investigations on the factors affecting the performance of a LLPG diesel dual fuel engine.
SAE Paper No.1999-01-1123, SP 1412 Alternative Fuels for CI Engines, 1999.
9. Prakash, G., Basha, S.A. and Ramesh, A.
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31. A.S.Varadarajan, P.K.Philip and B.Ramamoorthy, Neural network assisted performance prediction in hard turning with minimum quantities of cooling lubricants, Prof. Of the Int. Conf. CAR & FOF, 1998, pp 654-658.
32. A.S.Varadarajan, Dr.P.K.Philip and B.Ramamoorthy, Investigations on hard turning with minimal pulsed jet of cutting fluid, Proc. Of Int. Sem. On Manufacturing Technology Beyond 2000, Nov. 17-19, 1999, Bangalore, India (INAE), pp 173-179.
33. A.S.Varadarajan, Dr.P.K.Philip and Dr.B.Ramamoorthy, Optimisation of operating parameters for cutting performance during hard turning with minimal cutting fluid, Proc. Int. Conf. On Intelligent Flexible Autonomous Manufacturing System (IFAMS-2000), Jan.10-12, 2000.
34. Shock Tube Study of Convective Ignition of Metallized Propellants
V. Suresh, Job Kurian and K.A. Bhaskaran
Proceedings of the 22nd International Symposium on Shock Waves, Imperial College, London, July 18-23, Paper No.1130 (1999)
35. Effects of Interacting Droplet Size on the Burning of a Tandem Droplet Array
P. Balakrishnan, T. Sundararajan and R. Natarajan
XIV International Symposium on Airbreathing Engines, September 1999, Italy
36. Interaction of Surface Radiation with Laminar Natural Convection in an Enclosure with Isoflux Hot Wall , K. Velusamy, T. Sundararajan, K.N. Seetharamu and G. Vaidyanathan
Proceedings of IV ISHMT - ASME and National HMT Conference held at IAT Pune during Jan. 12-14, 2000, pp. 611-616
37. Development of a Code using Non-Orthogonal Grid for Natural Convection Studies in Complex Geometries, D.G. Roy Chowdhury, S.K. Das, T. Sundararajan, S. Govindarajan and S.C. Chetal
Proceedings of IV ISHMT - ASME and National HMT Conference held at IAT Pune during Jan. 12-14, 2000, pp. 817-824
38. Multi-Component Fuel Droplet Combustion
S. Mandal, Keshav Kant and T. Sundararajan
Proceedings of IV ISHMT - ASME and National HMT Conference held at IAT Pune during Jan. 12-14, 2000, pp. 1087-1092

39. Effect of Air Gap on the Solidification Simulation of Steel Castings
S. Bulusu, K.N. Seetharamu and T. Sundararajan
Proceedings of IV ISHMT - ASME and National HMT Conference held at IAT Pune during Jan. 12-14, 2000, pp. 1121-1128
40. S.SRINIVASA MURTHY, M.P.MAIYA and M.B.ARUN
Analysis of HFC134a - DMAC based compression absorption heat pump for high temperature applications 20th International Congress of Refrigeration, IIR/IIF, Sydney, 19-23 September 1999
41. Srinivasa Murthy, M.P.Maiya, Techniques and Instrumentation for Measurement of Thermal Resistance, Humidity and Moisture in Buildings, International Seminar on Environment Sustainability Through Architecture and Energy Management in Buildings, April 26 - 28, IIT Delhi, 1999.
42. M.B.Arun, M.P.Maiya, S.Srinivasa Murthy, Analysis of HFC134a-DMAC Based Compression - Absorption Heat Pump for High Temperature Applications, Twentieth International Congress of Refrigeration, September 19 - 24, 1999, Sydney, Australia.(Proceedings in Press)
43. Saravanan, R., Maiya, M.P., Studies on Bubble Pump Operated Two - Fluid Vapour Absorption Refrigerator, Twentieth International Congress of Refrigeration, September 19 - 24, 1999, Sydney, Australia.(Proc. in Press)
44. Sanjay Agarwal, Maiya, M.P., Analysis of desiccant Assisted Airconditioning Systems, Twentieth International Congress of Refrigeration, September 19 - 24, 1999, Sydney, Australia.
45. Maiya, M.P., Triple Fluid Vapour Absorption Refrigerator: Investigations on Solution Circuit, Twentieth International Congress of Refrigeration, September 19 - 24, 1999, Sydney, Australia.
46. Babu, K., Venkatarathnam, G., Oellrich, L.R, Mixed refrigerant cycles - an old technology rematures, to be presented at the **International Congress of Refrigeration**, Sydney, Australia, Sept. 1999
47. Venkatarathnam, G., Srinivasa Murthy, S., Oellrich, L.R., Engler, T., Performance of some mixtures as working fluids for high temperature heat pump applications, to be presented at the **International Congress of Refrigeration**, Sydney, Australia, Sept. 1999
48. Engler, T., Oellrich, L.R., Srinivasa Murthy, S., and Venkatarathnam, G., Screening of single component and mixture working fluids for compression heat pump applications, to be presented at the **International Congress of Refrigeration**, Sydney, Australia, Sept. 1999.
49. Foad Farhani, Venkatarathnam, G., and Sarangi, S., Effect of finite number of plates on the transient response of matrix heat exchangers during a single blow test, presented at the **International Cryogenic Engineering Conference**, Feb. 21-25, 2000
50. Sankarlal, T., Mani, A., and Venkatesh, A., Solar vapour jet refrigeration system, International Conference on energy storage technologies and systems, Feb 1999, Indore

6. Distinguished Visitors to the Department:

S.No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1	Dr. Davind Gansalvez Director (Portfolio Planning) General Motors (R&D) and Planning USA	24.09.99	Laboratory visit
2	Mr. Ravi Venkatesan Chairman Cummins India Ltd Pune	02.12.1999	Laboratory visit

3	Mr. Abhay N. Gante Vice President (R&D) Cummins India Ltd Pune	- do -	Laboratory visit
4	Mr V K Shenoy Regional Manager Cummins India Ltd Pune	-do-	Laboratory visit
5	Dr. Ebrahim Haji-Zadeh First Secretary and Director Science & Education (India & Sub Continent) Embassy of the Islamic Republic of Iran New Delhi	06.12.99	Laboratory visit
6	Mr. Donald W. Ableson President SAE International USA	18.01.2000	Laboratory visit
7	Mr. Mazumdar General Motors Research Laboratory USA	31.01.2000	Laboratory visit
8	Mr. Vaz General Motors Research Laboratory USA	31.01.2000	Laboratory visit
9	Prof. Arun Naik Vice Principal, Project Manager International Relations Oceania and Asia Universitat Politecnica DE Catalonia Spain	03.02.2000	Laboratory visit
10	Mr. Abelard Vilandell Director of International Development International Relations Office Technical University of Catalonia, Spain	- do -	Laboratory visit
11	Prof. Dr. Heinz W. Engl Industrial Mathematics Institute Johannes Kepler University, Austria	24.02.2000	Laboratory visit
12	Prof. Yoshiharu Mutoh , Dept. of Mech.Engg. Nagoya Any of Technology, Japan	15.5.99 to 17.5.99 23rd & 24th March,2000	For Technical discussions on Research Projects.
13	Dr.F.Balzereit	Dec.22, 1999 to Jan.2, 2000	Indo-German project
14	Prof. Bo Leckner	Jan.27, 1999 to Feb.8, 1999	Indo-Swedish project
15	Prof Dr.-Ing Paul Roth Gerhard-Mercator University, Duisburg, Germany	22.1.2000 to 29.1.2000	To deliver special lectures in the area of combustion
16	Dr.Ing.A.Eiber, Scientist, Stuttgart	Feb.23, 2000 March 9,2000	IIT-BMBF-Exchange programme
17	Dr.N.Bantel, FH Frankfurt	Feb.24,2000	Special Lecture

Other Activities:

Dr. B.V.S.S.S. Prasad:

1. Treasurer, Indian Society for Heat and Mass Transfer, 1998 - date.
2. Vice President, Mechanical Engg. Association.
3. Reviewer, FMFP and ASME Conferences.
4. Expert, Technical Review Committee, ISRO, Bangalore.

Dr. M. Govardhan:

1. Head, Guidance and Counseling, September 1999 - till date.
2. Vice-Chairman, Vana Vani Matriculation Higher Secondary School, October 1999 - till date.
3. Vice-President, Staff Club, August 1999 - till date.
4. Coordinator, Education Technology Cell, March 2000 - till date.

Prof. Pramod S Mehta - Secretary, Combustion Institute (Indian Section)

Prof. V. Ganesan - Chairman, Engineering Education Board, SAE International Board

Prof. B. Nagalingam - Secretary, SAE (Institute Chapter)

Dr. A. Ramesh - Member, SAE International Board, (SAE Institute Chapter)

Dr.S.Srinivasamurthy -

S.N.	Assignment Title/ Period	Host Details	Brief Description of Work
1	Guest Professor under Indo-German Co-Operation Program: May-June 1999	Institut für Technische Thermodynamik und Kältetechnik, Uni.Karlsruhe, Germany, Prof.L.R.Oelrich	To work on the Joint Project on New Environment Friendly Refrigerants for Heat Pump Applications
2	Visiting Professor, June-July 1999	Universitat Rovira i Virgili, Tarragona, Spain / Prof.Alberto Coronas	To deliver lectures in the area of new refrigerants and absorption systems

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 Course introduced:

S.No.	Course No.	Title	Faculty
01.	MT 631	Surface Phenomena	Dr.T.S.Sampath Kumar

2.2 Students on Roll:

Programme	I Year	II Year	III Year	IV Year	V Year & above	Total
B.Tech.	34	26	28	28	-	116
M.Tech.	17	13	-	-	-	30
M.S.	4	-	2	-	-	6
Ph.D.	5	1	4	1	14	25
Total	60	40	34	29	14	177

2.3 Number of Scholarship/Fellowship holders:

Programme	Institute Scholarship	Others	Total
B.Tech.	4	--	4
M.Tech	26	-	26
M.S.	4	-	4
Ph.D.	5	1	6
Total	39	1	40

2.4 Number of Degrees Awarded in the last Convocation:

Sl.No.	Programme	Total
1.	B.Tech	27
2.	M.Tech	18
3.	M.S.	2
4.	Ph.D.	6
Total		53

3. Faculty and their Development:

3.1 Faculty

Name and Qualification	Major area of specialisation
Professors:	
Achar, D.R.G., Ph.D.	Welding Technology, Failure Analysis, Corrosion, Industrial Metallurgy
Gokularathnam, C.V Ph.D.	Physical Metallurgy, X-ray diffraction, Powder diffraction, Powder metallurgy, Advanced ceramics, SEM and TEM
Pathak, S.D., Ph.D.	Materials Science and Technology, Mechanical Behaviour, Mechanical Metallurgy, Mechanical Testing, Fatigue, Fracture Mechanics
Prasad Rao, K., Ph.D.	Metal Joining, Corrosion
Raghavan, S., Ph.D.	Process and extractive metallurgy, Thermodynamics, Solid electrolyte chemical sensors, Hot corrosion
Seshadri, S.K., Ph.D.	Chemical Metallurgy, Surface Technology, Corrosion
Sundaresan, S., Ph.D.	Metal Joining, Welding metallurgy, mechanical behaviour
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, X-ray diffraction, materials science and technology
Paramanand Singh, Ph.D.	Powder Metallurgy, Ceramics, Composites and Material Science
Prasanna Kumar T.S., Ph.D.	Metallurgical process modeling, steel plant automation and off-line simulators, metal casting
Assistant Professors:	
Bhattacharya S.S., Ph.D.	Superplasticity and High Temperature Behaviour, Metal Forming
Guha B., Ph.D.	Fatigue & Fracture of Welded Joints, Appln. FEM/CAD in the area of Welding Technology
Devanathan R., Ph.D.	Electron Microscopy, Computer Simulation of atomic level processes in materials
Raghunatha Rao B., Ph.D.	Materials Technology, Heat treatment, Failure analysis

Assistant Professors:

Sampath Kumar T.S., Ph.D.

Surface science, biomaterials and composite super conductors

Sohini PalDey (Mrs.), Ph.D.

Chemical metallurgy, advanced materials

Uday Chakkingal, Ph.D.

Materials processing and characteri-zation, Aluminium alloys, Surface coatings

Emeritus Professor:

Radhakrishnan V.M., Ph.D.

Mechanical beavhiour, Creep, high Temperature Matgerials, Life Assesement

Scientific Officers:

Annamalai S., M.S.

Metal Forming, Forming of P/M components & Material Testing

Jothinathan G., M.Tech.

NDT, Metal Casting, Electro Met., Corrosion, Ceramics

Kumaran S., M.S.

Non Ferrous Extraction Metallurgy, Chemical Metallurgy

3.2 Short term courses/Workshop/Seminars/Symposia/Conferences organized:

S.No.	Co-ordinators	Title	Period
1.	Dr.T.S.Sampath Kumar with Prof. SP.Venkateshan	Industrial Applications of Analytical Instruments	14 th August 99
2.	Dr.T.S.Sampath Kumar with Prof. SP.Venkateshan	CCE Workshop on Thermal Analysis for the next Millennium	21 st to 23 rd October 99
3.	Dr.R.Devanathan	Industrial Applications of Electron Microscopy	19 th November 99
4.	Dr.T.S.Sampath Kumar with Prof. SP. Venkateshan	QIP - STTP on Scientific Instrumentation	6 th to 10 th December 99
5.	Dr.B.Guha	Fatigue life and fracture assessment of Industrial Components	10 th and 11 th December 99
6.	Dr.Paramanand Singh	Powder Metallurgy for the 21 st Century	3 rd and 4 th February 2000

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

S.No.	Name of Faculty	Title	Institution	Period/ Duration
1.	Dr.P.Kesavan Nair	Int. Conf. On Intelli-gent Flexible auto- nomous manufac-turing systems towards rapid design exploration and optimization (IFAMS 2000)	Central Inst. of Engg. Tech., Coimbatore	10 th to 12 th January 2000
2.	Dr.D.R.G.Achar	Int. Symposium of Joining of Materials 2000	REC Trichy	20 th to 22 nd January 2000

3.4 Special Lectures delivered by the Faculty in other Institutions:

S.No.	Name of Faculty	Topic of Lecture	Venue and Date	
1.	Dr.D.R.G.Achar		NIIR	27.5.99
			MRL Chennai	24.9.99
			LPSC Trivan.	9 to 13 th November 99
			ASM Intl.	03.12.99
2.	Dr.S.K.Seshadri	Coatings for Corrosion Control	Ooty (organised by IIM Kalpakkam Chapter and IGCAR)	28 th to 30 th June 99

3.5 Visits Abroad by Faculty:

S.No.	Name of Faculty	Country Visited	Date	Purpose of visit
1.	Dr.R.Devanathan	USA	19.6.99 to 26.7.99	To continue the research in Computer simulation of defects in semi conductors

3.6 Honours and Awards obtained:

S.No.	Name of Faculty	Name of Award	Awarded by	Awarded for	Date
1.	Dr.K.Prasad Rao	Panthaki Award	IIW	Best Paper	January 2000
2.	Dr.R.Devanathan	Faculty Fellow	Associated Western Universities USA	Conducting Research at Pacific North West National Lab.	May 1999

3.7 Books/Monographs authored or co-authored:

S.No	Name(s) of Author(s)	Title of Text Book/ Monograph	Publisher
1.	Dr.T.S. Sampath Kumar with Prof. SP. Venkateshan and Dr. Babu Varghese	STTP Lecture notes on Scientific Instrumentation	RSIC IIT Madras

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

Name of Faculty	Name of the Academy/ Professional Society	Year of Admission
Dr.S.S.Bhattacharya	AVH Foundation, Germany	August 1998

4. Design and Development Activities:

A new technique with sleeve for open die extrusion of sintd. P/m preforms for enhancement of properties at low strains.

Ironing of sintd. Iron p/m preforms for strains of 0.8 accommodating the contribution of friction to produce seamless short length tubes

Solid state diffusion of two dissimilar sintd. P/m preforms of iron and copper by compression testing

Bending characterization of sintd p/m preform sheets are the new techniques and processes (Prof.P.Venugopal)

A compact electron skin resonance (ESR) Spectrometer for identification of irradiator food stuffs (Dr.T.S.Sampath Kumar and Prof.SP.Venkateshan)

4.1 Patents awarded:

United States Patent No.5955145 dated 21st September 1999 was awarded for the patent filed by Dr.K.Prasad Rao

Patents filed:

Dr.P.Venugopal has applied for a Patent based on the outcome of the two sponsored projects

5 Research and Consultancy:

5.1 Sponsored Research Projects:

S. No.	Title of Project	Period	Funding Agency	Amount (In lakhs)	Co-ordinators
01.	Cascade in Welding Technology	1994- 1999	DST	12.46	Dr.D.R.G.Achar Dr.B.Guha
02.	Effect of fusion zone grain refinement on weldability of Al & Ti alloys	1994- 1999	AR&DB	5.85	Dr.S.Sundaresan

03.	Welding of duplex stainless steel	1995- 1998	AICTE	3.00	Dr.S.Sundaresan Dr.S.K.Seshadri
04.	Welding procedure development and performance valuation of steam generator transition joints	1996- 2000	BRNS	11.13	Dr.S.Sundaresan Dr.S.K .Seshadri
05.	Welding and stress corrosion cracking of maraging steel	1997-1999	DRDL	4.00	Dr.S.Sundaresan Dr.S.K.Seshadri Dr.V.M.Radhakrishnan Dr.K.J.L.Iyer
06.	Fundamental investigations of advanced ferrous alloys	1992-1996	Indo-US	3.93	Dr.S.Sundaresan Dr.V.M RadhaKrishnan Dr.K.J.L.Iyer
07.	Application of Electron Beam Welding Technique on Ti-6Al-4V	1995- 1999	ISRO- IITM	5.49	Dr.B.Guha Dr.K.Prasad Rao
08.	Improvement of Toughness of Titanium Welds	1997-2000	DST	7.18	Dr.B.Guha Dr.K.Prasad Rao
09.	Fatigue Behaviours of New Microalloyed Ferritic Pearlitic steels	1994-1999	VW Foundation Germany	DM 90000	Dr.K.A.Padmanabhan Dr.S.S.Bhattacharya
10.	Open Die Extrusion of sintered powder metallurgical preforms	1996-2000	DST	18.69	Dr.P.Venugopal Dr.S.S.Bhattacharya
11.	Fundamental Studies in Superplasticity and High Temperature Creep Phase II Phenomenological Studies	1997-2000	NRL	13.80	Dr.K.A.Padmanabhan Dr.S.S.Bhattacharya
13.	Production and Characterization of Carbon Nanotubes	1999-2001	NRB	20.25	Dr.P.Kesavan Nair Dr.Mrs.Sohini PalDey
14.	Characterization of Semiconductor Nanocrystals produced by ion implantation	1999- 2000	IUC-DAEF	0.78	Dr.R.Devanathan Dr.C.Vijayan
15.	Design and Development of a compact x-based ESR for identification of the irradiated food stuffs	1999- 2002	AERB	26.68	Dr.T.S.Sampath Kumar Prof.SP.Venkateshan

5.2 Industrial Consultancy:

S.No	Name of Faculty	Title	Industry	Amount (in lakhs)
01.	Dr.D.R.G.Achar (with Dr.B.Raghu natha Rao)	Failure analysis of steel rod in brake assembly	Ford India Ltd.	0.65

02.	Dr.C.V.Gokula Rathnam	SEM analysis	Various Indus. (Ceramics, Automobile)	1.50
03.	Dr.S.D.Pathak	KIC of Steels	Fomas India	0.50
		Stress Rupture of Spl.Mat.	Karthik Steels	0.60
		Flow Properties	Ford India	0.06
		Weld Testing	Giri Enterprises	0.05
		Tensile Behaviour	Baliga Lighting	0.06
04.	Dr.S.K.Seshadri	Failure analysis of black liquor gun	ENMAS	0.32
05.	Dr.S.Sundaresan	Anodised layer thickness measurements of aluminium window/door frames	M RTP Railways	0.06
		Oxide scale analysis and microstructural studies of boiler tubes	Industrial Quality Concepts	0.28
		Failure analysis of valve stem	Tamilnadu Petro products Ltd	0.20
		Microstructural studies on failed stainless steel tube	Enmas Ahlstrom Ltd	0.05
		Microstructural studies on II stage super heater tube	Equipment Consultants Inc	0.06
		Microstructure and hardness testing of spring steel	FAL Ltd.	0.09
		Failure analysis of rotor shaft	ABB Ltd	0.30
		Failure analysis of stainless steel spray gun	Enmas Ahlstrom	0.31
		Metallographic studies on imported and indigenous solenoid valves	Sundaram Clayton	0.16
		Metallurgical Studies on CRCA steel sheets (two consultancies)	Office of the Commissioner of Customs	0.25

06.	Dr.P.Kesavan Nair	Characterization of ranitidine by Hydrochlorid	Shasun Chemicals	4.00
		Residual Stress Analysis on Crank Shafts	Engine Valves	1.00
		Residual Stress Analysis on Springs	Hyundai and Leyland	0.75
		Phase analysis	Various Industries	1.00
07.	Dr.B.Raghunatha Rao (with Dr.D.R. G. Achar)	Failure Analysis of casting and Metallurgical Studies of Tie Rod	Ford India	0.65
		Dr.B.Raghunatha Rao (with Dr.S.K. Seshadri)	Failure analysis of black liquor gun	ENMAS
	TPL Valve Stress	Tamilnadu Petro Products	0.25	
	Spring failure analysis	Facit Asia	0.09	
	Failed Turbine Shaft	ABB	0.30	
	Ammonia Storage Tank failure	Coromandel	0.40	
	Turbine shaft failure	Mohan Breweries	0.45	
	Coating layer thickness	Govinda Raja	0.07	
	Scanar Met. Samples		0.02	

5.3 RBIC

S.No.	Name of Faculty	Title	Industry	Amount (in lakhs)
1.	Dr.S.D.Pathak	Short crack growth in SA 333 Gr 6 Carbon steels	BARC Mumbai	Rs.4.0

5.4 Retainer Consultancy

S.No.	Name of Faculty	Industry	Amount (in lakhs)
1.	Dr.S.D.Pathak	Karthik Steels	0.2

5.5 Journal Editorial Boards:

S.No.	Name of Faculty	Level	Journal
1.	Dr.S.Sundaresan	Member Ed. Board	Trans IIM Indian Welding Journal
2.	Dr.T.S.Sampath Kumar	Member Ed. Board	Trends in Biomaterials and Artificial Organs - India

6. Research Publications:

a) Number of Papers published in

Refereed National Journals	:	7
Refereed International Journalss	:	21

b) Number of Papers presented in

National Conference	:	6
International Conference	:	27

a. In Refereed National Journals:

01. D.R.G.Achar, "Current Trends in CAD/CAM in Welding Technology", Engineering Advances, Vol.11, No.1, pp.70-73, 1999
02. S.Raghavan, "Thermodynamics of formation of high calcium antimonites using a calcium fluoride solid electrolyte galvanic cell", Trans.Indian Inst. Metals, 1999, 52(5), pp.345-347.
03. P.Venugopal, "Applications of Fluid Power in Metal Forming – An Overview", Engineering Advances, The Premier Technology Magazine of Engineering industry, High Tech. Publ., Mumbai, April 1999, Vol.11, No.4, ISSN 0971-2968, PP.59-61.
04. P.Venugopal, "A Review of Some Important Aspects in Metal Forming", ibid, Vol.11, No.10, ISSN 0971 – 2968, October 1999, pp.49-58.
05. P.Venugopal, "Contributions of Blue Brittleness of Steel for Open Die Extrusion", ibid, Vol.11, No.11, ISSN 0971 – 2968, November 1999, pp.46-49.
06. B.Sasisekaran and B.Raghunatha Rao, "Technology of Iron and Steel from Kodumanal", Indian Journal of History, Vol.34, 1999
07. T.S.Subbaraman, N.Victor Jaya, T.S.Sampath Kumar and S.Natarajan, "A simple device to measure high pressure resistivity at temperatures upto 900K", J.Instr.Soc. India, 1999, 29, pp.85-88

b. In Refereed International Journals:

01. D.R.G.Achar, M.Kocak and G.M.Evans, "Effect of nitrogen on toughness and strain age embrittlement of ferritic steel weld metal", *Journal of Science and Technology of Welding and Joining*, The Institute Publication, U.K., 1998, Vol.3, No.5, pp.233-243.
02. K.Angamuthu, B.Guha and D.R.G.Achar, "Investigation of Dynamic Fracture Toughness (J Id) Behaviour of Strength Mis-Matched Q & T Steel Weldments using Instrumented Charpy Impact Testing", *IIW Doc. SC X.F.082-98* (Also published in the *Journal of Engineering Fracture Mechanics* in the Special Issue on "Mis-Matched Weld Joints", 64 (1999) 417-432
03. J.N.Balaraju and S.K.Seshadri, "Preparation and Characterisation of Electroless Ni-P and Ni-P.Si₃N₄ Composite Coatings", *Trans. Inst. Metal Finish*, 1999, 77(2) pp.84-86.
04. J.N.Balaraju and S.K.Seshadri, "Synthesis and Characterisation of Electroless Nickel-high phosphorus Coatings", *Metal Finishing*, 1999, 97(7) pp.8-13.
05. S.Sundaresan, G.D.Janaki Ram and G.Madhusudhan Reddy, "Microstructural refinement of weld fusion zones in alpha-beta titanium alloys using pulsed current welding", *Materials Science and Engineering A*, 1999, Vol.262, pp.88-100
06. S.Sundaresan and G.D.Janaki Ram, "Use of magnetic arc oscillation for grain refinement of GTA welds in alpha-beta titanium alloys", *Science and Technology of Welding and Joining*, 1999, Vol.4, No.3, pp.151-160.
07. G.D.Janaki Ram and R.Murugesan and S.Sundaresan, "Fusion zone grain refinement in aluminium alloy welds through magnetic arc oscillation and its effect on tensile behaviour", *Journal of Materials Engineering and Performance*, 1999, Vol.8, No.5, pp.513-520.
08. K.Srinivasan and P.Venugopal, "Hardness-stress strain correlation in Titanium Open Die Extrusion, An alternative to Visio-Plasticity, *Jl. Of Matls. Process Technology*, 95 (1999), Elsevier Sc. Publ., Amsterdam, pp.185-190
09. V.Balasubramanian and B.Guha, "Influence of weld size on fatigue crack growth characteristics of flux cored arc welded cruciform joints", *Material Science and Engineering - A*, Vol.265, 1999, pp.7-17
10. V.Balasubramanian and B.Guha, "Optimizing the SMA welded cruciform joint dimensions of ASTM 517 F Grade steels containing LOP defects" *Int. J.Pres. Vess. & Piping*, Vol.76, no.3, 1999, pp.147-155
11. V.Balasubramanian and B.Guha, "Fatigue life prediction of SMA welded cruciform joints containing LOP defects by a mathematical model" *Int.J.Pres. Vess. & Piping*, Vol.78, No.5, 1999, 283-290
12. V.Balasubramanian and B.Guha, "Effect of weld size on fcg of cruciform joints by strain energy density factor approach", *Theoretical and Applied Fracture Mechanics*, Vol.31, No.2, 1999, pp.141-148
13. V.Balasubramanian and B.Guha, "Effect of welding process of fcg behaviour of ASTM 517 F Grade steel weld metals", *The Science and Technology of Welding and Joining*, Vol.4, No.4, 1999, pp.233-239
14. V.Balasubramanian and B.Guha, "Assessment of some factors affecting the fatigue endurance of welded cruciform joints using statistical techniques", *int.J.Fatigue*, Vol.21, 1999, 873-877
15. V.Balasubramanian and B.Guha, "Analysing the influence of weld size on fatigue life prediction of FCAW cruciform joints by strain energy density concept", *Int. Journal of Pressure Vessels and Piping*, Vol.76, 1999, pp.759-768

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17. W.J.Weber, R.Devanathan Et.al., "The Effect of Temperature and Damage Energy on Amorphization in Zircon", Mat. Res. Soc. Symp. Proc.. 540, 1999, pp.367-372
18. R.Sandhya, K.B.S.Rao, S.L.Mannan and R.Devanathan, "The effect of Temperature on the Low Cycle fatigue properties of A 15Cr-15Ni, Ti modified austenitic stainless steel", Scripta Materialia, 1999, 41 (9), pp.921-927
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c. In Proceedings of National Conferences:

01. D.R.G.Achar, "Welding of Aluminium Castings", Fifth National Seminar ALUCAST 99, Chennai, 1-2 December 1999, pp.1-6.
02. D.R.G.Achar, "Welding of Dissimilar Metals" National Seminar on Latest Developments in Welding Technology, Pune, 22-23 December 1999, pp.3.1-3.8
03. D.R.G.Achar, "Welding in Y2K", Proceedings of the National Seminar on Recent Advances in Metal Casting and Welding Technology", Varanasi, 25-26 September 1998, Published by Star Line Publication, Ed.S.N. Tiwari, pp.253-263, April 1999
04. K.Hariprasad Reddy, B.Ramamoorthy and P.Kesavan Nair, "Optimum Grinding Conditions for Better Surface Integrity of Ground finished Components", Int. Conf. On Manufacturing Technooogy beyond 2000, Bangalore, Nov,17-19, 1999, pp.180-186
05. T.S.Prasanna Kumar, "FM-SIM: A generic Off-line Simulator for Multi Pass Hot Rolling of Steel Strip", Advances in Materials Sciences and Processes, 1999, pp.188-206
06. T.S.Prasanna Kumar, "Implementation of a Band Width Independent Solver for Large, Symmetrical Sparce Matrices: Application to Finite Element Analysis of Steel Slab Solidification", 4th ISHMT-ASME Heat and Mass Transfer Conference, Pune, January 2000.
07. N.Rajan, P.Magudapathy, K.G.M.Nair, K.Krishnan and T.S. Sampath Kumar, "Nitradition aspects of a basal and prism plane textured Ti films", Proc. Solid State Physics Symposium, IGCAR, Kalpakkam, 1999

d. In Proceedings of International Conferences:

01. K.Angamuthu, B.Guha and D.R.G.Achar, "Structure proerty correlation and fracture topographic analysis of weldments of strength mis matched Q and T Steel Weldments", Proc. of the International Welding Conference (IWC 99) on Welding and Allied Technology - Challenges in 21st Century, New Delhi, 15-17 February 1999, Vol.1, pp.478-484.
02. A.A.Reddy, B.Guha, D.R.G.Achar and S.H.Lallam, "Finite Element Analysis of Transient Heat Transfer in HAZ of Pulsed Current GTA Weldments", presented at the International Conference on Numerical Analysis of Weldability, Austria, October 1999, pp.4-6.

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04. G.D.Janaki Ram and S.Sundaresan, "Improvement in tensile ductility of titanium alloy weld fusion zones through microstructural modification", Proc. Intern. Welding Conf. IWC 99, IIW, New Delhi, 1999, p.704-713.
05. M.Sireesha, Shaju k.Albert, V.Shankar and S.Sundaresan, "Selection of filler material for dissimilar welds between 316 LN austenitic stainless steel and alloy 800", *ibid*, 1999, pp.1039-1049.
06. V.Muthupandi and S.Sundaresan, "Influence of nitrogen additions on the structure and properties of duplex stainless steel GTA welds", *ibid*, 1999, pp.501-511.
07. V.Shankar, T.P.S.Gill, S.L.Mannan and S.Sundaresan, "A fundamental investigation of hot cracking evaluation criteria for stainless steels using the varestraint test", *ibid*, 1999, pp.452-460
08. K.Prasad Rao, G.Madhusudhan Reddy, A.A.Gokhale and A.Bhasker, "Grain Refinement and Improvement of Strength and Ductility of Welds by Pulsed Current and Magnetic Arc Oscillation Techniques", Int. Welding Conference 99, Feb.99, New Delhi, pp.1050-1055.
09. K.Hariprasad Reddy, B.Ramamoorthy and P.Kesavan Nair, "Influence of Macro and Micro Residual Stresses on Corrosion Behaviour of Ground Finished Components", SME International Student Paper Competition, Cincinnati, USA, June 7-9, 1999.
10. K.Hariprasad Reddy, B.Ramamoorthy and P.Kesavan Nair, "Investigations on the Influence of Grinding Parameters on the Microstrain in Medium Carbon Steels", ASME Mechanics and Materials Conference, Blacksburg, USA, June 27-30, 1999, pp.247-252
11. K.Hariprasad Reddy, B.Ramamoorthy and P.Kesavan Nair, "Influence of Grinding Parameters on the Surface Integrity of Ground Components", 3rd international Machining and Grinding Conference, Cincinnati, USA, 1999, Oct.4-7
12. K.Hariprasad Reddy, B.Ramamoorthy and P.Kesavan Nair, "Studies on the Nature of Surface Quality in Precision Grinding of Carbon Steels", ASPE Annual Technical Meeting, Monterey, California, USA, Oct.31 - Nov.5, 1999, pp.91-94.
13. V.Balasubramanian and B.Guha, "Fatigue life estimation of flux cored arc welded cruciform joints of Q and T steels containing LOP defects", Presented at the 7th Int. Fatigue Conference (Fatigue 99) in Beijing, P.R.China, June 1999, pp.1263-1266
14. V.Balasubramanian and B.Guha, "Fatigue performance of cruciform joints of Q and T steel welded by manual and semi automatic process region", 1999 ASME Mechanics of Materials Conference, Blacksburg, Virginia State, USA, June 1999, pp.27-30
15. V.Balasubramanian and B.Guha, "Effect of specimen geometry on FCG behaviour of FCA welded Q and T steels region", 1999 ASME Mechanics of Materials Conference, Blacksburg, Virginia State, USA, June 1999, pp.448
16. A.A.Reddy, B.Guha and D.R.G.Achar and Sree Harsha Lalam, "Finite Element Analysis of Heat Affected Zone behaviour in pulsed GTA weldment of HSLA Steels, Presented at Int.Sem. on Numerical of Weldability, Tu-Graz, Austria, Oct.1999
17. K.Ramkumar, T.S. Sampath Kumar and R.Krishnan, "Effect of chloride ion from chlorinated water on PMMA and characterization by UV and IR spectroscopy", Int. Symp. on Atraumatic Restorative Treatment, Aug.1999, Chennai, Ab.No.12

7. Distinguished Visitors to the Department:

S.No.	Name of the Visitor and Designation	Date of visit	Purpose of Visit
1.	Mr.Toshio Amano Managing Director K Consultants Corporation, Japan	21.04.1999	Lecture
2.	Prof.M.C.Chaturvedi Dept. of Mech. And Indus. Engg. Winnipeg, Manitoba, Canada	30.04.1999	Lecture
3.	Mr.B.Shyamsundar Ph.D. Scholar Purdue University, USA	02.08.1999	Lecture
4.	Dr.V.A.Ravi W.L.Gore and Associates and Adjunct Associate Professor at Drexel University, USA	17.08.1999	Lecture
5.	Prof.Paul G.Shewmon Dept. of Materials Science & Engg Ohio State Univ., Ohio, USA	25.11.1999	Lecture
6.	Dr.Anandh Subramaniam Dept. of Metallurgy IISc. Bangalore	11.01.2000	Lecture
7.	Dr.Tara Chandra Dept. of Materials Engg. Univ. of Wollongong, Australia	14.02.2000	Lecture
8.	Dr.K.Sadananda Visiting Faculty Dept. of Met. Engg. IIT Madras	25.02.2000	Lecture
9.	Dr.Ms.Vaidehi Ganesan DPEND, Metallurgy and Materials Group, IGCAR, Kalpakkam	16.03.2000	Lecture
10.	Dr.B.Sundaravel Dept. of Electronic Engg., The Chinese Univ of Hong Kong Hong Kong	21.03.2000	Lecture

7.1 Other activities:

Visiting Faculty:

Dr.K.Sadananda, Scientist, Laboratory of Deformation and Fracture Section, Naval Research Laboratory, Washington D.C., USA visited our Department as Visiting Faculty from 4th March 1999 to 28th February 2000. During this period he was awarded the ASM Fellowship Award.

INAE Award:

Mr.K.Y.Sastry of 96 Batch M.Tech. Student was awarded the INAE Award for students innovative potential project at the Master's level during May 1999 and Ms.G.Deepa of 95 Batch B.Tech. Student was also awarded the INAE Award for students innovative potential project at the Bachelor's level during December 1999.

4.12 OCEAN ENGINEERING CENTRE

1 Introduction

Ocean Engineering Centre (OEC) was established in 1977. It offers Ph.D., M.S., M.Tech. (Ocean Engineering) and B.Tech. (Naval Architecture and Ocean Engineering) programmes. 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 Students on Roll :

Programme	I Year	II Year	III Year	IV Year	V Year	Others	Total
B.Tech.	25	21	19	19	-	-	84
M.Tech.	6	13	-	-	-	-	19
M.S.	9	9	8	-	-	-	26
Ph.D.	4	1	3	-	4	-	12
Total	44	44	30	19	4	-	141

2.2 Number of Scholarship/Fellowship holders :

Programme	Institute Scholarship	Others	Total
B.Tech	2	-	2
M.Tech	8	-	8
M.S.	11	-	11
Ph.D.	4	4	8
Total	25	4	29

2.3 Number of Degrees Awarded in the last Convocation :

Sl.No.	Programme	Total
1.	B.Tech	21
2.	M.Tech	13
3.	M.S.	6
4.	Ph.D.	2
	Total	42

3. Faculty and their Development :

3.1 Faculty

Name and Qualifications

Major Area of Specialization

Professors:

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

Computer aided analysis of Ocean, Civil and Aerospace structures, dynamics of floating bodies and structures

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

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

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, Foundations for coastal and offshore structures

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

Soil-structure-fluid interaction studies, submarine pipelines, marine corrosion and control, Behaviour of materials in ocean environment, design of port structures, coastal process, marine surveying, marine geotechniques

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

Marine geotechnical engineering, Analysis and design of foundations for offshore and onshore structures

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

Analysis and design of ocean structures, Behaviour of materials in Ocean Environment

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

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

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

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

SP.Subramanian, Ph.D.(IIT, 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

S.K. Bhattacharyya, Ph.D. (IIT, Madras) Computer aided structural analysis, Analysis of motion characteristics of floating bodies, Model studies

J.S. Mani, Ph.D.(IIT, Madras) Hydraulic and numerical modeling of Coastal and offshore Processes

R. Natarajan, Ph.D. (IIT, Madras) Ship Hydrodynamics, Design of small crafts, Model testing of launches, tugs, trawlers etc., Mooring analysis of floating structures

Assistant Professors:

P. Sambandan, M.S.(IIT, Madras) (on lien to NSDRRC, Visakhapatnam as Director) Ship design, ship structures, Computer applications in ship design

S. Neelamani, Ph.D. (IIT, Madras) Hydrodynamics, Wave structure interaction, Wave energy and coastal engineering problems

V. Anantha Subramanian, Ph.D. (IIT, Madras) Naval Architecture, Ship model testing

S.Surendran, Ph.D. (Yokohama National Univ Japan) Naval Architecture, Dynamics of mooring and surface towing ship model making and testing

3.2 Short-term courses/ Workshops/ Seminars/ Symposia/ Conferences Organised

Sl .No.	Coordinator(s)	Title of Workshop/Seminar/ Symposium/ Conference	Period
1	Prof.M.R.Pranesh and Prof.S.C.Misra	Short Term Course on Environmental hazards and safety requirements in port sector	19-21 April 1999
2	Prof.K.Ganesh Babu	Seminar on Durability of Marine Structures	15 Feb. 1999
3	Prof.V.G.Idichandy	Short Term Course on Integrity monitoring of structures	13-17 Dec. 1999
4	Prof.V.Sundar	Inter Institutional course on Coastal Engineering	6-8 March 2000

5	Prof.V.Sundar	Workshop on Breakwaters	9-10 March 2000
6	Dr.J.S.Mani Prof.M.R.Pranesh	Short Term Course on Marine Pollution	14-16 June 1999
7	Dr.J.S.Mani Dr.S.Neelamani	Symposium on Ocean Engineering	11-13 Nov. 1999
8	Dr.V.Anantha Subramanian	Experiment on Ship Hydrodynamics & IC Engines	Feb. 1999
9	Dr.V.Anantha Subramanian and Prof.S.C.Misra	Naval Architecture for ship operation & maintenance	29.11.99- 3.12.99
10	Dr.S.Neelamani	Short Term Course on Design of Submarine Pipelines	Dec. 1999

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

SI No.	Name of Faculty	Title	Place	Period/ Duration
1	Prof.K.Muthukrishnaiah	15 th National Convention of Civil Engineers	The Institution of Engineers (India), Cochin, India	2 & 3.12.1999
2	Dr.S.Neelamani	Attachment Camp at Air Force Station, Tambaram,	Air Force Station, Tambaram	June 1999
3	Dr.S.Neelamani	NCC Refreshment Course at Air Force Administrative College, Coimbatore	Air Force Administrative College, Coimbatore	13.12.1999 to 7.1.2000

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

SI No	Name of Faculty	Topic of Lecture	Venue and Date
1.	Prof V Sundar	Coastal erosion and protection	
2.	Prof.V.Sundar	Coastal erosion and protection	Anna University 19-25 Nov. 1999
3.	Dr.J.S.Mani	Coastal erosion with reference to coastal zone management	Anna University 1.1.1999
		Coastal environment, risk management and strategic environment assessment	Anna University Nov. 1999

		Importance of pressure transducers for field measurements with special reference to pile structures	Cochin University of Science & Technology 17.12.1999
3.	Dr.S.Neelamani	Ocean Energy – Its relevance to India	S.V.University, Tirupati 25-26 February 2000

3.5 Visits abroad by faculty

Sl. No.	Name of Faculty	Country Visited	Date	Purpose of visit
1	Prof.K.Muthukrishnaiah	Germany	6.9.99 – 21.10.99	Guest Professor
2	Prof.K.Muthukrishnaiah	USA	September 1999	To give a lecture
3	Prof.V.Sundar	Cape Town, South Africa	19-24 April, '99	To present paper
4	Prof.V.Sundar	Victoria, B.C., Canada	19-23 May 1999	To present paper
5	Prof.V.Sundar	Genoa, Italy	1-4 June 1999	To present paper
6	Prof.V.Sundar	Leipzig, Germany	2-30 Dec.,1999	Under joint project
7	Prof.V.Sundar	New Orleans, USA	14-17 Feb. 2000	To present two papers
8	Dr.R.Sundaravadivelu	Cape Town, South Africa	April 1999	To attend COPED-EC '99 Conference
9	Dr.R.Sundaravadivelu	Genoa, Italy	June 1999	To attend MCMHS 1999 Conference
10	Dr.R.Sundaravadivelu	USM & UTM, Malaysia	October 1999	To attend ISCEM 1999 Conference
11	Dr.R.Sundaravadivelu	NUS & NTU, Singapore	November 1999	To visit universities for joint projects
12	Dr.S.Neelamani	Cape Town, South Africa	19-23 April 1999	To present papers in the 5 th Int. Conf. on Coastal and Port Engg. in developing countries
13	Dr.J.S.Mani	South Africa	19-23 April 1999	To attend conference

3.6 Honours and Awards obtained :

Sl. No.	Name of Faculty	Honours/ Awards	Purpose
1	Prof.V.Sundar	Great Achiever of India, awarded by Front for National Progress	Outstanding achievement in chosen field of activity
2	Prof.V.Sundar	India's most Coveted Institutional Award, awarded by India International Friendship Society	Singular and unique contribution to the chosen area of activity
3	Prof.V.Sundar	Vijay Shree Award, awarded by India Int. Friendship Society	Dedicating meticulous efforts and supreme services to Ocean Engineering
4	Prof.V.Sundar	Best Citizen of India Award, awarded by Indian Publishing House	Exceptional calibre and outstanding performance in chosen area of activity
5	Prof.V.Sundar	Hall of Fame, awarded by International Publishing House, New Delhi	A tribute to the Achiever
	Others: Mr.A.Raman M.Tech. student	Best Thesis Award	Student Innovative Pro-jects at Master's level in Engg.

3.7 Books/Monographs authored and co-authored :

Sl No.	Name of Faculty	Title	Publisher
1	Prof.M.R.Pranesh and Prof.S.C.Misra	Module preparation on environmental hazards and safety prescription in port sector	CCE, IIT Madras
2	Dr.J.S.Mani	Impact on coastal processes on environmental and socio economic aspects	Indira Gandhi Institute of Development Research, Bombay
3	Dr.J.S.Mani	Environmental problems of Coastal areas in India	Bookwell, Delhi

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

Name of Faculty	Name of the Academy/ Professional Society	Level	Year of Admission
Prof.C.P.Vendhan	Acoustical Society of America	Member	1997
Prof.C.P.Vendhan	American Society of Mechanical Engineers	Member	1997
Prof.V.G.Idichandy	American Society of Mechanical Engineers	Member	1997
Prof.V.Sundar	The Institution of Engineers, Madras	Member	1997
Prof.V.Sundar	International Association of Hydraulic Research	Member	1997
Prof.V.Sundar	Maritime Hydraulic Section of I.A.H.R.	Member	1997
Dr.R.Sundaravadivelu	Institution of Engineers, India	Member	1986
Dr.R.Sundaravadivelu	American Society of Civil Engineers	Member	1998
Dr.S.K.Bhattacharyya	ASME	Member	1997
Dr.S.K.Bhattacharyya	Institution of Naval Architects	Life Member	1998

4. Design and Development Activities

4.1 Brief and specific details of process/Instruments/Equipment/ software designed and developed :

Prof.V.G.Idichandy : A portable digital current meter with digital display has been designed and fabricated for measurement of current upto 4m/sec. It is meant to replace the conventional propeller type current meters. This design has no moving parts, possibility for calibration in the field and digital storage of data making and ideal for unmanned field use.

Dr.S.K.Bhattacharyya : Co-ordinated to design a digital current meter

Dr.J.S.Mani : Coordinated installation activities for a wave maker in the 2m flume of Ocean Engineering Centre

Dr.V.Anantha Subramanian : Feedback controlled fin stabilization for SWATH

4.2 New facilities added or major equipment procured through project funds :

Prof.V.Sundar : 12 pressure transducers were procured from the project "Dynamic pressures exerted on Semi Circular Breakwaters" sponsored by German Agency for Technical Cooperation (GTZ), Germany.

Dr.S.Neelamani : Co-ordinated the installation of the water supply system for all the Hydrodynamic Test Facilities at OEC

5. Research and Consultancy

5.1 Sponsored Research Projects :

Sl. No.	Title	Period	Industry	Amount (in lakhs)	Co-ordinators
1	Numerical and experimental studies of OTEC Seawater Systems	1997-2000	NIOT, Madras	10.70	Prof.C.P.Vendhan Dr.V.Anantha Subramanian Dr.S.K.Bhattacharyya
2	Stability of frustrum cone concrete block for prevention of erosion of sea coast	February 1998 Two years	NIOT, Madras	1.60	Prof.M.R.Pranesh Prof.V.Sundar
3	Development of a portable digital current meter	1998-1999	NIOT Madras	6.88	Prof.V.G.Idichandy Prof.C.P.Vendhan Dr.S.K.Bhattacharyya
4	Hydrodynamic behaviour of floating breakwaters	12.4.99 to 11.4.2002	Ministry of Surface Transport	11.75	Prof.V.Sundar
5	Dynamic pressures exerted on semicircular breakwaters	Three years	GTZ, Germany	94367 DM	Prof.V.Sundar
6	Reliability of ship decks	1999-2002	Min. of Surf. Transport	3.91	Dr.K.Rajagopalan
7	Fuzzy reliability	1999-2002	Min.of Surf. Transport	4.95	Dr.K.Rajagopalan
8	Different types of berthing structures and development of standard designs	1997-2000	Min.of Surf. Transport	6.77	Dr.R.Sundaravadivelu
9	Development of finite element analysis capability for harmonic and transient exterior acoustics including fluid-structure interaction with application to ships and underwater vehicles	1997-2000	Naval Res. Board (NRB)	18.00	Dr.S.K.Bhattacharyya Prof.C.P.Vendhan
10	Analysis and design of ship mooring system	1997-2000	Min. of Surf. Transport, New Delhi	21.17	Dr.R.Natarajan
11	Study and development of repair technology for repairing composites at site under-water for vessels	1998-2001	Naval Research Board, New Delhi	23.00	Dr.R.Natarajan Prof.K.Gopinath Dr.R.Gnanamoorthy Dr.S.K.Malhotra
12	Wave force on piles and wave slamming force on deck of an open sea jetty		Ministry of Surface Transport	25.37	Dr.S.Neelamani

13	Hydrodynamic studies on sea water intake structures		DST	54.71	Dr.S.Neelamani
14	Hydraulic testing and optimization of new generation crafts	1996-1999	Dept. of Science and Technology	19.0	Dr.V.Anantha Subramanian Prof.C.P.Vendhan
15	Damaged ship stability - Theoretical	1999-2002	NRB	8.85	Dr.V.Anantha Subramanian Prof.S.C.Misra Dr.S.Surendran
16	Damaged ship stability - Experimental	1999-2002	NRB	17.80	Dr.V.Anantha Subramanian Prof.S.C.Misra Dr.S.Surendran
17	Design optimization of SWATHS	1997-2000	DST	20.00	Dr.V.Anantha Subramanian Prof.C.P.Vendhan Dr.V.Jagadeesh Kumar

5.2 Industrial Consultancy :

Sl. No	Name of the Faculty	Title of the work	Name of the client	Amount involved (Rs.in lakhs)
1	Prof.C.P.Vendhan Prof.V.G.Idichandy	Hydrodynamic testing and data analysis	DRDL, Hyderabad	19.50
2	Prof.S.Narasimha Rao	Consultancy/Advisory services for the proposed Ammonia Storage at Kakinada	M/s.Godavari Fertilisers & Chemicals Ltd.	1.37
3	Prof.S.Narasimha Rao	Geotechnical stability study of breakwaters naval base at Karwar	Project Seabird, New Delhi	4.00
4	Prof.S.Narasimha Rao	Soil testing for capital dredging at Mormugao Port Trust	Mormugao Port Trust, Goa	0.50
5	Prof.S.Narasimha Rao	Road over bridge at Sullurpeta	Chief Construction Engr., Sriharikota	0.44
6	Prof.S.Narasimha Rao	Soil investigation for bridges in Chittoor dist.	Roads&bdgs, Govt. of Andhra Pradesh	0.40
7	Prof.S.Narasimha Rao	Laboratory tests & preparation of report for construction of 4 multi purpose berths in inner harbour, VPT	M/s.Visakha Polymer Constructions	0.10
8	Prof.S.Narasimha Rao	Design of river water intake structure & approach bridge for Kondapalli power project/well design	M/s.Encon Services Pvt. Ltd.	0.10
9	Prof.S.Narasimha Rao	Soil investigation for Dad officers and staff at St. Thomas Mount	Garrison Engr., St. Thomas Mt	0.15

10	Prof.S.Narasimha Rao	Provision for basement floor slab for income tax office building at Nungambakkam High Road, Chennai	Exe. Engr. Chennai Central Division II, CPWD, Chennai	0.05
11	Prof.M.R.Pranesh Dr.R.Sundaravadivelu Dr.S.R.Gandhi	Review of design of container berth	Jawaharlal Nehru Port Trust	2.50
12	Prof.M.R.Pranesh Dr.R.Sundaravadivelu Dr.R.Natarajan Dr.S.R.Gandhi	Construction of slipway at Kandla Port Trust	Kandla Port Trust	12.00
13	Prof.M.R.Pranesh Dr.J.S.Mani	Crisis management for shore protection	ICI Works, Ennore	0.25
14	Prof.K. Muthukrishnaiah	Investigation of the causes for cracks in the flooring of LPG sheds	R.P.P.Construction Pvt.Ltd.Chennai	0.08
15	Prof.K. Muthukrishnaiah	Soil investigation and recommendations for suitable type of foundation for primary school building for OCF,Avadi	Garrison Engineer, Avadi, Chennai	0.37
16	Prof.K. Muthukrishnaiah	Remedial measures for erosion	Fisherman's Cove, Kancheepuram Dist.	0.15
17	Prof.K.Muthukrishnaiah	To study the reasons for settlement and to advise remedial measures	Rajarathnam Construction	0.05
18	Prof.K.Muthukrishnaiah	Soil investigation work	Metallurgical & Engg. Consultants(I) Ltd.,Ms.	0.18
19	Prof.K. Muthukrishnaiah	Consultancy service for the proposed modification in sulphur storage building in Wellington Island, Cochin to increase the storage capacity	Fact Engineering and Design Organisation, Udyogamandal	0.20
20	Prof.K.Muthukrishnaiah	Improving quality of soil under building area	All India Radio, Chennai	0.10
21	Prof.K.Muthukrishnaiah	Recommendations for suitable type of foundation for machine	Protech circuits and systems Pvt.Ltd.	0.05
22	Prof.K. Muthukrishnaiah	Soil investigation for provn./augmentation of technical accommodation for tank T-72	Garrison Engineer, Avadi,Chennai	0.49

23	Prof.K.Muthukrishnaiah	Recommendations for soil bearing capacity and foundation type	Dalal Consultants & Engineers Ltd., Chennai	0.24
24	Prof.K. Muthukrishnaiah	Suitability of borrow material for embankment purposes	Southern Railway, Madras	0.05
25	Prof.K.Muthukrishnaiah	Recommendations for suitable type of foundations for a building at Kilpauk Garden Road, Chennai	Om Sakthi Plaza, Chennai	0.05
26	Prof.K.Muthukrishnaiah	Remedial measures for cracks in building	Garrison Engineer, Avadi, Chennai	0.22
27	Prof.K.Muthukrishnaiah	Remedial measures for cracks in married accommodation building at Nandambakkam	Garrison Engineer, St.Thomas Mt., Chennai	0.16
28	Prof.K. Ganesh Babu	Rehabilitation of cement silos 1x2"	M/s.Raymond Ltd., Bilaspur, Madhyapradesh	1.50
29	Prof.K. Ganesh Babu	Utilisation of industrial slags for high performance concrete composites	Ministry of Water Resources	14.60
30	Prof.V.G.Idichandy	Proof testing and analysis of air bottles	TEAM, Vandalore	3.06
31	Prof.V.Sundar	Numerical modeling for tranquility studies for Rameswaram Fisheries harbour	Fisheries Department, Chennai	3.50
32	Prof.V.Sundar	Construction of 25 MLD capacity sewage treatment plant at Visakhapatnam	Municipal Corporation, Visakhapatnam	6.50
33	Prof.V.Sundar	Feasibility report for proposed fishing harbour at Veerapandipattinam in Tuticorin	Fisheries Department, Chennai	5.00
34	Prof.V.Sundar	Breakwater flume studies of Thangassery Fishing Harbour	Harbour Engg. Dept., Thiruvananthapuram	7.00
35	Prof.V.Sundar	Seawall-North of Madras Harbour	Kampsax Industries, Chennai	3.75
36	Prof.V.Sundar	Ennore Manali Road Improvement Project - Additional surveys and numerical modeling	Kampsax Industries, Chennai	7.00
37	Prof.V.Sundar	Numerical model studies for Rameswaram Fishing Harbour	IHH Poondi	1.25

38	Prof.V.Sundar	Sea water intake well and jetty of Simhadri power plant of NTPC	Navyuga Engg. Co. Ltd. Visakhapatnam	1.00
39	Prof.V.Sundar	Coastal erosion protection at outer wheeler island	DRDO, New Delhi	8.25
40	Prof.V.Sundar	Construction of mini fishing harbour at Muthalapozhi - numerical model studies	Harbour Engg. Dept., Thiruvananthapuram	8.00
41	Prof.V.Sundar	Stability analysis of composite breakwater at Mormugao Port	Mormugao Port Trust, Goa	10.00
42	Prof.SP.Subramanian	Installation of Thiruvalluvar Statue at Kanyakumari	Tamil Nadu State Construction Corporation	0.60
43	Prof.SP.Subramanian Dr.R.Ambalavanan	Identification & Photography of different rocks	Granite & Construction Companies Industries	0.90
44	Dr.R.Sundaravadivelu Dr.K.Ananthanarayanan	Estimation of quantity of Chilika Dredging Channel	Chilika Development Authority	11.06
45	Dr.R.Sundaravadivelu	Consultancy services for safety/stability for seawater intake system for desalination plant at Naripayur	Bharat Heavy Electricals Ltd.	0.30
46	Dr.R.Sundaravadivelu Prof.C.P.Vendhan Prof.SP.Subramanian	Protection wall for filling of Kappalodai at Minor Rock, Kanyakumari	Tamil Nadu State Construction Corporation	0.60
47	Dr.R.Sundaravadivelu Dr.S.R.Gandhi	Extension of Naval Wharf at Port Blair	Indian Navy, Port Blair, Mormugao Port	5.00
48	Dr.R.Sundaravadivelu Prof.SP.Subramanian	Augmentation of water supply to Mormugao Port	Mormugao Port Trust, Goa	1.00
49	Dr.R.Sundaravadivelu Prof.M.R.Pranesh Dr.S.R.Gandhi	Extension of berthing jetty at Vadinar	Kandla Port Trust	10.00
50	Dr.R.Sundaravadivelu Dr.R.Natarajan	Ro/Ro facilities between Satapada to Jahnkuda	Chilika Development Authority	4.50
51	Dr.R.Sundaravadivelu Dr.S.R.Gandhi	Construction of Cargo Berth No.8	Tuticorin Port Trust	6.00
52	Dr.R.Sundaravadivelu Prof.V.Sundar	Amba Creek Crossing - calculations for floating and buoyancy	ABAN Construction, Chennai	0.30

53	Dr.R.Sundaravadivelu	Review of design proposal of Precast Units	Afcons India Ltd.	0.40
54	Dr.R.Sundaravadivelu Dr.K.Ananthanarayanan	Bathymetry survey work in Nuagath, Astaranga	Fisheries & ARD Department	4.00
55	Dr.R.Sundaravadivelu	Technical services for protection works against sea-erosion at Daman and extension of existing jetty at Nani Daman	WAPCOS	1.00
56	Dr.R.Sundaravadivelu Dr.S.R.Gandhi	Construction of Diaphragm wall at Fishing Harbour at Pondicherry	Pondicherry Fishing Harbour	0.40
57	Dr.R.Sundaravadivelu Dr.K.Ananthanarayanan	Survey of dredging and reclamation at Chennai Port Trust	Sri Bhavani Builders	1.00
58	Dr.R.Sundaravadivelu Dr.S.R.Gandhi Dr.K.Ananthanarayanan	Construction of Wetland Centre at Barakul, Orissa	Chilika Development Authority	4.00
59	Dr.R.Sundaravadivelu Dr.R.Natarajan	Procurement of launches for Andhra Pradesh Travel & Tourism Development Corporation	Mahindra Acres	1.50
60	Dr.R.Sundaravadivelu	Petronet LNG Terminals at Dahej	Mahindra Acres	0.40
61	Dr.R.Sundaravadivelu	Technical advisory services for design and engineering for construction of 9 th cargo berth at Kandla Port	Kandla Port Trust	3.00
62	Dr.J.S.Mani	Shore protection at Cuddalore for Ro-Ro Terminal	N.O.C.L.	0.75
63	Dr.J.S.Mani Dr.Koshy Varghese	Integrated coastal marine area management plan for Chennai		US \$ 32350
64	Dr.R.Natarajan	Consultancy services for the manufacture and commissioning of one no. 1.5T Bollard Pull Twin Screw Mooring Launch	Gopalpur Port Project, Gopalpur	1.00
65	Dr.S.Surendran	Model making and testing of 18m long trawlers	CIFT (ICAR)	1.00

5.3 RBIC

Sl.No	Name of the Investigator/Co-investigator	Organisation	Values (in lakhs)	Co-consultants, if any
1	Prof.C.P.Vendhan	NPOL Kochi	21.5	Prof.V.G.Idichandy Dr.S.K.Bhattacharyya
2	Prof.K.Ganesh Babu	Dalmia Cement (Bharat) Ltd., New Delhi	2.0	--
3	Prof.V.G.Idichandy	DRDL	19.00	Prof.C.P.Vendhan
4	Prof.V.G.Idichandy	DRDL	14.25	Prof.C.P.Vendhan

OCEAN 1999-00

5	Prof.V.G.Idichandy	DRDL	4.00	--
6	Dr.V.Anantha Subramanian	NIOT	1.04	--

5.4 Retainer Consultancy

Sl. No.	Name of Faculty	Duration	Industry
1	Prof.K.Ganesh Babu	1.12.99-30.11.2000	Grasim Industries Ltd., Secunderabad-500 003

5.5 Exchange programme with other Universities

The following B.,Tech. (NA students) of VII Semester left for Germany during December, 1999 for three months to carry out project work at Hochschule Bremen, Germany under B.Tech. Internationalisation programme.

Sl.No.	Name	Roll NO.
1.	G Harini	NA 97477
2.	G HariGovind	NA 97476
3.	Manoj Pandey	NA 97479
4.	V S Vivekanand	NA 97494
5.	G Arathi Kamath	NA 97472

5.6 Research Publications:

(a) Papers published in:

Refereed National Journals : 1
Refereed International Journals : 15

(b) Papers presented in:

National Conference : 14
International Conference : 36

In Refereed National Journal:

- (1) Sreekumar, S., Bhattacharyya, S.K. and Idichandy, V.G., New Generation Offshore platforms for Deep water Marginal Fields, Journal of the Institution of Naval Architects, pp.61-80, 199

In Refereed International Journal:

1. Narasimha Rao, S. and Panda, A.P., Nonlinear Analysis of Undrained Cyclic Strength of Soft Marine Clay, International journal of Ocean Engg., Vol.25, No.1 Pergamon Press, U.K., 1999
2. Rajasekharan, G. and Narasimha Rao, S., Influence of Lime Treatment of Resistivity of a Marine Clay, International journal of Ocean Engg., Vol.25, No.8, Pergamon Press, U.K., 1999
3. Rambabu, M., Narasimha Rao, S. and Sundar, V., Wave and Current Induced Scour around a cylindrical pile, International Conference on Offshore and Nearshore Geotechnical Engineering 1999 to be held at ONGC, Panvel, Mumbai, India during December 2-3, 1999
4. Ilamparuthi, K. and Muthukrishnaiah, K., Anchors in sand bed delineation of rupture surface, Ocean Engineering (Journal), 26, 1249-1273, 1999
5. Sundar, V., Laxmi Narayana, G. and Sannasiraj, S.A., Dynamic pressures exerted on semicircular breakwaters, Ocean Engg. Journal, August 1999
6. Sundar, V., Pranesh, M.R., Roopsekhar, K.A. and Laxminarayana, G., Stability analysis of horizontal composite breakwater at Mormugao Port, India, Ocean Engineering Journal, Jan.1999
7. Sannasiraj, S.A., Sundar, V. and Sundaravadivelu, R., Diffraction-radiation of multiple floating structures in directional waes, Ocean Engineering journal, July 1999
8. Prabhakar, V. and Sundar, V., Standing wave pressures on walls, Ocean Engineering Journal, December 1999
9. Ranga Rao, A.V. and Sundaravadivelu, R., A Knowledge Based Expert System for Design of Berthing Structures, Ocean Engineering, Vol.26, pp.653-673, 1999
10. Alagusundaramoorthy, P., Sundaravadivelu, R. and Ganapathy, C., Experimental Study on Collapse Load of Stiffened Panels with Cutouts, Journal of Constructional Steel Research, pp. 235-251, 1999
11. Sundaravadivelu, R., Sundar, V. and Surya Rao, T., Wave Forces and Moments on an Intake Well, Ocean Engineering, Vol.26, pp.363-380, 1999
12. Neelamani, S., Schuettrumpf, H., Muttray, M. and Oumeraci, H., Prediction of Wave Pressures on Smooth Impermeable Seawalls, Ocean Engineering, 1999, Volume 26, pp.739-765
13. Neelamani, S., Koether, G., Schuettrumpf, H., Muttray, M. and Oumeraci, H., Wave Forces on and Water Surface Fluctuations Around a Vertical Cylinder Encircled by a Perforated Square Caisson, accepted for publication in Ocean Engineering
14. Subramanian, V.A. and Suchithran, P.R., Interactive Curve Fairing & Biquintic Surface Generation for Ship Design, International Ship Building Progress, Vol.46, pp.188-208, July 1999

14. Surendran, S., Launching and handling of heavy concrete caisson in a marine environment, *Ocean Engineering*, Vol.27, pp.655-665, 1999-2000

In Proceedings of National Conference:

1. Vendhan, C.P. and Prabhavathi, C., Finite element analysis of acoustic scattering by rigid bodies with surface impedance, Fifth Technical Sessions of the MIRC of the ASA, 19-20 Aug. 1999, pp.41-48
2. Pranesh, M.R. and Misra, S.C., Impact of marine corrosion on ship operation, Proceedings of 13th National Convention of Marine Engineers on ship building and repair : Thrust areas for putting India back on the World, 17-18 Dec.'99, pp. 85-92, Chennai
3. Pranesh, M.R., Coastal environmental hazards, Proceedings of ICM Workshop with special reference to west coast of India, 29-30 Nov.'99, pp.10-1 to 10-16, IIT Bombay
4. Pranesh, M.R., Coastal zone management – a necessity, Proceedings of ICM Workshop with special reference to west coast of India, 29-30 Nov.'99, pp.22-1 to 22-16, IIT Bombay
5. Rambabu, M., Narasimha Rao, S. and Sundar, V., Response of cohesive bed to ocean waves and currents, Indian Geotechnical Conference '99, Calcutta, December 1999
6. Muthukrishnaiah, K., Importance of soil investigation for the design of high rise buildings, Proc. of 15th National Convention of Civil Engineers, organised by The Institution of Engineers (India), Cochin Local Centre, Cochin, India, 73-78, 1999
7. Muthukrishnaiah, K., Soil investigation and design foundations at Wellington Island, Irumpanam, Maradu and Ernakulam South sites (Cochin), Proc. of Seminar on design and construction of pile foundations in marine clays organised by Chief Engineer (Navy), Cochin, India, Compendium-1, Paper No.1, 1-13, 1999
8. Muthukrishnaiah, K., A case study of abnormal settlements of petroleum product storage tanks on a thick deposit of soft marine clay at Ernakulam south (Cochin), Proc. of Seminar on design and construction of pile foundations in marine clays organised by Chief Engineer (Navy), Cochin, India, Compendium-2, Paper No.5, 1-6, 1999
9. Sundar, V., Roopsekhar, K.A. and Sri Veda Kumar, K., Remedial measures for coastal erosion at Royapuram, North of Madras Harbour, Workshop on Coastal Hydrology, India, 16-18 February 2000
10. Manoj, K.G. and Bhattacharyya, S.K., Transient exterior acoustics with fluid-structure interaction, Fifth Technical Session of the Madras-India Regional Chapter of the Acoustical Society of America, held at Indian Institute of Technology, Madras, pp. 9-15, August 19-20th, 1999
11. Mani, J.S., Dispersion characteristics of pollutants in Surf Zone – A Numerical Approach, New Millennium Conference on Retrospect of Indian Research on Environmental Pollution, Focus 21st Century, 1999
12. Neelamani, S., Hydrodynamics of a Sea Water Intake Structure, Workshop on Coastal Hydrology, 16-28 February 2000
13. Neelamani, S., Ocean Energy – Its Relevance to India, Invited Lecture in the National Seminar on Energy and Environment for Sustainable Development, SV University, Tirupati, 25-26 February 2000

14. Subramanian, V.A. and Beena, V.I., An interactive versatile technique for ship hull form development, 12th Conference, Institution of Marine Engineers, 17-19 December 1999

In Proceedings of International Conferences:

1. Sathyapal, S., Bhattacharyya, S.K. and Vendhan, C.P., Analysis of Second Order Steady Hydrodynamic Forces on Floating Bodies in Regular Waves by Finite Element Method, ISOPE-1999 Conference, May 30th to June 4th 1999, pp.504 to 510.
2. Sudarsan, K., Bhattacharyya, S.K. and Vendhan, C.P., Hydroelastic Instabilities of Ship and Submarine Towed Underwater Cylindrical Structures, 18th Offshore Mechanics and Arctic Engineering, July 11th to 16th 1999, OMAE 99/OFT 4182 C12 pages
3. Sreekumar, S., Bhattacharyya, S.K. and Idichandy, V.G., Numerical study of Dynamic Response of a Spar and Seastar for a Deep water Water Marginal Field, Proceedings of the 18th International Conference on Offshore Mechanics and Arctic Engineering (ASME), July 11-16 1999, St.Johns, Newfoundland, Canada
4. Sundar, V., An application of boundary integral methods to wave diffraction study based on the knowledge of breakwater porosity, Fifth International Conference on Coastal & Port Engineering in developing countries, COPEDEC '99, 19-23 April 1999, Cape Town, South Africa, pp.520-530
5. Sundar, V., Subba Rao, B.V.V., Roopsekhar, K.A. and Prema Kumar, J., Hydrodynamic characteristics of pile supported quadrant front face breakwater, Proc. of International Canadian Coastal Conference, 19-22 May 1999, Victoria, B.C., Canada, pp.167-179
6. Sundar, V., Pranesh, M.R., Roopsekhar, K.A. and Laxmi Narayana, G., Stability analysis of horizontal composite breakwater at Mormugao Port, India, International Conference on monitoring and control of marine and harbour structures, Genoa, Italy, 1-4 June 1999
7. Roopsekhar, K.A., Laxmi Narayana, G., Sundar, V. and Pranesh, M.R., Stability of concrete cubes in restoring horizontal composite breakwater at Mormugao Port, India, International conference on offshore and nearshore geotechnical engineering 1999 to be held at ONGC, Panvel, Mumbai, India during December 2-3, 1999
8. Roopsekhar, K.A., Sundar, V. and Pranesh, M.R., Twin frustrum concrete block as armour units for breakwaters, International symposium on coastal environment and management – challenges in the new millenium to be held in Kuala Lumpur, Malaysia during 13-15 October 1999
9. Roopsekhar, K.A. and Sundar, V., Restoration of the breakwater of fishing harbour in Thangassery, Kerala, International conference on the Intl. Oceanographic data and information exchange in western pacific (IODE-WESTPAC, 1-4 Nov.1999, Langkawi, Malaysia
10. Sannasiraj, S.A., Sundar, V. and Sundaravadivelu, R., Interference effects on adjoining floating structures due to oblique random waves, OMAE 2000, Energy for the new millennium, Sheraton New Orleans Hotel, New Orleans, Louisiana, USA, February 14-17, 2000
11. Sannasiraj, S.A., Chan, E.S., Sundar, V., Roopsekhar, K.A. and Kway, J.H.L., Characterisation of deep water breaking waves, OMAE 2000, Energy for the new millennium, Sheraton New Orleans Hotel, New Orleans, Louisiana, USA, February 14-17, 2000
12. Sundar, V., Roopsekhar, K.A. and Sri Veda Kumar, K., Coastal erosion protection measures North of Madras Harbour, International Maritime Association of Mediterranean, IX Congress (IMAM 2000), Naples (Italy), 2-6 April 2000

13. Sivasankaravel, M., Subramanian, SP., Sundaravadivelu, R. and Patnaik, A.K., XVI Convention, Indian Association of Sedimentologist, Oct. 24-30, 1999, Jammu, Abstract pp.67-68
14. Subramanian, SP. and Ashok Kumar, R., Beach Placer Studies Due to Littoral Drift at Kanyakumari Coast, International Seminar on Placer Studies Due to Littoral Drift at Kanyakumari Coast, December 1999
15. Kalyani, M. and Sundaravadivelu, R., Model test on a submerged cross moored cylinder under random waves, Proc. of International Canadian Coastal Conference, 19-22 May 1999, Victoria, B.C., Canada, pp.181-194
16. Ranga Rao, A.V. and Sundaravadivelu, R., Development of Spread Sheets for the Design of Diaphragm Walls, COPEDEC '99, April 19-25, 1999, Cape Town, South Africa, pp. 1282-1293
17. Sundaravadivelu, R., Panneerselvam, K. and Balaji, K.B., Model Studies on Piled Breakwater, COPEDEC '99, April 19-25, 1999, Cape Town, South Africa, pp.2235-2236 (Poster)
18. Ranga Rao, A.V. and Sundaravadivelu, R., Nonlinear Soil-Structure-Interaction Analysis of Diaphragm Wall, International Conference on Offshore and Nearshore Geotechnical Engineering (GEOSHORE '99), December 2-3, 1999, Mumbai, pp.277-282
19. Sundaravadivelu, R. and Shashikala, A.P., Dynamics of Moored Floating Bodies, International Conference on Monitoring and Control of Marine and Harbour Structures, MCMHS 1999, June 1-4, 1999, Genoa, Italy
20. Panneer Selvam, R., Bhattacharyya, S.K. and Sundaravadivelu, R., Application of Reverse MISO Technique to Identify Drag and Inertia Coefficients of a Compliant SDOF System, 18th International Conference on Offshore Mechanics and Arctic Engineering, OMAE 1999, July 11-16, 1999, St.Johns, Newfoundland, Canada, OMAE99/OFT-4071
21. Sundaravadivelu, R. and Pattnaik, A.K., Management of Chilika Lake – A Ramsar site, International Symposium and Exposition on Coastal Environment and Management (ISCEM '99) – Challenges in the New Millennium, 13-15 October 1999, Kuala Lumpur, Malaysia, Vol. II, Session IV, pp. 15-25
22. Kalyani, M., Sundar, V. and Sundaravadivelu, R., Hydrodynamic Behaviour of a Cross Moored Cylinder under Regular Waves, International Symposium and Exposition on Coastal Environment and Management (ISCEM '99) – Challenges in the New Millennium, 13-15 October 1999, Kuala Lumpur, Malaysia, Vol.II, Session XII, pp.10-23
23. Shashikala, A.P., Sundaravadivelu, R. and Ganapathy, C., Dynamic behaviour of Longitudinally Connected Twin Floating Bodies, Third International Conference on Shock & Impact Loads on Structures, 24-26, November 1999, Singapore
24. Sivasankaravel, M., Anbukumar, S., Sundaravadivelu, R. and Pattnaik, A.K., Environmental Risk Assessment of Sedimentation in Chilika Lake, Orissa, International Conference on Environmental Challenges for the New Millennium (ECNM '99), 25-27, November 1999, New Delhi, Vol.1, pp. 504-510.
25. Rajashree, S.S. and Sundaravadivelu, R., Gap Model of One-way Cyclic Lateral Load on Vertical Piles in Soft Clay, International Conference on Offshore and Nearshore Geotechnical Engineering (GEOSHORE '99), 2-3 December 1999, Mumbai, pp.295-300
26. Hemalatha, R. and Sundaravadivelu, R., Computer Aided Analysis of Approach Jetty, International Conference on Offshore and Nearshore Geotechnical Engineering (GEOSHORE '99), 2-3 December 1999, Mumbai, pp.365-369

27. Shashikala, A.P. and Sundaravadivelu, R., Dynamic behaviour of multi body floating systems, accepted for presentation at the Ninth Congress of International Maritime Association of Mediterranean, IMAM 2000, 2-6 April 2000, Naples, Italy
28. Mani, J.S. and Raman, V., Armoured Caisson Breakwater, Fifth International Conference on Coastal and Port Engineering in developing countries, South Africa, 1999
29. Mani, J.S., Development of Minor Port and Associated Risk Management with special reference to Fishing Harbour at Chennai, Indian International Maritime Expo '99 Conference, Goa, 1999
30. Natarajan, R. and Venugopal, K.V., Experimental study of a passive free surface tank roll stabiliser, 18th International Conference on Offshore Mechanics and Arctic Engineering, OMAE '99, 11-16 July 1999, St.Johns, Newfoundland, Canada
31. Neelamani, S., Schuettrumpf, H., Muttray, M. and Oumeraci, H., Sub Aerial Wave Pressures on Smooth Impermeable Seawalls due to Regular and Random Waves, 5th International Conference on Coastal and Port Engineering in Developing Countries, Cape Town, South Africa, 19-23 April, 1999
32. Neelamani, S., Koether, G. and Oumeraci, H., Wave Forces on a Vertical Cylinder Protected by a Perforated Caisson, Fifth International Conference on Coastal and Port Engineering in Developing Countries, Cape Town, South Africa, 19-23 April 1999
33. Neelamani, S., Koether, G., Schuettrumpf, H., Muttray, M. and Oumeraci, H., Water Surface Fluctuations around a Vertical Cylinder Encircled by a Perforated Square Caisson, Coastal Structures 1999, Santander, Spain, June 7-10 1999
34. Thiruvenkatasamy, K., Jayakumar, Neelamani, S. and Sato, M., Engineering Design of Wave Power Caisson Breakwater, Oceanology International 1999, Pacific Rim, Singapore, April 27-29 1999
35. Neelamani, S., A Decade of Wave Energy Research in India, First International Conference on Renewable Energy Resources, Mauritius, August 1999
36. Subramanian, V.A. and Kastner, S., Ship Stability due to Dynamic Impact of Water on Deck, 7th International Conference on Stability of Ships and Ocean Vehicles, Tasmania, Australia, Vol.A, pp.206-225, February 2000

6. Distinguished Visitors to the Centre :

Sl. No.	Name of the Visitor and Designation	Date of visit	Purpose of visit
1.	Dr.K.Venkatachalam, Director CSMRS, Delhi	12.8.1999	Seminar talk
2.	Shri S.A.Reddy, Deputy Managing Director, Gammon India Ltd., Mumbai	19.8.1999	Seminar talk
3.	Shri S.A.Sannasiraj, National University of Singapore	16.3.2000	Seminar talk

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. Students on Roll (as on 31.08.1999):

Programme	I Year	II Year	III Year	IV Year	V Year	Total
M.Tech	7	5	-	-	-	12
M.Sc	35	40	-	-	-	75
Ph.D	8	3	4	3	7	25
Total	50	48	4	3	7	112

2.2 Number of Scholarship / Fellowship holders:

Programme	Institute Scholarship	Others	Total
M.Tech.	11	-	11
M.Sc	32	-	32
Ph.D.	16	-	16
Total	59	-	59

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

Sl. No.	Name of the Scholar	Programme	Name of the Conf/Seminar/Symposia	Date & Venue
1	Bhat Viswanath Krishna	Ph.D.	10 th Intl. Workshop on Physics of Semiconductor Physics	14-12-1999 to 21-12-1999 SSPL, Delhi
2	N Kejalakshmi	Ph.D.	Intl. Conference on.....Devices	8-12-1999 to 10-12-1999 DRDO, Delhi
3	Justin Rajesh	Ph.D.	Intl. Conference on Mathematical & Modelling	7-12-1999 to 13-12-1999 IIT, Kharagpur
4	S Angapanne	Ph.D.	18 th Intl. Conference on Cryogenic Engg. Conference.	21-2-2000 to 25-2-2000 IIT, Bombay
5	R. Nirmala	Ph.D.	18 th Intl. Conference on Cryogenic Engg. Conference	21-2-2000 to 25-2-2000 IIT, Bombay
6	M. Pattabiraman	Ph.D.	42 nd DAE Solid State Physics Symposium	20-12-1999 to 24-12-1999 IGCAR, Kalpakkam

7	R. Nirmala	Ph.D.	42 nd DAE Solid State Physics Symposium	20-12-1999 to 24-12-1999 IGCAR, Kalpakkam
8	S. Angapanne	Ph.D.	42 nd DAE Solid State Physics Symposium	20-12-1999 to 24-12-1999 IGCAR, Kalpakkam
9	J.Venkatesh	Ph.D.	42 nd DAE Solid State Physics Symposium	20-12-1999 to 24-12-1999 IGCAR, Kalpakkam
10	S.Suja Helan	Ph.D.	26 th National Symposium of the Optical Society of India on Optics and Optoelectronics	4-2-2000 to 6-2-2000 REC, Warangal
11	S. Ramesh Kumar	Ph.D.	IV National Conference on Solid State Ionics	3-3-2000 to 5-3-2000 IIT, Bombay

2.3 Number of Degrees Awarded in the last convocation:

Programme	Number Awarded
M.Tech.	6
M.Sc.	32
Ph.D.	12
Total	50

3 Faculty and their Development:

3.1 Faculty

Name and Qualification

Areas of specialization

Professors

V.Balakrishnan, Ph.D (Brandeis Univ., USA)	Mathematical Physics, Statistical Physics and Dynamical Systems
V.Damodara Das, Ph.D (SPU, Vidyanaagar)	Thin film science and technology
P.C.Deshmukh, Ph.D (Nagpur Univ., Nagpur)	Atomic and Molecular Physics
M.P.Kothiyal, Ph.D (IIT, Madras)	Physics - Applied optics
(Mrs) Maha Seshasayee, Ph.D (RPI, New York, USA)	Condensed matter physics, (structure studies)
J.Majhi, Ph.D (IIT, Madras)	Semiconductor physics
V.R.K.Murthy, Ph.D (IIT, Madras) (Head)	Microwaves and Dielectrics
T.A.Prasada Rao, Ph.D (Andhra Univ., Waltair)	Electronic spectra of molecules, lasers, nonlinear optical processes, electro-optic Kerr effect in liquids and liquid crystals
V.Ramachandran, Ph.D (IIT, Madras)	Theoretical and Experimental condensed matter physics
K.V.S.Rama Rao, Ph.D (Andhra Univ., Waltair)	Magnetism and magnetic materials, Hydrogen in metals, Actuators/Sensors

G.Rangarajan, Ph.D
(IISc, Bangalore)
R.S.Sirohi, Ph.D
(IIT, Delhi)
K.Srinivasan, Ph.D
(IIT, Madras)

Low temperature physics, Superconductivity &
Magnetism
Optics

Lattice Dynamics, Electro optics, Dielectrics

Associate Professors

K.Hariharan, Ph.D
(IIT, Madras)
V.S.Murty, Ph.D
(IIT, Madras)
T.S.Natarajan, Ph.D
(IIT, Madras)
G.Sreenivasa Murthy, Ph.D
(IIT, Madras)
A.Subrahmanyam, Ph.D
(IIT, Kharagpur)
B.Subramanyam, Ph.D
(Andhra Univ., Waltair)

Solid state ionics

Resonance spectroscopy

Conducting polymers, Instrumentation Electronics

X-ray crystallography

Semiconductor devices, photovoltaics
Transparent conducting thin films
Condensed Matter Physics

Assistant Professors

P.B. Bisht, Ph.D
(Kumaun Univ., Nainital)
Govindarajan Suresh, Ph.D
(Pennsylvania Univ., USA)
S.Kasiviswanathan, Ph.D.
(IIT, Madras)
(Mrs) S.Lakshmi Bala, Ph.D
(Madras Univ.)
G.Markandeyulu, Ph.D
(IIT, Madras)
(Mrs) Neelima M. Gupte, Ph.D
(SUNY, Stony Brook, USA)
S.Ramaprabhu, Ph.D
(IIT, Madras)
M.S.Ramachandra Rao Ph.D
(IIT, Kharagpur)
V.Sankaranarayanan, Ph.D
(IIT, Madras)
M.V.Satyanarayana, Ph.D
(Madras Univ.)
K.Sethupathi, Ph.D
(Moscow State Univ., Russia)
V.Subramanian, Ph.D.
(IIT, Madras)
P.B. Sunil Kumar, Ph.D.
(IISc, Bangalore)
V.Venkateswara Rao, Ph.D
(IIT, Madras)
C.Vijayan, Ph.D
(IIT, Madras)
(Ms) T.M.Vimala, Ph.D
(IIT, Madras)

Ultrafast laser optics and spectroscopy

Theoretical Physics with specialization in Field
Theory & Dynamical Systems
Thin Films

Theoretical Physics with specialization in gauge
theories, dynamical systems and chaos
Magnetism and magnetic materials

Dynamical systems, Statistical Physics

Metal hydrides, Resonance Spectroscopy

Experimental Solid State Physics (Electronic and
Magnetic Materials - Thin films and bulk)
Superconductivity, Low Temperature Physics,
Cryogenics
Photonics, Quantum optics

Low temperature physics and Superconductivity

Microwaves, Semiconductors, Ferroelectrics

Condensed Matter Physics

Applied optics

Photonics, Nonlinear Optics

X-ray crystallography

Chief Design Engineer

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

Optical instrumentation, lens design

Senior Scientific Officer Gr.I

Mr.K.Sarangapani, M.Sc.
(Madras Univ.)

Thermal expansion of materials

**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.	M.P. Kothiyal	National Laser symposium	Univ. of Hyderabad	December 15-18, 2000
2.	M.P. Kothiyal	Conference on Precision Engg. (COPEN 2000)	IIT, Madras	January 12-13, 2000
3.	J. Majhi	International Conference on metallurgical coatings and thin films	American Vacuum Society	April 12-15, 1999
4.	K.V.S. Rama Rao	INTERMAG 99, Korea	Korea	May 18-21, 1999
5.	K.V.S. Rama Rao	2 nd Magneto-Electronics International Symposium, Japan	Japan	October 18-23, 1999
6.	R.S. Sirohi	Int. Conference on Laser Materials and devices	Defence Science Centre, Delhi	December 8-10, 1999
7.	R.S. Sirohi	National Laser Symposium	Univ. of Hyderabad	December 15-18, 1999
8.	R.S. Sirohi	COPEN 2000	IIT, Madras	Jan.12-13, 2000
9.	R.S. Sirohi	Frontier Areas of Thin Film Tech. & App.Opt.	CUSAT, Cochin	April 19, 1999
10.	K. Hariharan	4 th National Conference on organizing committee members solid state Ionics.	IIT, Powai, Mumbai	March 3-5, 2000
11.	K. Hariharan	Asian conf. On Solid State Ionic Devices	MIT, Anna University	March 22-24 2000
12.	T.S. Natarajan	Indian National Physics Olympiad Competition	Homi Bhabha Centre for Science Education, Bombay	May 20-June 10, 1999
13.	P.B. Bisht	Recent advances of lasers in scientific and industrial applications	St. Joseph's College, Thiruchirapalli	September 6-7, 1999
14.	P.B. Bisht	International Conference on Laser Materials and Devices (ICLMD-1999)	Defence Science Centre, Delhi	December 8-10, 1999
15.	P.B. Bisht	National Laser symposium	Univ. of Hyderabad	December 15-18, 1999
16.	P.B. Bisht	Symposium on Mathematical Methods and Applications	IIT, Madras	December 22, 1999
17.	P.B. Bisht	Trombay symposium on Radiation and Chemistry	BARC, Mumbai	January 12-17, 2000
18.	S. Lakshmi Bala	Conference on Dynamical systems: Recent Development	Univ. of Hyderabad	November 4-6, 1999

19	Neelima M Gupte	Conference on Dynamical System: Recent Development	Univ. of Hyderabad	November 4-6, 1999
20	Neelima M Gupte	Discussion Meeting on Non-equation St. Physics	JNCASR, IISc, Bangalore	November 15-25, 1999
21	K. Sethupathi	DAE Solid State Physics Symposium '99	IGCAR, Kalpakkam	December 20-24, 1999
22	V. Subramanian	Latest trends in microwave devices and circuits - Their impacts on communication	Osmania University, Hyderabad	September 30-31, 1999
23.	P.B. Sunil Kumar	Recent trends in Non-equilibrium statistical mechanics	Indian Institute of Science, Bangalore	November 15-20, 1999

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

Sl. No.	Name of Faculty	Topic of Lecture	Venue & Date
1.	M.P. Kothiyal	Optical Metrology	University of Hyderabad, National Laser Symposium, December 15-18, 2000.
2.	J.Majhi	A series of lectures on Electronic materials to M.Sc. Electronic Science students	Berhampur University, Berhampur December 6-18, 1999
3.	V. Ramachandran	Phonons in Solids	UGC Winterschool at Anna University December 1999
4.	K.V.S. Rama Rao	Recent advances in magnetosensitive and permanent magnet materials	IGCAR, Kalpakkam February 28, 2000
5.	K.V.S. Rama Rao	Recent trends in Materials Science	Tirupati (SV University) November 25, 1999
6.	R.S.Sirohi/ M.P. Kothiyal	Collimation Testing Procedures - A Review	DSC, New Delhi, December 8, 1999
7.	R.S. Sirohi	Engineering Applications of Speckle Phenomenon	CUSAT, Cochin, April 19, 1999
8.	R.S. Sirohi	Optical Metrology in NDT	Hyderabad Univ., December. 14, 1999
9.	R.S. Sirohi	Interferometry	Proof & Exptl. Est. Balasore, Jan 17, 2000
10.	R.S. Sirohi	Speckle interferometry in deformation measurement	Phy. Dept. Teachers Training University, Tehran, Iran, February. 8, 2000
11.	K Hariharan	Composite Solid Electrolytes	Dept. of Physics, Bharathiar University, Coimbatore, October 21, 1999
12.	T.S. Natarajan	Micro-computer Interfacing in Laboratory	Univ. of Kerala December 1-3, 1999
13.	P.B. Bisht	Morphology dependent resonances	St. Joseph College, Trichirapalli, September 6-7, 1999
14	P.B. Bisht	Relaxation Processes using Transient Grating Technique	BARC, Mumbai January 12-17, 2000
15	S. Lakshmi Bala	Suppression of wavepacket serials, geometric phases and classical maps	Univ. of Hyderabad November 1999
16	Suresh Govindarajan	D-branes in the boundary state formalism	Mehta Research Institute, Allahabad, November 10-12, 1999
17	Suresh Govindarajan	LG description of minimal models with boundary	JN Centre, Bangalore January 6, 2000

18	Neelima M. Gupte	Intermittency and scaling Law in Inhomogenous lattice systems	Colloquium at Institute of Physics, Bhubaneswar, 16 th March 1999
19	M.S. Ramachandra Rao	Growth Characterization and Applications of high T_c films grows by PLD	Physikalisches Institute, Univ. of Cologon, Germany (Feb.1999)
20	M.S. Ramachandra Rao	GMR Manganites	Physikalisches Institute, Univ. of Cologon, Germany (May.1999)
21	V. Sankaranarayanan	Method of specific heat studies at Low Temperature	IGCAR, Kalpaklam
22	P.B. Sunil Kumar	Two component fluid membranes	Raman Research Institute June, 1999
23	C. Vijayan	Nanostructured Materials	Calicut University March 3, 2000

3.4. Visits Abroad by Faculty:

Sl. No.	Name of Faculty	Country visited	Date	Purpose of Visit
1.	Maha Seshasayee	USA	June 1998 to June 1999	Sabbatical
2.	J. Majhi	USA	12 th to 15 th April, 1999	To attend the International Conference on Metallurgical coatings and Thin films, Sandiego, USA.
3.	K.V.S. Rama Rao	Korea	18 th to 21 st May 1999	To attend INTER MAG'99
4.	K.V.S. Rama Rao	Japan	18 th to 23 rd October 1999	To attend 2 nd Magneto-Electronics International Symp. Japan
5.	R.S. Sirohi	U.S.A.	17 th July to 7 th Aug. 1999	To attend SPIE annual conference and 18 th congress of ICO
6.	R.S. Sirohi	Iran	4 th to 11 th Feb., 2000	To receive 13 th Khwarizmi International Award
7.	Neelima M Gupte	Italy	24 th May to 5 th July 1999	Visit to ICTP Trieste as Associate
8.	Neelima M Gupte	U.K.	20 th to 25 th June 1999	Workshop on Intermittency in Fluids and other dynamical systems
9.	M.S. Ramachandra Rao	Germany	Jan-July 1999	Alexander Von Humboldt (AVH) Fellowship
10.	S. Ramaprabhu	Germany	1 st to 26 th June 1999	BMBF Project
11.	V. Venkateswara Rao	USA	18 th July - 10 th August, 1999	Presented a research paper in SPIE annual conference

3.5 Honours and Awards obtained

Sl. No.	Name of Faculty	Name of the award	Award by	Awarded for	Date
1.	R.S. Sirohi	Khwarizmi International Award	Iranian Research Organization for Science & Technology	Work on speckle phenomenon	Feb 6, 2000
2.	R.S. Sirohi	Albert Einstein Silver Medal	UNESCO	Fundamental work	Feb 6, 2000

3.	M.S. Ramachandra Rao	Alexander Von Humboldt (AvH) Fellowship	AvH Foundation, Germany	Excellence in academies (to carry out research in a German University)	Jan 1999
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3.6 Books/Monographs authored or co-authored:

Sl. No.	Name(s) of Author(s)	Title of Text Book/Monograph	Publisher
1.	R.S. Siroh/F.S. Chan	Optical Methods of Measurement	Marcel Dekker Inc

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

Sl. No.	Name of Faculty	Name of Academy / Professional Society	Level	Year of Admission
1.	V. Ramachandran	Indian Cryogenic Council	Fellow	1998
2.	R.S. Sirohi	Humboldt Fellowship	Sr. Fellowship	1974-75
3.	R.S. Sirohi	Humboldt Award		1996
4.	R.S. Sirohi	OSA Fellowship		1987
5.	R.S. Sirohi	SPIE Fellowship		1994
6.	R.S. Sirohi	INAE Fellowship		1998
7.	T.S. Natarajan	First step to Nobel Prize in Physics, International Advisory Board Member	Member	1999
8.	M.S. Ramachandra Rao	Humboldt Germany		1999
9.	V. Venkateswara Rao	Optical Society of India	Fellow	1990
10.	V. Venkateswara Rao	SPIE International Society for Optical Engg.	Member	2000

4. Design and Development Activities:

- Developed set-up to measure second harmonic generation in materials excited by high power lasers.
- Design and development of a hydrogen absorption/desorption apparatus for the study of hysteresis in alloy-hydrides - The study of hysteresis occurring during hydrogen absorption and desorption cycle is an important property to determine the suitability of the alloys for hydrogen storage device. An apparatus has been designed and developed for the study of hysteresis in alloy during absorption-desorption cycle at the same temperature.
- Design and development of in-situ electrical resistivity of alloy-hydrides - During hydrogen absorption, the physical properties of the alloys change due to the inclusion of the hydrogen atoms in the interstitial sites. An apparatus is being designed and developed for the study of the in-situ electrical resistivity of the alloys during hydrogen absorption to determine the various phases of the alloy-hydride.
- Development of a material for hydrogen storage device - From the hydrogen solubility properties of various C 14 Laves phase alloys, alloys with the composition $Zr_x Y_{1-x} V_m Cr_n Mn_o Fe_p Co_q Ni_r$ ($m+n+o+p+q+r = 2$) have been identified to possess excellent hydrogen storage properties and these alloys will be used to develop the hydrogen storage devices. (results of MNES project and the results will be published after filing the patent with the approval of MNES.
- Development of a Schottky barrier diode using polymer blends
- Measurement of Temperature inside a dewar using fibre optic link.
- Development of a level sensor for liq N₂g.

- h. Designed and developed a cryostat for low temperature (300 - 35 k) magneto-resistance studies in magnetic fields upto 0.8 Tesla.

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

1. Temperature variable low frequency dielectric holder
2. Design of microwave measurement apparatus for characterizing GMR materials
3. Experimental set-up to measure thermoelectric power of materials from 15K - 300K using a closed circuit refrigerator - Automation of the same with a personal computer.
4. Design and development of measurement facility to study a.c. magnetic susceptibility and specific heat using closed circuit refrigerator.
5. Laser induced transient grating (LITG) technique has been developed to measure ultrafast optical parameters.
6. A software has been developed for theoretical calculation of ultrafast optical parameters.
7. Developed software for demonstrating chaos and dynamical systems.
8. Software on Chaos (Deterministic Chaos)
9. Software on Waves Superposition
10. A software package for data acquisition is being developed for the magneto-resistance (MR)- V motor set-up. The software would help acquire data directly from the mano-volt source, I - source, magnetic field etc. and would give an on-line plot during the process of the experiment.

4.2 New facilities added and Major equipment procured through project funds

1. Leitz Reflection Microscope with interference objective
2. Keithley LCZ Meter - Integrated to Home built conductivity setup
3. Thin film coating unit with thickness monitor
4. Will be presenting a project proposal on May 1st at DST, Delhi for setting up a pulsed laser deposition (PLD) thin film growth facility at MSRC.

4.3 Patents filed: Polymer-based low temperature sensor - Patent application filed at Germany

5. Research and Consultancy:

5.1 Sponsored Research Projects on hand :

	Title	Period	Funding Agency	Amount in lakhs	Coordinators
1	Rigorous studies of Angular distribution and spin-polarization parameters of photoelectrons from Atoms.	2000-2003	DST	19.80	Dr.P.C. Deshmukh Dr.C.Vijayan

2	Optical Instrumentation	1993-2000	DAE	60.00	Dr.M.P. Kothiyal Dr.D.K. Sharma Dr.V.V. Rao Dr.R.S. Sirohi
3	Neutron diffraction of superonic glasses	1999-2000	IUC	2.00	Dr. Maha Seshasayee
4	Genetic algorithms to complex system	1999-2003	DST	7.00	Dr. Maha Seshasayee Dr. A. Subrahmanyam
5	Development of magnetostrictive materials	1995-99	MHRD New Delhi	160.00	Dr.K.V.S. Rama Rao Dr.U.V. Varadaraju Dr.G. Markandeyulu
6	Specific Heat Studies of Magnetic ordering	3 ½	D.S.T.	12.00	Dr.G. Rangarajan Dr.V.Sankaranarayanan
7	Optical Instrumentation	1993-2000	DAE	60.00	Dr.R.S. Sirohi Dr.D.K. Sharma Dr.V.V. Rao
8	Fastion conducting glass ceramics - Application to solid state ionic devices	1999-2002	DST	11.00	Dr.K. Hariharan
9	Development of computer-based instruction in Vibration	1999-2000	CCE/CDCELL	1.15	T.S. Natarajan C. Vijayan P.C. Deshmukh
10	Development of computer aided instructional packages	1998-1999	AICTE	1.05	Dr.T.S. Natarajan Dr.C. Vijayan
11	Development of temperature sensitive magnetic switch	1997-Ongoing	IGCAR, Kalpakkam	24.73	Dr.G. Markandeyulu Dr.K.V.S. Rama Rao Dr.V. Radhakrishnan (ME) Dr.A.K. Kolar (ME) Dr.K. Prasada Rao (MT) Dr.S. Sundaresan (MT)
12	Spatio temporal order and chaos in system with many degrees of freedom	1997-2000	DST	24.90	Dr.Neelima M Gupte Dr.S. Lakshmibala Dr.Govindarajan Suresh
13	Investigations of hydrogen solubility, electrochemical hydrogen storage capacity of Re-TM Laves phase alloys	1999-2002	CSIR	7.52 + 3.46	Dr.S. Ramaprabhu Dr.M.V. Ananth CEERI, Madras Unit
14	Study of hydrogen absorption in novel Zr-based alloys	1996-99	BMFT, Germany	-	Dr.S. Ramaprabhu Prof. P.C. Schmidt Dr.K.V.S. Rama Rao
15	Development of Hydrogen storage device with Indian misch metal based Laves phase AB ₂ alloys	2000-2003	MNES Government of India	18.90	Dr.S. Ramaprabhu
16	Characterization of Semiconductor Nano Crystals produced by Ion Implementation	1999-2003	IGCAR	4.00	Dr.C. Vijayan Dr. Ram Devanathan

5.2. Industrial Consultancy :

Sl. No.	Name of the Faculty	Title	Industry	Amount (in lakhs)
1.	R.S. Sirohi M.P. Kothiyal	Optical Head for Holographic Interferometry	ISRO, Bangalore	2.95
2.	R.S. Sirohi M.P. Kothiyal	Development of Optical Head for speckle shearographic system	ISRO, Bangalore	2.80
3.	P.B. Bisht S. Kasiviswanathan V. Sankaranarayanan K. Sethupathi T.S. Natarajan	Development of Multi-Dimensional Micro-Manipulator	M/s. Anuram Educational and Charitable Trust	0.10
4.	V. Venkateswara Rao	Fabrication & Testing of Optical Flats	Guindy Machine Tools Ltd., Pallikarani, Chennai - 601302	0.14
5.	K. Sethupathi & G. Rangarajan	Characterization of Magnetic trips	M/S. Eagle Press (Pvt) Ltd., Chennai-81	0.10

5.3 RBIC :

Sl. No	Name of the Faculty	Title	Industry	Amount (in Lakhs)
1.	Dr.V. Sankaranarayanan	Measurement of Thermal conductivity, Specific Heat and coefficient of Linear expansion of polysymmetric form and cryo-adhesive for cryogenic upper stage project	ISRO, Bangalore	4.50
2.	M.S. Ramachandra Rao	Development of Aluall metal based luminescent materials	Anabond, Madras	0.50

5.4 Retainer Consultancy :

S.No.	Name of the Faculty	Title	Industry	Amount (in Lakhs)
1.	Dr.V.S. Murty		M/s, Trilux Technologies (India) Ltd.,	1.00

5.5 Exchange programme with other Universities:

University of Cologne, Germany & Physiatisches Institut

5.6 Journal Editorial Boards:

S.No.	Name of the Faculty	Level	Journal
1.	R.S. Sirohi	Member	Journal of Modern Optics Optic Germany Indian Journal of Pure & Applied Physics
2.	V.R.K. Murthy	Member	Bulletin of Pure and Applied Sciences - Section D - Physics
3.	Neelima M Gupte	Member	Pramana

5.7 Publications:

a) No. of Papers published in:

Refereed National Journals	: 5
Refereed International Journals	: 32

b) No. of Papers presented in:

National Conference	: 17
International Conference	: 30

In Refereed National Journals:

1. J. Majhi and E.T. Paul Benny, XPS and UPS study of the effect of annealing on the surface states of hydrofluoric acid treated silicon surfaces, *Indian J. Phys.* 73 A, 591-595 (1999).
2. Prem B. Bisht, R. Justin Rajesh and B.M. Sivaram, Laser Induced grating technique to study relaxation times of laser dyes, *Laser Horizon*, 3, 8-12 (1999).
3. P. Nandakumar, C. Vijayan, Y.V.G.S. Murti, K. Dhanalakshmi and G. Sundararajan, Proton Exchange Mechanism of Synthesizing CdS Quantum Dots, *Journal of Pure and Applied Physics*, 37, p. 239-241, April (1999).
4. Y.V.G.S. Murti, P. Nandakumar and C. Vijayan, Experiments on Jailed Electrons, *Physics Education*, 16, 229-235 (1999).
5. K.V.S. Rama Rao, G. Markandeyulu, K.G. Suresh, V.R. Shah, U.V. Varadaraju, M. Venkatesan, M.Q. Huang, Sirisha K, M.E. McNery and V.G. Harris, Recent advances in 2:17 and 3:29 permanent magnet materials, *Bull. Mater. Sci.* 22, 509-517 (1999).

In Refereed International Journals:

1. V.M Murukeshan, A.R. Ganesan and R.S. Sirohi, Curvature measurement using double shear TV holography, *Optik*, 110(2), 57-60 (1999).
2. S. Suja Helen, M.P. Kothiyal and R.S. Sirohi, Phase shifting by a rotating polarizer in white-light interferometry for surface profiling, *J. Mod. Opt.*, 46(6), 993-1001 (1999).
3. T. Santhanakrishnan, N. Krishna Mohan, P.K. Palanisamy and R.S. Sirohi, A modified in-line speckle interferometric configuration for contouring of three-dimensional objects, *Optik*, 110(4), 181-183 (1999).
4. Shanti Bhattacharya, L. Wang, R.S. Sirohi and T. Tschudi, Optical perfect shuffle using diffractive optical elements, *Optik*, 110(5), 233-237 (1999).
5. M.H. Majles Ara, C. Vijayan, N. Krishna Mohan and R.S. Sirohi, Estimation of diffraction efficiency of holographic gratings in photorefractive BaTiO₃ and BaTiO₃:Ce at multiple wavelengths, *Optik*, 110(8), 383-388 (1999).
6. R.S. Sirohi, C.J. Tay, H.M. Shang and W.P. Boo, Characterization of defects using digital shearography, *Opt. Eng.*, 38(9), 1582-1585 (1999).

7. Ganesh Udupa, M. Singaperumal, R.S. Sirohi and M.P. Kothiyal, Surface topography characterization by confocal microscopy - part I: Principles and measurement system, *Int. Journal of Measurement Science & Technology*, 11(3) 305-314 (2000).
8. Ganesh Udupa, M. Singaperumal, R.S. Sirohi and M.P. Kothiyal, Surface topography characterization by confocal microscopy - part II: Principles and measurement system, *Int. Journal of Measurement Science & Technology*, 11(3) 315-329 (2000).
9. Aloka Sinha, T.A. Prasada Rao and Roman Dabrowski, *Journal of the Physical Society of Japan*, 68, No.6, 143-146 (1999)
10. P.B. Sunil Kumar, G. Gompper and R. Lipowsky, *Phy. Rev. E*. Vol.60, 4610-4618 (1999).
11. J. Venkatesh and V.R.K. Murthy, Microwave studies on (BaSr) (Zn_{1/3} Ta_{2/3}) O₃ dielectric resonators, *Mat. Chem and Phys*, 58, 276-279 (1999).
12. J. Joseph, V. Sivasubramanian, T.M. Vimala and V.R.K. Murthy, Structural studies on Ca_{0.6} Sr_{0.4} Zr_{0.3}, *Japanese JI. Appl. Phys, Part 2*, No. 24, 38, 822 (1999).
13. J. Joseph, V.Sivasubramanian, T.M. Vimala and V.R.K. Murthy, Structural investigations on (BaSr) (ZrTi)O₃, *Jl. Phys D: Applied Physics*, 32, 1049-1053 (1999).
14. J. Majhi and E.T. Paul Benny, Effect of preoxidation treatment on the I-V and C-V characteristics of Si/SiO₂/Al MIS diodes, *Semiconductor Science Technol*, 14, 528-531 (1999).
15. P. Haible, M.P. Kothiyal and H.J. Tiziani, Hyterodyne Temporal Speckle Pattern Interferometry, *Appl. Opt.* 39, 114-117 (2000).
16. M.H. Majles Ara, C. Vijayan, N. Krishna Mohan and R.S. Sirohi, Parametric study of Photorefractive Beam-Coupling in BaTiO₃, *Optical Engineering* 39 (2), p 535- 540, February 2000.
17. R. Sivakumar, S. Ramaprabhu, K.V.S. Rama Rao, Bodo Mayer and P.C. Schmidt, Hydrgen absoption, kinetics of hydrogen absorption and thermodynamics of dissolved hydrogen in Zr_{0.2}Tb_{0.8}Fe_{1.5}Co_{1.5}, *Int. J. Hydrogen Energy*, 25, 463 (2000).
18. S. Ramaprabhu, Formation of Cu(II) centres in X-ray irradiated Cu(I) complexes: A priliminary single crystal ESR studies, *J. Molecular Structure*, 478, 29-35 (1999)
19. V.R. Shah, G. Markandeyulu, K.V.S. Rama Rao, M-Q. Huang, Sirisha K and M.E. McHenry, Effects of Co substitution on magnetic properties of Pr₃(Fe_{1-x}Co_x)_{27.5} Ti_{1.5} [x = 0 - 0.3], *J. Appl. Phys.* 85, 4678-4680 (1999).
20. R. Sivakumar, S. Ramaprabhu, K.V.S. Rama Rao, H. Anton, P.C. Schmidt, Hydrogen absorption characteristics in Tb_{1-x}Zr_xFe₃ [x = 0.1, 0.2, 0.3] system, *J. Alloys and Compounds*, 285, 143-149, (1999).
21. V.R. Shah, G. Markandeyulu, K.V.S. Rama Rao, M-Q. Huang, and M.E. McHenry, Study of structural and magnetic properties and exchange interactions in (Y_{1-x}Gd_x)Fe_{27.5}Ti_{1.5} [x = 0, 0.2, 0.5, 0.8, 1.0], *Solid State Commn.* 112, 161-166, (1999)
22. V.G. Harris, Q. Huang, V.R. Shah, G. Markandeyulu, K.V.S. Rama Rao, M.Q. Huang, K. Sirisha and M.E. McHenry, Neutron diffraction and extended x-ray absorption fine structure studies of Pr₃(Fe_{1-x}Co_x)_{27.5}Ti_{1.5} permanent magnet compounds, *IEEE Trans. Magn.* 35, 3286-3288 (1999).
23. M. Venkatesan, U.V. Varadaraju, K.V.S. Rama Rao, S.K. Malik, H. Luo and W.B. Yelon, Neutron diffraction studies on (Ho_{1-x}Er_x)₂Fe₁₅Ga₂C₇ compounds, *J. Appl. Phys.* 86, 3290-3294, (1999).
24. V. Srinivas, S. Kasiviswanathan, P. Barva and B.K. Mathur, Surface characterization of Al-Cu-Fe Thin Films by scanning tunneling microscopy and scanning tunneling spectroscopy, *Appl. Surf. Sci.* 147, 140-145 (1999).

25. K. Muruganandam & Maha Seshasayee, Structural studies on $\text{Li}_{20} - \text{P}_2\text{O}_5 - \text{Sb}_2\text{O}_3$, Phys. Chem. Glasses 40, 287 (1999)
26. R.K. Sistla and Maha Seshasayee, RMC of Lizo- P_2O_5 glass, Solid State Communication, 113, 35 (2000)
27. S. Seshadri, S. Lakshmi Bala and V. Balakrishnan, Quantum revivals, geometric phases and circle map recurrences', Phys lett A, Vol. 256, pp. 15-19, May (1999).
28. S. Seshadri, S. Lakshmi Bala and V. Balakrishnan, Noise amplitude dependence of the invariant density for one dimensional maps, Physder E, Vol. 60, pp. 386-390, July (1999).
29. K.S. Ramesh and M.S. Ramachandra Rao, Effect of grain network modifications due to additives on critical current (I_c) in Bi-2212 superconductor, Physica C 316, 119, (1999)
30. S. Shah and M.S. Ramachandra Rao, Preparation and dielectric study of PLZT $x/35/65$ ($x=6, 7 \& 8$) ferroelectric ceramics, Appl. Phys. A (Materials Science & Processing), 75, 1-5, (2000).
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2. M.H. Majles Ara, C. Vijayan, N. Krishna Mohan and R.S. Sirohi, Real-time speckle shear photography using BaTiO₃ for in-plane strain and displacement measurements at multiple wavelengths, Proc. SPIE 3801, (1999).
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4. J. Venkatesh, V.Subramanian and V.R.K. Murthy, Microwave characterization of $\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})\text{O}_3$ relaxor, presented at latest trends in Microwave devices and circuits - their impact on communication, Osmania University, 15 (1999).
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11. Prem B. Bisht, Morphology dependent resonances, Proceedings of Recent advances of lasers in scientific and industrial applications, St. Joseph's College, Tiruchirapalli, p. 18 (1999).
12. Prem B Bisht, R. Justin Rajesh and B.M. Sivaram, Transient Grating technique for studies of ultrafast laser spectroscopy, Proc. of National laser symposium, p. 285-286, (1999).
13. R. Justin Rajesh, Prem B Bisht and B.M. Sivaram, Numerical calculations on the ultrafast pulse generation by distributed feed back dye laser, Proc. of symposium on Mathematical Methods and Applications, p. 10, (1999).
14. Maha Seshasayee, Computer Modelling of glasses At FNC, SS I-2000, IIT, Bombay in March 2000.
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4. V. Subramanian, A. Subrahmanyam and V.R.K. Murthy, Minority carrier lifetime in silicon solar cells by short circuit current decay technique, X-IWPSD Proceedings, page no. 1292-1295, 1999.
5. M. Chitra, B. Subrahmanyam, R. Dhamodharan, V. Madhurima and V.R.K. Murthy, Dielectric studies of hydrogen bonded polar binary mixtures of ethyl benzoate with aromatic amines, Proc. 13th Int. Nat. Conference on dielectric liquids ICDL, pp. 41-44, Hara, Japan, July 20-25, 1999.
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7. R. Nirmala, V.Sankaranarayanan, G. Rangarajan, O.Vijayan and V.V. Karunakaran, Thermal conductivity measurements on urethane modified polyisocyanurate foams at cryogenic temperatures, presented at International Conference on cryogenic engineering ICEC-18 held at IIT Bombay, Feb. 21-25, 2000.
8. R. Justin Rajesh, Prem B Bisht and B.M. Sivaram, Theoretical calculations on efficiency of self diffraction of the laser induced transient grating in laser dyes, Proc. of International Conference on mathematical methods and modelling, IIT, Kharagpur, pp 134-142, 1999.

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10. Prem B. Bisht and B.M. Sivaram, Two photon distributed feed back laser (TPDFDL), Proc. of International Conference on Laser Materials and devices (ICLMD-1999), Defence Science Centre, Delhi, p 318-321, 1999.
11. Prem B. Bisht, Relaxation Processes using Transient Grating technique, Proc. of Trombay Symposium on Radiation and Chemistry, BARC Mumbai, pp. 466-475, 2000.
12. Prem B. Bisht, Justin Rajesh R and B.M. Sivaram, Ultrafast time-resolved measurements of excited state relaxation processes in rhodamine B' using transient grating technique, Proc. of Trombay Symposium on Radiation and Chemistry, BARC Mumbai, p. 125-126, 2000.
13. M.H. Mahles Ara, C. Vijayan, N. Krishna Mohan and R.S. Sirohi, Realtime Speckle Shear Photography using BaTiO₃ for in-plane Strain and Displacement Measurements, Annual meeting of the SPIE, Denver, USA, July (1999)
14. N. Rajalakshmi, S. Dhathathreyan and S. Ramaprabhu, Electrochemical Investigations of Zr_xY_{1-x}Mn_mFe_nCo_pV_oCr_q (m+n+o+p+q=2) electrodes for Ni-MH battery application, presented in International Symposium on Hydrogen production, storage and utilization at the American Chemical Society Meeting held at New Orleans, Louisiana, USA, August 22-26 (1999).
15. J. Srinivas, G. Markandeyulu and K.V.S. Rama Rao, Magnetic properties of Nd_{0.5}Er_{0.5}Fe_{10.5-x}Al_xMo_{1.5} [x = 0 - 5], Proceedings of the 2nd Magneto-Electronics International Symposium, NAGANO MAGE1999, Nagano, Japan, 443-446 (1999).
16. V.R. Shah, G. Markandeyulu, K.V.S. Rama Rao, M.Q. Huang, K. Sirisha and M.E. McHenry, Magnetic transitions in Pr₃(Fe_{1-x}Co_x)_{27.5}Ti_{1.5} [x = 0 - 4], Proceedings of the 2nd MagnetoElectronics International Symposium, NAGANO MAGE1999, Nagano, Japan, 435-438, (1999).
17. V. Venkateswara Rao and N Krishna Mohan, Real-time Image subtraction using phase reversal technique, SPIE Proceedings, Vol. 3783, pp. 288-293, (1999).
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19. N. Chatterjee and N Gupte, Spatio-temporal periodicity and bifurcations in Coupled Sine Circle Map Lattices, Conference on Nonlinear Dynamics and Computational Physics, Ahmedabad, India, November 1997, edited by V. Sheorey, pp 159-164, Narosa Publishers (1999).
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21. N. Chatterjee and N. Gupte, Spatio-temporal bifurcations in coupled sine circle map lattices, Nonlinear dynamics: Integrability and Chaos, ed. M. Daniel, K.M. Tamizhmani and R. Sahadevan, pp. 345-354, Narosa Publishers (2000).
22. R. Suresh Kumar and K Hariharan, AC conductivity and electrical relaxation studies on 10CuI - 60 AgI - 30 V₂ O₅ glasses, Materials Chemistry Physics, 60, 28-38 (1999).
23. S. Lakshmi Bala, Wavepacket serials, geometric phases and poincare recurrences, 6th International Conference on 'Squeezed states and uncertainty relations', (ICSSUR 99), May 24-29 (1999), Naples, Italy.
24. S. Lakshmi Bala, Quantum serials and classical recurrences, NATO Advanced Research Workshop on 'Nonlinear Science: Dynamics and Stochasticity, Brussels, Belgium (1999).

25. M.S. Ramachandra Rao, High resolution transmission electron microscopy study on strained epitaxial manganite thin films and heterostructures: EMRS - Strasburg, France (1999).
26. Meera Kuppusamy, V. Ravindranath and M.S. Ramachandra Rao, Magnetotransport studies in $\text{La}_{0.7}\text{Ca}_{0.3}\text{Mn}_{1-x}\text{M}_x\text{O}_3$ (M=Co and Ga).
27. M.S.R. Rao, V. Ravindranath, Y. Lu, J. Klein and R. Gross, Strain effects in Ho- AND Y - doped $\text{La}_{0.7-x}\text{R}_x\text{Ca}_{0.3}\text{MnO}_3$ (R = Ho AND Y) manganite thin films.
28. V. Ravindranath, Mary Sheela Bobby, Phani Kumar, Suresh, Siram and M.S. Ramachandra Rao, Grain boundary modifications in polycrystalline $\text{La}_{0.7}\text{Ca}_{0.3}\text{MnO}_3$ due to additives.
29. V. Ravindranath, Mary Sheela Bobby, M.S. Ramachandra Rao, Achieving room temperature magnetoresistance in $\text{La}_{1-x}\text{Sr}_x\text{MnO}_3$ by grain boundary modification.
30. V. Ravindranath, G. Rangarajan* and M.S. Ramachandra Rao, Spin glass-like behaviour in the colossal magnetoresistive $\text{La}_{0.6}\text{M}_{0.1}\text{Ca}_{0.3}\text{MnO}_3$ (M = Ho (magnetic) and Y (non-magnetic) compounds).

7. Distinguished Visitors to the Department:

S.No.	Name of the Visitor & Designation	Date of Visit	Purpose of Visit
1.	Dr.C. Joenathan Dept. of Physics Rose-Hulman Institute of Technology, Indiana, USA.	July 5, 1999	lecture
2.	Dr. Krishnan Balasubramaniam, Associate Professor Dept. of Aerospace Engineering and Mechanics, Mississippi State University, USA	July 5, 1999	lecture
3.	Dr. Shiva Prasad Professor, Dept.of Physics IIT, Bombay, Powai, Bombay (Mumbai)	July 22, 1999	lecture
4.	Dr.P.A. Pramod Raman Research Institute Bangalore	August 2, 1999	lecture
5.	Dr.R. Suryanarayanan Lab. de Chemie des Solides Universite de Paris CNRS Orsat cedex France	November 24, 1999	lecture
6.	Professor Tomas Bohr The Technical University of Denmark, Lyngby, Denmark	November 26, 1999	lecture
7.	Dr. Sitabhra Sinha Department of Physics IISc, Bangalore	January 20, 2000	lecture
8.	Prof. A. Ravi Prakash Rau Department of Physics and Astronomy, Louisiana State University, Baton Rouge, Louisiana, USA	February 11, 2000	lecture

9.	Prof. Dr.-Ing Martin Bantel, Fachhochschule Frankfurt Fachbereich Maschinenbau Nibelungenplatz1, 60318 Frankfurt am Main, Germany	February 25, 2000	lecture
10.	Professor Govind Swarup, FRS, National Centre for Radio Astrophysics, TIFR, Pune University Campus, Pune	February 29, 2000	lecture
11.	Dr. Arul Lakshminarayanan Physical Research Lab, Ahmedabad	March 14, 2000	lecture
12.	Dr. Sagar A Pandit Physical Research Lab, Ahmedabad	March 15, 2000	lecture
13.	Prof. Vladimiv, Russia		Delivered talk

5.1 COMPOSITES TECHNOLOGY CENTRE

1. Introduction

Composites Technology Centre formerly known as Fibre Reinforced Plastics (FRP) Research Centre which was established in 1974 as an interdisciplinary Centre for carrying out teaching, research and development of composite materials and their applications. The Centre was renamed as Composites Technology Centre in 1997.

The Centre currently works on polymer, metal and ceramic matrix composites and their technological applications. The areas of the expertise of the Centre include:

- (i) Material Research and Development
- (ii) Composites Manufacturing Technology
- (iii) Composite product design and development
- (iv) Quality assurance of composites in Industrial Production

The Centre undertakes a large number of sponsored projects and has established close interaction with the industries concerned offering consultancy and technical guidance.

2. Academic Programmes

The Centre conducts M.Tech. specialisation programme in Composites Technology admitting upto 9 students every year. Guidance of M.S. and Ph.D. scholars and B.Tech. students and offering elective courses for M.Tech. and B.Tech. students are the other academic activities of the Centre. All the academic programmes are linked to Aerospace, Civil, Chemical, Mechanical and Metallurgical Engineering Departments.

2.1 Students on Roll

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

2.2 Numbers of Scholarship / Fellowship holders

Programme	Institute Scholarship	Others	Total
M.Tech.	Nil	16	16
M.S.	1	1	2
Ph.D.	2	1	3
Total	3	18	21

3. Faculty and their Development

3.1 Faculty

Sl. No.	Name and Qualification	Major Area of Specialisation
1.	Dr. S.K. Malhotra, Ph.D. (IIT Madras) Chief Design Engineer (SG)	Composite Materials Research Analysis, Design and Quality Control of Composites
2.	Dr. N.G. Nair, Ph.D. (IIT Kanpur) Chief Design Engineer	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.

3.2 Short-term Courses / Workshops / Seminar / Symposia / Conferences organised

Sl. No.	Co-ordinators	Title	Period
1.	Dr. N.G. Nair	Technology clinic on FRP technology held at District Industries Centre, Allappuzha, Kerala	28.06.99 to 30.06.99
2.	Dr. N.G. Nair	Short-term course on hand Lay-up of FRP Products	19.07.99 to 22.07.99
3.	Dr. N.G. Nair	Workshop on FRP Ship Manufacture and Repair Technology	08.02.2000 to 17.02.2000

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.	Dr. N.G. Nair	Sixth Indo-Japan Joint Seminar on Manufacturing Science of Advanced Composites	IIT Kharagpur and Dept. of Education, Gangtok, Sikkim	18.02.99 to 25.02.99

3.4 Special Lectures delivered by the faculty in other Institutions

Sl. No.	Name of Faculty	Topic of Lecture	Vénue & Date
1.	Dr. N.G. Nair	FRP Pipes For Marine Applications	Seminar on OTEC at NIOT, Chennai – May 1999
2.	Dr. N.G. Nair	Introduction to Composite Sandwich Materials and Structures	RV-TIFAC Composites Design Centre, Bangalore – 28.04.99

3.5 Visits Abroad by Faculty

Sl. No.	Name of Faculty	Country Visited	Date	Purpose of Visit
1.	Dr. S.K. Malhotra	Australia	13.02.2000 to 19.02.2000	Attended, presented a paper & chaired a session at Intl. Conf. (ACUN-2) held at Univ. of New South Wales, Sydney

4. Design and Development Activities

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

- (i) A four metre long ribbless FRP sonar dome has been designed and fabricated for the first time in India.
- (ii) Three design softwares have been prepared for the design of chemical tanks / pipes and water tanks.
- (iii) Design of a propulsion shaft for marine vessels was developed and a software prepared.

4.2 New Facilities added and Major equipment procured through project funds

Nil

5. Research and Consultancy

5.1 Sponsored Research Projects on Hand (Only ongoing)

Sl. No.	Title	Period	Funding Agency	Amount (in Lakhs)	Co-ordinators
1.	Design and Development of Mechanically Deployable Composite Bridge by Pressurebag / Autoclave moulding	4 years	MHRD & RDEE, Pune	68.00	Dr. N.G. Nair
2.	Design, Development and Fabrication of FRP Sonar Dome Employing Pressurebag Moulding Method	3 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	3 years	MHRD & FACT, Aluwa	39.44	Dr. N.G. Nair
4.	Technology Project in Mission Mode on Advanced Composite CTC, Chennai	3 years	TIFAC, New Delhi	115.00	Dr. N.G. Nair

5.2 Industrial Consultancy (Only ongoing)

Sl. No.	Name of the Faculty	Title	Industry	Amount (Rupees in lakhs)
1.	Dr. N.G. Nair	Design of FRP Pipes	Srivari Enterprises, Chennai	0.05
2.	Dr. N.G. Nair	Design, Fabrication and Supply of Kevlar Carbon Shoe	CLRI, Chennai	0.05
3.	Dr. N.G. Nair	Development of FRP Blade for Railway Carriage Fan Applications (16" sweep)	Raman, Sinhas Electricals, Chennai	0.2
4.	Dr. N.G. Nair	Technical Evaluation of Projects Undertaken by TAML	Tata Industries Ltd., Mumbai	0.40

5.3 RBIC (Only ongoing)

Sl. No.	Name of the Investigator / Co-investigator	Title	Number	Amount (in Lakhs)
1.	Dr. N.G. Nair	Design and Development of Power pack Cover plate (Middle) in Composites	CVRDE, Avadi	24.7

5.4 Exchange programme with other Universities

1. Mr. Sawant Sourabh Pandit, M.Tech. student in Composites Technology carried out his M.Tech. thesis at Technical University, Berlin, Germany under DAAD Sandwich programme.

Research Publications

- a) Total No. of Referred National Journals :
- b) Total No. of International Journals : 3
- c) Total No. of National Conference : 1
- d) Total No. of International Conferences : 1

(A) In Refereed National Journals : Nil

(B) In Refereed International Journals

1. V.V. Rao, R. Singh, S.K. Malhotra, "Residual strength and fatigue life assessment of composite patch repaired specimens", Composites : part-B, V-30, n-6, pp. 621-627.
2. P.S. Sreejith, R. Krishnamurthy, K. Narayanasamy and S.K. Malhotra, "Studies on the machining of carbon / phenolic ablative composites", Jl. of Materials Processing Technology, V-88, pp. 43-50, 1999.
3. P.S. Sreejith, R. Krishnamurthy, K. Narayanasamy and S.K. Malhotra, "Thermal aspects during machining of high silica / phenolic ablative composites", Jl. of Materials and Manufacturing Processes, V-14, n-5, pp. 647-659, 1999.

(C) In Proceedings of National Conferemces

1. Selvam, N.G. Nair and Paramanand Singh, "Synthesis and characteristics of spherical silicon carbide fibre form an organo silicon polymer". National conference on Powder Metallurgy for the 21st century (NCPM-2000) held on 3-4 Feb.2000, at IIT Madras, Chennai.

(D) In Proceedings of International Conferences

1. S.K. Malhotra and K.K.K. Sanyasi Raju, "Some studies on tribological behaviour of filled epoxies under reciprocating motion", Proc. of the ACUN-2, Intl. Composites Conference : Composites in Transportation Industry Feb. 14-18, 2000, Sydney, Australia, V-1, pp. 307-312.

6. Distinguished Visitors to the Department

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1.	Mr. Toshio Amano, Managing Director, K. Consultant Corporation, Kawasaki Industries, Japan	21.04.1999	To give lecture and to have discussions on the use of Composites for Motor Cycle Applications.

6.1 Other Activities

Dr. N.G. Nair has taken part in various national technical activities as given below :

1. Served as Head, Materials Panel of the Naval Research Board, DRDO, New Delhi.
2. Served as Expert Member of the Departmental Scientific Committee of FRP Pilot Plant Division of National Aerospace Laboratory, Bangalore.
3. Served as Expert Member of the Project Assessment and Review Committee of Department of Science and Technology, New Delhi.
4. Served as Expert Member in various Staff Promotion Committees of VSSC Trivandrum, CIPET Madras and RRL, Trivandrum.
5. Served as Expert Member of Project Monitoring Committee of ISTRAC, ISRO.
6. Served as Member of the Technology and Research Advisory Committee of CIPET, Chennai.
7. Served as Chairman, FRP Institute, a professional society for the Advancement of Composite Materials.

5.2 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:

Perovskite Mixed Oxides

Formulation, synthesis and characterization of new and novel rare earth containing perovskite mixed oxides – Study of electrical and magnetic properties – Search for magnetic and semi-conductor-to-metal transition.

Magnetoresistance Studies

MR Studies on Giant Magnetoresistance (GMR) perovskites manganites and intermetallics. GMR/CMR manganites: A new class of materials of this type $\text{La}(\text{Sr})\text{MnO}_3$ exhibiting huge change in resistivity as a function of applied fields. Large changes in the MR ratios of the order of $\sim 10^3$ - $10^{10}\%$ could be achieved by doping. Apart from the underlying physics which is an important aspect to study, these materials show great promise in device application such as MR-recording heads, switching etc.

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.

Fast Ion Conductors

Fundamental studies on Ion mobility and structure property correlations in fast ion conductors (channel type oxides and phosphates) and pyrochlore structures.

Nuclear Waste Disposal Materials

Study of crystalline mixed oxide and phosphate systems with a view to fix radioactive ions for nuclear waste disposal applications.

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 AB_3 where A is Co, Ir or Rh and B is As, P or Sb. In the present study thermoelectrical properties of series of compounds of CoSb_3 family are being investigated.

Luminescent Materials

Fundamental studies on the structure property correlations in luminescent materials.

Lithium Ion Battery Materials

To identify new cathode materials for lithium ion battery.

2. Academic Programmes

B.Tech	:	Inorganic, Physical and General Chemistry
M.Tech	:	Synthesis and Characterisation of Materials
M.Sc.	:	Solid State Chemistry and Crystal Chemistry
Ph.D.	:	Advanced Solid State Chemistry

2.1 Students on Roll (as on 31.08.1999)

Programme	I Year	II Year	III Year	IV Year	V Year	Others	Total
Ph.D.	2	-	2	-	-	-	4

2.2 Number of Scholarship/Fellowship holders

Programme	Institute Scholarship	Others	Total
Ph.D.	3	1 (CSIR)	4

2.3 Number of Degree Awarded in the last convocation:

Programme	Total
Ph.D.	3
M.Sc.	1
Total	4

3. Faculty and their Development:

3.1 Faculty:

Name and Qualification	Major Areas of Specialization
Prof. K. Gopinath, Head Ph.D., IIT Madras	Materials Engineering, Powder Metallurgy, Tribology and Surface Engineering
Dr. U.V. Varadaraju, Assoc. Prof., Ph.D., IISc Bangalore	Materials Science and Solid State Chemistry, High T _c Superconducting Materials, High Temperature Oxide and Phosphate based Ceramics, R&D of new materials for nuclear waste disposal. Cathode materials for lithium ion battery, Luminescent materials.
Dr. M.S. Ramachandra Rao, Asst.Prof., Ph.D., 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/Training Attended by the Faculty in recognised Academic Institutions and Public Sector Units:

S.No.	Name of Faculty	Title	Institution	Period/Duration
01.	Dr. U.V. Varadaraju	International Symposium on Luminescence and its Applications	M.S. University of Baroda	7-10 February, 2000

4. Design and Development Activities

- ◆ Set-up Electrochemical system for study of Lithium Cathode Materials
- ◆ Designed and set-up of HT tubular furnace for operation in controlled gas atmosphere

5. Research and Consultancy

5.1 Sponsored Research Projects

S.No.	Title	Period	Funding Agency	Amount (Rs. In laksh)	Co-ordinator
01.	Studies on the feasibility of Ceramic phases	1997-2000	BRNS, Mumbai	15.0	Dr.U.V.Varadaraju

5.2 RBIC:

S.No.	Title	Period	Funding Agency	Amount (Rs in lakhs)	Co-ordinator
01.	Development of metal sulphide based phosphors Analysis of Brake Pads	6 Months	M/s.Anabond Chennai.	0.5	Dr.U.V. Varadaraju
02.		1 Week	M/s. Rane Brake Linings, Chennai	0.2	Dr.U.V. Varadaraju

5.3 Research Publications

5.3.1 In Refereed International Journals

1. G. Buvaneswari and **U.V. Varadaraju**
Synthesis of new network phosphates with NZP structure
J. Solid State Chem., 145 (1999) 227-234.
2. M. Venkatesan, **U.V. Varadaraju**, K.V. S. Rama Rao, S.K. Malik, H. Luo and W.B. Yelon
Neutron diffraction studies on $(\text{Ho}_{1-x}\text{Er}_x)_2\text{Fe}_{15}\text{Ga}_2\text{C}_y$ compounds
J. Appl. Phys., 86 (1999)
3. M. Venkatesan, **U.V. Varadaraju** and K.V.S. Rama Rao
Magnetic transitions in $\text{HoErFe}_{17-x}\text{Ga}_x\text{C}_y$ compounds
Solid State Commun., (in press).
4. K.N. Marimuthu, **U.V. Varadaraju**, M. Hervieu, B. Raveau, S.K. Malik and W.B. Yelon
Electron Microscopy and Neutron diffraction studies on $\text{ErBaSrCu}_{3-x}(\text{PO}_4)_x\text{O}_y$ ($x=0.0, 0.10, 0.20$)
J. Solid State Chem., 150 (2000) 188-195
5. G. Buvaneswari and **U.V. Varadaraju**
Synthesis and characterization of new Apatite-related phosphates
J. Solid State Chem., 149 (2000) 133-136
6. K.N. Marimuthu and **U.V. Varadaraju**
Alkali metal insertion and dielectric studies on anion excess fluorite related mixed oxide
 $\text{Bi}_2\text{Te}_2\text{W}_3\text{O}_{16}$
Mat. Chem. Phys., 63 (2000) 127-132

5.3.2 In Proceedings of International Conferences:

1. U. Kameshwari, G. Gokul, R.D.V. Nirmal, T.V. SunderRaj, Karthik Shankar, J. Vijayakumar and **U.V. Varadaraju**
Development of metal oxide based long afterglow phosphors
International Symposium on Luminescence and its Applications, 7-10 Feb, 2000, Baroda.

6. Distinguished Visitors to the Department:

S.No.	Name of the Visitor & Designation	Date of Visit	Purpose of Visit
1.	Prof. Gedangan, Israel.	May 1999	Visit to the Centre
2.	Dr. Hasse, Rich Seifert, Germany	January 2000	Software demonstration for XRD

5.3 REGIONAL SOPHISTICATED INSTRUMENTATION CENTRE

1. Introduction :

Regional Sophisticated Instrumentation Centre (RSIC) established with the help of DST provides sophisticated instrument and equipment facilities to Scientists / Faculties of Educational Institutions, National Laboratories, Industries and IIT Madras.

RSIC also undertakes on specific request, servicing of sophisticated instruments at other institution and also provide training for operation and maintenance.

Periodically RSIC conducts workshops, seminars and conferences to expose new trends in sophisticated instrumentation and methods. Contact programs for college students and open house for school children are conducted every year to motivate them towards scientific careers.

2. Academic Programmes :

2.1 New Courses Introduced :

Sl.No.	Course No.	Title	Structure	Faculty
1.	MT631	Surface Phenomena	3003	Dr. TS Sampath Kumar

2.2 New discipline introduced :

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

Sl. No.	Name of the Student/Scholar	Programme	Name of the Conference / Seminar/Symposia	Date & Venue
1	Ms. Swarnalatha	Ph.D	National Conference on Crystallography	1999 University of Madras

2.4 Number of Degrees Awarded in the last Convocation:

Programme	Total
Ph.D	6

3. Faculty and their Development

3.1 Faculty :

S. No.	Name and Qualification	Major Area of Specialization
1.	Prof. S.P. Venkateshan, Ph.D	Heat Transfer, Instrumentation
2.	Prof. P.T. Manoharan Ph.D, FNA, FASc	Molecular Magnetism, Magnetic Resonance and Hemoglobin
3.	Dr. T. Pradeep, Ph.D	Physical Chemistry, Spectroscopy, Monolayers, Ion chemistry
4.	Dr. T.S.Sampath Kumar, Ph.D	Surface Science, Biomaterials

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

Sl. No.	Co-ordinators	Title	Period
1.	Dr. SP Venkateshan and Dr. TS Sampath Kumar	Technology Appreciation Program on Industrial Applications of Analytical Instruments	August 14, 1999
2.	Dr. SP Venkateshan and Dr. TS Sampath Kumar	CCE Workshop on Thermal Analysis for the next Millennium	October 21-23, 1999
3.	Dr. SP Venkateshan Dr. TS Sampath Kumar and Dr. Babu Varghese	QIP-STTP on Scientific Instrumentation	December 6-10, 1999
4.	Prof. SP Venkateshan	National Heat and Mass Transfer Conference	January 12-15, 2000

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

Sl. No.	Name of Faculty	Title	Institution	Period/ Duration
1.	Prof. SP Venkateshan	15 th National Heat & Mass Transfer Conference 2000	IAT, Pune	12-15, 2000

3.4 Special Lectures Delivered by the faculty in other Institutions :

Sl.No.	Name of Faculty	Topic of Lecture	Venue & Date
01.	Prof. P.T. Manoharan	1 lecture	Madurai Kamaraj Univ., Madurai May 1999
02.	Prof. P.T. Manoharan	1 lecture	University of Fribourg Switzerland June 2 nd week, 1999
03.	Prof. P.T. Manoharan	1 lecture	University of Linz Austria June 2 nd week, 1999
04.	Prof. P.T. Manoharan	5 lectures	University of Stuttgart Stuttgart June 1 st week, 1999
05.	Prof. P.T. Manoharan	1 lecture	National Inst. Of Health USA Aug. 3 rd week, 1999
06.	Prof. SP Venkateshan	Heat Transfer	VSSC, Trivandrum Sept., 1999
06.	Prof. P.T. Manoharan	1 lecture	Bharathidasan University, Trichy January 2000
07.	Prof. P.T. Manoharan	Medal lecture	Chemical Research Society of India meeting at Hyderabad, January 2000

3.5 Visits Abroad by Faculty :

Sl. No.	Name of Faculty	Country visited	Date	Purpose of visit
01.	Prof. P.T. Manoharan	Germany, Switzerland and Austria	June 1999	Invited lecture Tour
02.	Prof. P.T. Manoharan	Germany	August 1999	IUPAC-INSA delegates
03.	Prof. P.T. Manoharan	Poland	August 1999	INSAs delegation
04.	Prof. P.T. Manoharan	United States	August 1999	Research collaboration at NIH

3.6 Honours and Awards obtained :

Sl.No.	Name of Faculty	Name of Award/ Honour	Awarded by	Awarded for	Date
01.	Prof. P.T. Manoharan	CRSI Medal for extensive and outstanding Research in Chemistry	Chemical Research Society of India	For extensive and outstanding research in chemistry	January 2000
02.	Prof. P.T. Manoharan	Honorary Professor	Jawaharlal Nehru Centre for Advanced Scientific Research		January 2000

3.7. Books/Monographs authored or co-ordinated :

Sl.No.	Name(s) of Author(s)	Title of Text Book/ Monograph	Publisher
01.	Prof. SP Venkateshan Dr. TS Sampath Kumar Dr. Babu Varghese	STTP Lecture Notes on Scientific Instrumentation	RSIC IIT Madras
02.	Dr. T. Pradeep	Frontiers of Physical Chemistry	Allied Publishers New Delhi
03.	Prof. SP Venkateshan, Editor	Proceedings of the XV National Heat and Mass Transfer Conference	Tata McGraw Hill New Delhi

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
P.T. Manoharan	Indian Academy of Sciences		1981
P.T. Manoharan	Indian National Science Academy		1985

4. Design and Development Activities

A Compact electron spin resonance (ESR) spectrometer for identification and close quantification of irradiated food stuffs is being designed and developed.

5. Research and Consultancy :

5.1 Sponsored Research Projects on hand :

Sl. No.	Title	Period	Funding Agency	Amount (in lakhs)	Co-ordinators(s)
01.	Design and development of a compact X-band electron spin resonance spectrometer for identifying the irradiated food stuffs	April 1999 to April 2002	AERB	Rs.26.68	Prof. SP Venkateshan Dr. TS Sampath Kumar Mr. G. Palanisamy
02.	Computer Aided Instructional Module for Conduction & Radiation	Sept., 98 to August 2000	CCE IIT Madras	0.96	Prof. SP Venkateshan
03.	Development of a General purpose computer program for estimation of Radiant heat flux in a solid rocket motor	Aug. 99 to Aug. 2000	ISRO	8.14	Prof. SP Venkateshan
04.	Spectroscopic and Investigations of Metal Ions	1995-2000	CSIR	13.00	Prof. P.T. Manoharan
05.	Tandem Mass Spectrometry and ion surface collisions	1997-2000	DST	48.6	Dr. T. Pradeep
06.	Chemistry of metalcarbohedrenes	1997-1999	DST	21.25	Prof. P.T. Manoharan
07.	Monolayers on metal clusters	1999-2002	CSIR	6.63	Dr. T. Pradeep

5.2 Industrial Consultancy :

Sl.No	Name of the Faculty	Title	Industry	Amount Rs.Ps
01.	Prof. SP Venkateshan and Dr. TS Sampathkumar	Analysis of samples of Clutch Plate	M/s Cortica Mfr. SIDCO Industrial Estate, Chennai - 107	Rs.5000/-
02.	Prof. SP Venkateshan	Analysis of PMMA BLANLS	M/s AI Optics Ltd 20, SBI Colony Chennai - 106	Rs.1500/-
03.	Prof. SP Venkateshan	Analysis of PMMA BLANLS	M/s AI Optics Ltd 20, SBI Colony Chennai - 106	Rs.1500/-
04.	Prof. SP Venkateshan	Analysis of barium in brine	M/s Southern Petrochemicals Industries Corp. Manali Chennai - 68	Rs.24,000/-

R S I C 1999-00

05.	Dr. SP Venkateshan	Characterics of the sample Polymethyl-methaacylic (PMMA)	M/s AI Optics Ltd B46, Vallalar, Street MMDA Colony Chennai - 106	Rs.1500/-
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5.3 Journal Editorial Boards :

Sl.No.	Name of Faculty	Level	Journal
01.	Prof. P.T. Manoharan	Research Member	Ind. J. of Chemistry
02.	Prof. P.T. Manoharan	Member of Editorial Board	Journal of Chemical Education
03.	Dr. T.S. Sampath Kumar	Member of Editorial Board	Trends in Biomaterials and Artificial Organs- India

Research Publications :

(a) In Refereed National Journals :

1. P.T. Manoharan, Inorganic Molecular Ferromagnets in "Advanced in Physical Chemistry" (Allied Publishers Ltd., New Delh, 1999, pp 34-66).
2. B. Venkatesh, S. Ramasamy, V. Swarnalatha, J. Santhanalakshmi, R. Asokan, J.M. Rifkind and P.T. Manohaaran, Surfactant induced Stabilization of Four Coordinated Hemes in Reconstituted Hemoglobins. *Proc. Indian Acad. Sci. (Chem. Sci.)*, Vol.111, No.4, Aug. 1999, pp547-554.
3. K. Padmakumar and P.T. Manoharan, Dynamic Jahn-Teller effect in a FeN₆ cage molecule, *Pramana*, 53, 353-361 (1999).
4. T.S.Subba Raman, N.Victor Jaya, T.S.Sampath Kumar and S.Natarajan, "A simple device to measure high pressure resistivity at temperatures upto 500K", *J. Instr. Soc. India* 29(1999) 85-88.

(b) In Refereed International Journals :

1. C. Balaji, N. Ramesh, S.P. Venkateshan, "Effect of Boundary conditions on Natural Convection in an Enclosure", *Int. Journal of Transport Phenomena*, Vol.I, pp. 205-214 (1999).
2. N. Ramesh, S.P. Venkateshan, "Effect of Surface Radiation on Natural Convection in a Square Enclosure", *Journal of Thermophysics and Heat Transfer*, vol.13 No.3, pp.299-301, 1999.
3. N. Ramesh, S.P. Venkateshan, "Effect of Surface Radiation and Partition Resistance on Natural Convection Heat Transfer in a Partitioned Enclosure: An Experimental Study", *Journal of Heat Transfer*, vol.121, 1999.
4. Subrahmanya S. Katte and S.P. Venkateshan, "Accurate Determination of view factors in axisymmetric enclosures with shadowing bodies inside", *Journal of Thermophysics and Heat Transfer*, vol.14, No.1, pp.68-76, 2000.
5. B. Venkatesh, S. Ramasamy, M. Mylrajan, R. Asokan, J.M. Rifkind and P.T. Manoharan, FT Raman Approach to Structural Correlation in Hemoglobin Derivatives, *Spectrochimica Acta Part A*, 55, 1961-1967 (1999).
6. T.K. Kundu, Raf Bruyndonckx, C. Daul and P.T. Manoharan, A Density Functional Approach to the Jahn-Teller Effect of [Cu(en)₃]²⁺ as Model for a Macrobicyclic Cage Complex of Copper (II), *Inorg. Chem.*, 38, 4393-4399, (1999).

7. A. Asokan, Babu Varghese and P.T. Manpharan, Synthesis, Structure, Magnetic and ¹H-NMR Studies on Moderately Antiferromagnetically Coupled Binuclear Dicopper(II) Complex, *Inorg. Chem.*, 38, 4393-4399, (1999).
8. T.K. Kundu and P.T. Manoharan, Variable Temperature EPR, Optical and Magnetic Studies of a Macrobicyclic Cage Complex of Cu(II) in Pure and Zinc-Doped Systems: Evidence for a Jahn-Teller Distortion, *Mol. Phys.*, 97, 709-720, (1999).
9. R. Selvan and T. Pradeep, An approach towards the synthesis of metallocarbohedrenes, *Chem. Phys. Lett.*, 309 (1999) 149.
10. Sandhyarani, M. R. Resmi, R. Unnikrishnan, K. Vidyasagar, Shuguang Ma, M. P. Antony, G. Panneer Selvam, V. Visalakshi, N. Chandrakumar and T. Pradeep, Monolayer protected cluster superlattices: structural, spectroscopic, calorimetric and conductivity studies, *Chem. Mater.*, 12 (2000) 104-113.
11. M. R. Resmi, N. Sandhyarani, R. Unnikrishnan, S. Ma and T. Pradeep, Charge-transfer complexation of C₆₀ with diphenyltetraathiafulvalene (DPTTF) capped gold clusters, *J. Coll. Interface Sci.*, 217 (1999) 395.
12. C. Evans, T. Pradeep, J. Shen and R. G. Cooks, C-F and C-C bond activation by transition metals on low energy atomic ion/surface collisions, *Rapid. Comm. Mass Spectrom.*, (13, (1999) 172.
13. M. Venkataraman, S. Ma and T. Pradeep, 3D monolayers of 1,4-benzenedimethanethiol on Au and Ag clusters: distinct difference in adsorbate geometry with corresponding 2D monolayers, *J. Coll. Interface Sci.*, 216 (1999) 134
14. T. Pradeep, C. Evans, J. Shen and R. G. Cooks, Adsorbate Geometry Distinction in Arenethiols by Ion/Surface Reactive Collisions *J. Phys. Chem. B*, 103 (1999) 5304.
15. N. Wade, T. Pradeep, J. Shen, R. G. Cooks, Covalent chemical modification of self-assembled fluorocarbon monolayers by low-energy CH₂Br₂⁺ ions: a combined ion/surface scattering and X-ray photoelectron spectroscopic investigation, *Rapid Commun. Mass Spectrom.* 13 (1999) 986.
16. T. Pradeep, J. Shen, C. Evans and R. G. Cooks, Reactive ion scattering from surfaces bearing isomeric adsorbates *Ana. Chem.*, 71 (1999) 3311.
17. N. Sandhyarani and T. Pradeep, Ion/surface reactions at monolayers in solution: a combined surface enhanced Raman-X-ray photoelectron spectroscopic investigation of the chemical modification of 2-mercaptobenzothiazole monolayer on gold, *J. Coll. Interface Sci.*, 218 (1999) 176.
18. K. Bandyopadhyay, K. Vijayamohan, M. Venkataraman and T. Pradeep, Self assembled monolayers of small disulphide and diselenide molecules on polycrystalline gold films: a comparative study of the geometrical constraint using temperature dependent surface enhanced Raman spectroscopy, x-ray photoelectron spectroscopy and electrochemistry, *Langmuir*, 15 (1999) 5314.
19. M. R. Resmi, K. Smitha, T. N. Arungagiri and T. Pradeep, Spectroscopic investigations of M(CO)₅-C₆₀ (M=W, Mo) complexes: precursors for metal fullerides, *Fullerene Science and Technology*, 7 (1999) 123-146.
20. V. Bindu, M. Venkataraman and T. Pradeep, Trapping of molecules in self assembled monolayer matrices, *Mol. Phys.*, 96 (1999) 367-370.

21. N. Rajan, K.G.M. Nair, G.V.N. Rao, L.S. Vaidhyathan, V.S. Sastry, P. Magudapathy, K. Krishnan and T.S. Sampath Kumar, "Transformation of (0002)-oriented Ti film into (111) TiN through nitrogen implantation", Appl. Phys. A : 70 (2000) 65-68.

(c) In Proceedings of National Conference :

1. M.R. Dhasekaran, S.K. Das, S.P. Venkateshan, "Laminar Natural Convection in cavities filled with low Prandtl Number Fluids" IV ISHMT-ASME Conference, Pune, India, January 14-16, 2000.
2. T. Nageswara Rao, S.P. Venkateshan, "Direct Contact Condensation of Vapour on Laminar Conical Spray Sheet of Water". Proceedings of the Fourth ISHMT-ASME Heat and Mass Transfer Conference and 15th National Heat and Mass Transfer Conference, pp.521-526, 2000.
3. R. Rajesh, C. Balaji, S.P. Venkateshan, "A Numerical Study of Free Convection in an Open Cavity with a Discrete Heat Source" Proceedings of the Fourth ISHMT-ASME Heat and Mass Transfer Conference and 15th National and Mass Transfer Conference, pp.521-526, 2000.
4. A. Venkata Ramayya, S.P. Venkateshan and Ajit Kumar Kolar, "Experimental Evaluation of Local Heat Transfer and Bubble Contact Dynamics in a Large Particle Gas-Fluidized Bed", Proceedings of the Fourth ISHMT-ASME Heat and Mass Transfer Conference and 15th National Heat and Mass Transfer Conference, pp.1305-1312, 2000.
5. P.T. Manoharan, "Modern Trends in Inorganic Chemistry, 2000" L10(2000).
6. K. Padmakumar and P.T. Manoharan, "Modern Trends in Inorganic Chemistry" p96 (2000).
7. P.T. Manoharan, "2nd National Symposium in Chemistry", 6 (2000).
8. Adsorbate geometry studied by ion/surface reactive scattering, T. Pradeep, C. Evans, J. Shen and R. G. Cooks, 8th ISMAS symposium proceedings, pages 508-511, (1999).
9. Non linear optical properties of monolayer protected Au and Ag clusters, N. Sandhyarani, T. Pradeep, Reji Philip and G. Ravindra Kumar, National Laser Symposium-99, Hyderabad (1999).
10. J. Hemalathi, T.S. Sampath Kumar and A. Prameswaran, "Clinical applications of resorbable ceramics", 14th National Conference of Federation of Operative Dentistry of Indian and 7th National Conference of Indian Endodontic Society, 3rd-5th December 1999, Guwahati, 125.

(d) In Proceedings of International Conferences :

- K. Ramkumar, T.S. Sampath Kumar and R. Krishnan, "Effect of Chloride ion from chlorinated water on PMMA and characterization by UV and IR spectroscopy; International Symposium on 'Atraumatic Restorative Treatment 12-14 August 1999, Chennai. Abr. No:12.

6. Distinguished Visitors to the Department :

Sl.No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
01.	Dr. Reji Philip Visiting Scientist TIFR, Mumbai	10.9.1999	Delivered lecture
02.	Dr. A. Parameswaran, Head, Department of Conservative Dentistry, and Dr. K. Ramkumar, Lecturer, Meenakshi Ammal Dental College, Madurai, have visited	31 st January 2000.	For collaboration on clinical evaluation of biomaterials developed at RSIC,

	RSIC		
03.	Prof. Dr. W. Kaim, Institut fur Anorganische Chemie, Universitat Stuttgart, Germany	March 6, 2000.	Visited all the laboratories
04.	Group of Vice Chancellors from Sri Lankan Universities along with Prof. PV Indiresan, our Former Director	7.3.2000.	Indo-Sri Lanka Co-operation Mission

5.4 CENTRE FOR SYSTEMS AND DEVICES

The Centre for Systems and Devices carries out research and development activities on areas of interest to Defence Research and Development Organization. The centre has focused its R and D activities in the following areas:

- a) Applied Electromagnetics and Antenna Engineering
- b) Semiconductor Devices
- c) Signal Processing Techniques

The centre has established leadership in R and D activities on the above areas over the past several years. DRDO is able to make full use of the expertise available in the centre which are of relevance to their programs. Some of the R and D activities of the center relate to programs of national importance pursued by DRDO. Further, a number of students also work in the laboratories of the centre towards their B.Tech., M.Tech., M.S. and Ph.D. projects. The centre receives recurring grant from DRDO for the up keep of CSD laboratory facilities in addition to project grants received from DRDO from time to time. During the year under review the following R and D activities of the center could be highlighted.

- A) Determination of direction finding errors associated with direction finding system installed on Kamov type of helicopter.

In this project a highly sophisticated software has been developed for

- (1) Analysis of DF errors of the electronic jammers mounted on a helicopter of Kamov class so that accurate estimate of the angle of arrival information of an incoming radar beam can be estimated. The error is essentially due to the interaction of the helicopter body with the signals radiated by the jammer.
- (2) Determination of optimum location of the jammers on the body of the helicopter with a view to keep the estimated error within acceptable limits.

- (B) Development of PIN photo-diodes with dark current for scintillation detection.

Scintillation detectors with PIN photo-diodes form an integral part of Industrial Computed Tomography systems (ICT). ICT systems consists of highly sensitive scintillation crystal-photo detector array, besides other components. Scintillation crystals convert X-rays into light photons, which are subsequently converted to electrical signals. The aim of this project is fabrication of PIN photo detector suitable for scintillation detection. Their extremely small dark current, large active area and high reverse bias voltage characterize these photodiodes. Such a photo detector is being fabricated using the facilities available at the semiconductor devices research laboratory of this centre.

6. SPECIAL CENTRES OF FACILITIES

The following centres were established in this Institution to provide special facilities to its departments, faculty members and students / scholars :

Centre for Continuing Education

Industrial Consultancy and Sponsored Research

Central Electronics Centre

Computer Centre

The activities of the above Centres during the period under report are as follows :

6.1 CENTRE FOR CONTINUING EDUCATION

6.1.1. Introduction :

The Centre for Continuing Education (CCE) at IIT, Madras was established in June 1986, by merging together the different units connected with Quality Improvement Programme, Continuing Education activities and Curriculum Development activities at the Institute.

6.1.2. Quality Improvement Programme :

Since inception, 282 faculty members from other institutions have obtained Ph.D Degrees and 390 faculty members have obtained M.Tech degrees under this Programme.

Following are the data on Quality Improvement Program (QIP) pertaining to the year 1999-2000:

Title of the Program	Number Admitted	Number on Roll	No. of Degrees Awarded
Ph.D.	15	34	08
M.Tech	17	24	07

6.1.3. Short Term Training Programmes (Sttp) Under Qip :

Under QIP STTPs, 6 courses were held in 1999-2000 and 158 teachers of Engineering Institutions and also a few participants from industries participated in these programmes.

From 1970-71 to 1999-2000, 184 Short Term Training Programmes were conducted under QIP, and 4,251 teachers from various engineering colleges participated and got benefitted from these courses.

6.1.4. Curriculum Development Programme :

A more comprehensive Overall Curriculum Development Cell is now functioning in order to cater to the needs of all Departments. The course materials in the form of modules are developed. On request, these materials will be sent to various engineering colleges/ industries.

During the year under review, 11 programmes have been taken up by the faculty members of our institute.

Model Curriculum Development :

AICTE entrusted to us 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 CCE Office for all the areas. Also, Thermodynamics syllabus which has been planned as a common subject in first year has been done by this Institute.

Book Writing Scheme :

Under this scheme, the norms were 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, 30 books were published by our faculty members.

Continuing Education Project :

Under this Project, continuing education modules are developed by the faculty members and many industries are coming forward to make use of the expertise of the IIT, Madras faculty through these programmes.

Continuing Education Programmes (Short Term Courses) :

Institute faculty members organise several short-term courses under Continuing Education Programme for professionals from industry and R&D establishments on need-basis. From the date of inception, i.e., between 1980 & 1999-2000, 385 S.T.Cs. were conducted and 7,771 participants from various industries participated in these courses. About 25 to 30 such programmes are organised every year. During 1999-2000, 26 short term courses were conducted and 564 participants attended these programmes.

Educational Consultancy Programme :

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) meet their requirement to a great extent, it may be noted that CEP programmes are course / instruction oriented. Hence, it was decided to start Educational Consultancy Programmes (ECP) for industries. On specific request from industries, a programme is floated. The course contents and syllabus are drawn with mutual consultation. The programme may run from several days upto one year or so. Practical training is also imparted. During the year 1999-2000, 9 consultancy / training programs were undertaken by our faculty members.

6.2 INDUSTRIAL CONSULTANCY AND SPONSORED RESEARCH

6.2.1 Introduction:

The Centre for Industrial Consultancy & Sponsored Research was set up in 1973 to promote interaction with industries. The Centre provides administrative support for carrying out consultancy and sponsored research projects including for recruitment of project staff, maintenance of accounts and purchase of equipments and materials. It facilitates active participation of the faculty in various interactive programmes organized for the benefit of industries

Some of the areas of major activities of the Centre are:

- Sponsored Research Programmes
- Plan Schemes
- Technology Development Mission Schemes
- Consultancy programmes : Research based industrial consultancy/Retainer consultancy/Institutional consultancy
- Collaborative projects with foreign countries
- ISRO-IITM Cell Joint Projects
- IGCAR-IITM Cell Joint projects
- Projects sponsored by National Institute of Ocean Technology
- Industrial Associateship Scheme
- Entrepreneurship Development Programmes
- Technology Transfers
- Patents, etc.

Dean IC & SR

Prof. S. Srinivasa Murthy

6.2.2 Staff

Dr. D. Balakrishnan
Shri. R Sundaram
Shri. V Suresh
Shri. K Sekar
Shri. B Ramaswamy
Shri. S Mahalingam

Chief Techno Economic Officer
Senior Techno Economic Officer
Senior Techno Economic Officer
Assistant Registrar (Recruitment)
Asst Registrar (Project Purchase)
Asst Registrar (Project Accounts)

6.2.3 Sponsored Research:

42 Projects of value totaling to Rs. 448.01 lakhs were taken up by the Institute during 1999-2000

Major Funding Agencies:

- Department of Science & Technology (DST)
- Council of Scientific & Industrial Research (CSIR)
- Aeronautics Research & Development Board (ARDB)
- Department of Electronics (DoE)
- Indian Space Research Organisation (ISRO)
- Ministry of Human Resources Development (MHRD)
- Ministry of Surface Transport (MST)
- Department of Atomic Energy (DAE)

- IUC
- NBHM
- BRNS
- Ministry of Non-Conventional Energy Sources (MNES)
- All India Council for Technical Education (AICTE)
- Naval Research Board (NRB)
- National Institute of Ocean Technology (NIOT)

6.2.4. Plan Schemes:

Plan Schemes were sanctioned to this Institute by the Ministry of Human Resource Development in the following areas:

- Nationally coordinated project on Telematics
- Nationally coordinated project on Educational Technology
- Industry Institute Partnership Programme

Thrust areas, R & D Programmes and Modernisation Schemes have also been sanctioned.

6.2.5 Consultancy Programmes:

833 consultancy assignments of value totaling to Rs. 678.03 Lakhs were taken up during 1999-00. Research Based Industrial Consultancy activity contributes nearly Rs.221.46 Lakhs of the total value of the assignments. Also 18 faculty were retained as consultants by various industries.

6.2.6 Collaborative Research Projects:

The joint research projects taken up through BMBF, Germany and the GTZ projects for development of facilities in Catalysis, Material Science, Electronics Production Engg. Metallurgical Engg and Ocean Engg. Centre continued during the year. Also several projects under Indo-US, Indo-EEC, Indo-French etc. have continued.

List of Agencies (Foreign Collaboration)

1. Department of Navy, USA
2. National Science Foundation, USA
3. Commission of the European Communities, Brussels
4. Indo-French Centre for the promotion of Advanced Research (IFCPAR)
5. National Institute of Standards and Technology (NSST)
6. Swedish International Development Cooperation Agency (SSDA), Sweden
7. Analog Devices, U.S.A
8. Air Products & Chemicals Inc, U.S.A
9. Poppenhagen Grips GmbH, Germany
10. Ray Stata, U.S.A
11. AUM Systems Inc, U.S.A
12. Argonne National Laboratory, U.S.A
13. London School of Hygiene, London
14. International Lead Zinc Research Organisation, U.S.A

15. Ericsson Inc, U.S.A
16. Delaware Water Gap Science Institute U.S.A
17. Boeing Commercial Airplane Group U.S.A
18. Deluge Inc, U.S.A
19. Praxair Inc, U.S.A
20. DuPont, U.S.A

6.2.7 Industrial Associateship Scheme:

More than 225 industries are members of this Scheme (Large scale 26 medium-scale 109 and small scale 90). The following Technology Appreciation Programmes were organized during 1999-2000.

- Material Handling for the next millennium
- Smart Sensors & Valve Positioners
- Industrial Applications of Analytical Instruments
- Industrial Applications of Electron Microscopy
- Simulations on Computing for Industrial Applications

6.2.8 Other Programmes:

IGCAR Cell.

Periodical review meetings were held during the year. One new project was sanctioned and other projects mentioned in the previous year were continued during the year.

ISRO-IITM Cell Joint projects

This is an on-going activity sponsored by the ISRO where research projects of interest to ISRO are being taken. 7 ongoing projects were continued during the year and 4 Projects were sanctioned. 4 Projects were closed and reports submitted to ISRO. The Joint Policy Committee of the Cell reviewed the Project periodically.

Centres

ICSR has assisted in setting up and administering of the following centres:

- CFD
- CFEAD
- NDE (Proposed)

6.2.9 Patents

During the year under report, applications were made for taking 2 patents in the name of the Institute and 2 were sanctioned.

6.2.10 Visitors:

The centre organized and facilitated the visits of many dignitaries to IIT Madras.

The following visited during the year:

National

03-12-1999 Dr.A.M. Singhvi, President(World Class Manufacturing) The Aditya Birla Group of companies, Mumbai

- 02-03-2000 DRDL Scientists visited in connection with possible projects for the design of hypersonic test vehicle
- 15-03-2000 Shri. A. Gopal General Manager (Cold Rolling Technology) TISCO, Jamshedpur
- 20-03-2000 Shri. M. Supramanian, Senior Vice President, The Reliance Industries Limited, Mumbai

International

- 03-03-1999 Jean Heuschen, Vice President and Managing Director General Electric Technology Centre, Bangalore
- 24-09-1999 Dr. David Gonsalvez, Director (Portfolio Planning) General Motors, USA
- 14-02-2000 Prof. Streffer Scientific adviser for International Projects DLR, Germany

6.2.11 ISO 9001

Internal Quality Audit was done on 03-09-1999

ISO 9001 Surveillance Audit was conducted on 23-02-2000

6.2.12 Technology Development Missions:

The projects taken up under the Mission on "New Materials" and "Energy Efficient Technologies & Devices" were completed on 31.03.2000.

New Proposals have been submitted to the Planning Commission for TDM Projects under the Ninth Plan. IIT Madras is the lead Institute for the Mission on "Energy, Resources Management and Environment Technologies".

6.2.13 MoUs / Agreements signed by IIT Madras with the following organizations / Institutions during 1999-2000

17 MoUs were signed by IIT Madras with other organizations/institutions during the year 1999-2000

6.2.14 Publications:

- Quarterly Publication on "IIT Madras News" continued to be published.
- "Newstech", a News Letter for Industrial Associates continued to be published
- Abstract of M.Tech & M.S theses were published
- Updated version of the booklet on Research Consultancy Expertise and Facilities at IIT Madras
- Handout on Products developed at IITM
- Handout on IITM at a glance
- Handout on IITM Turns Forty

6.2.15 The "Summer Assistantship Scheme" was continued for 3rd year B.Tech/B.E students of other Engineering colleges. 21 students joined the scheme during the year

6.2.16 Industrial Lecture Programme approved by IC & SR continued to be organized by Engineering Departments.

6.2.17 Exhibition

Participated in the Exhibition conducted by CII at Hyderabad during 28-30 October 1999

6.3 CENTRAL ELECTRONICS CENTRE

6.3.1. About the Centre

The Central Electronics Centre (CEC), founded in 1971, is unique among several centres at this Institute, since it offers various technical services like maintenance, servicing, manpower development and calibration of electronic instrumentation, all under one roof. It is conceived as the core in the area of servicing of electronic equipment and development of skilled manpower for this purpose. Over the years, from being a central service facility within IITM, it has continuously enlarged its activities and is now in a position to offer the following services to other organisations in and outside the country.

- Servicing and maintenance of electronic equipment
- Training programs for manpower development
- Measurement of physical parameters
- Calibration of electronic equipment
- Development of custom-built systems/controllers

Its role has been vital in the training of electronic technicians by conducting regular training programs. These trained personnel play a major role in the maintenance of electronic equipment not only in the institute but also in several other outside organisations. From time to time, this Centre has been conducting short term courses, orientation programs, and tailor-made courses in the area of maintenance of electronic equipment.

Recently, Laboratory (Indoor and outdoor) facilities have been established in the area of Solar Photo Voltaics. The Centre has completed a major Training Program Project in the area of Solar Photo Voltaics, by training 855 Engineers and Technicians from all over the country.

So far, this Centre has lent its expertise to more than 200 industries in this country by servicing sophisticated electronic equipment and process controllers including field service right at their plants. It has been helping various industries in calibrating their electronic equipment as well as in-situ measurement and recording of various electrical and physical parameters. The Centre has also developed instrumentation systems to suit the industry-specific needs for a number of organisations in this country. Currently, there are a number of ongoing Industrial Consultancy Projects on diversified industrial problems in the area of Electronics & Instrumentation

6.3.2. Training Programs

Long Term CEC Training Program

Regular CEC Training Program of one year duration is being conducted. Fourteen candidates are undergoing training this year.

AMET (Academy of Maritime Education and Training) Training Program

Second Electro-Technical Officers Training Program for the Marine Radio officers of the Merchant Navy has been conducted in co-ordination with AMET, Chennai.

Co-ordinator	Title	Period	No. of candidates trained
Dr.M.Kumaravel	Electro-Technical Officers Training Program for Merchant Navy	12 weeks 27.9.99 to 17.12.99	19

The project value is Rs.12 Lakhs.

6.3.3. New facilities added and major equipment procured

Name of the Facility	Cost Rs. In lakhs
(i) Upgradation and networking of PCs	2.50
(ii) Video LCD Projector	2.40
(iii) Digital Storage Oscilloscopes	0.70
(iv) Multimeters	0.36
(v) Ink Jet Printer	0.13
(vi) Uninterrupted Power Supplies	1.20
(vii) Oscilloscopes	0.78
(viii) True RMS Multimeter	0.18
(ix) Dot Matrix Printer	0.06
(x) Desoldering Tool	0.18

6.3.4. Some of the Important Consultancy Projects completed

Sl. No.	Co-ordinator	Title of Project	Organisation	No of Assign.	Project value in Lakh of Rs.
1.	Dr.M.Kumaravel	CNC M/C Modules	Heavy Vehicles Factory, Ministry of Defence, Avadi, Chennai	17	2.95
2.	-do-	CNC M/C modules	Engine Factory, Ministry of Defence, Avadi, Chennai	1	0.43
3.	-do-	CNC M/C Modules	Ordnance Factory, Ministry of Defence, Medak, A.P	1	0.36
4.	-do-	CNC M/C Modules	GE Power Controls, Pondicherry	2	0.12
5.	-do-	Wire bonding Machine	Pentafour Solec, Chennai	1	0.79
6.	-do-	Controllers for Textile Machineries	Euro Tech, Chennai	2	0.28
7.	-do-	Evaluation of UPS	Enertek (P) Ltd, Chennai	2	0.28
8.	-do-	Audio Cassette Loading Machine	Vijayavani Audio, Chennai	2	0.21
9.	-do-	CRT Monitors	National Institute of Ocean Technology, IIT Madras Campus.	1	0.30
10.	-do-	R-core winding M/C	Probis Industries, Chennai	1	0.13
11.	-do-	Tensile Testing Machine	Jumbo Bag Ltd, Chennai	1	0.29
12.	-do-	Drives and Controllers	SPIC Electronics Ltd, Chennai	7	0.78

(i) Paper presented in the Workshop

Author	Title of the Paper	Name of the Workshop	Date
Dr.M.Kumaravel	Solar Photo Voltaic Systems – Current Trends and Challenges	Renewable Energy -99 Exhibition cum Seminar organised by TEDA in Chennai.	31.7.99

(ii) Paper presented in International Conference

Author	Title of the Paper	Name of the Conference	Period
Dr.M.Kumaravel	Strategic Measures to achieve sustainable Quality Solar Photo Voltaic Systems	International conference on Renewable Energy Technology (MILCONRES) in Chennai.	14-18 th February 2000

6.3.5. (I) Guest Lecture delivered

Name of Faculty	Topic of the Lecture	Organisation	Date
Dr.M.Kumaravel	Solar Photo-Voltaic Systems –Recent Trends and Challenges	School of Energy, Bharathidhasan University, Trichy	28.12.99

6.3.6. Special Assignment

Dr.M.Kumaravel served as Expert Reviewer and Resource Person on invitation for the SPV Training Program conducted by an Australian Company in Sri Lanka from 14.3.2000 to 18.3.2000. The program was supported by World Bank Project.

6.3.7. Design and Development Activities

An electronic maximum Power Point Tracker (MPPT), as Energy Enhancement Device for Solar Photo Voltaic powered Water Pumping System has been developed. It is undergoing field trials to determine the quantity of enhanced water delivery.

6.3.8. Staff Strength

The Centre has 11 Technical, 5 Administrative and 4 Project staff.

6.4 COMPUTER CENTRE

6.4.1. Introduction:

The Computer Centre was established in 1973 and 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 system was replaced by a client-server environment with effect from Nov.95. The present IBM RS 6000 models 590 and 370, a cluster of servers on a high-speed network and provide a distributed computing platform for research and development. The computing facility was enhanced with H.P highend server cluster and a file server under ICOSER scheme and IBM S-390, a gift from IBM.

Computer Centre also provides Campus network connecting all the departments and Internet facility using VSNL 64Kbps radio link. During the year under review, an ATM based high-speed backbone for the campus has been implemented. Fibre cable is used to connect buildings and enhanced UTP cable for general networking of each building. The backbone is 622 Mbps and each building is connected to the backbone by 155 Mbps ATM uplink. Work is under way to extend this network to cover the hostel sector. There are also plans to upgrade the 64 Kbps external connectivity to 512 Kbps.

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 1500 machines. In addition Computer Centre has been serving the computerisation of the following establishments of the IIT:

- | | |
|-----------------------|-------------------------------|
| 1. Administration | 6. GATE |
| 2. Finance & Accounts | 7. Joint Entrance Examination |
| 3. Hospital | 8. Hostels |
| 4. Library | 9. Stores & Purchase |
| 5. Engineering Unit | 10. Academic Section |

6.4.2. Details of Staff

Name and Qualification	Major Area of Specialization
Head Sriram P, Ph.D	Computer Networks, Distributed & Parallel computing.
Senior Systems Engineers Dheenadayalu R, M.Sc(Engg)	Data Centre Operations, Systems Administration. Application Software System selection.
Jayaprakash S, Ph.D.	Software Engineering, Computer Networks, Fault-tolerant Distributed Systems, Internet, E-Commerce, Data Warehousing & Data mining.

Ramesh S.K, M.S

MIS, Data Management, Data Processing, System Programming.

**Systems Officer Gr.I
Sourirajan C.S, M.Sc.**

System Administration, Programming Languages, Small computers, Application Software Development.

**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. &
M. Tech. In Ind. Maths.**

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. &
M.Tech (IIT) (Comp. Applns)**

UNIX System Administration (ii)RDBMS (iii)E-commerce and Data Warehousing (iv) Data Mining

**Junior Systems Engineer
Sreekumar P.Y, B.Tech(C.S)**

Computer Networks, Database management Systems, Systems Administration.

System Trainees on Roll: (1999-2000)

1. A. Nandini Devi
2. M. Parthasarathy
3. V. Sriram
4. P. Vijaya Rajkumar
5. D. Bhanu
6. P. Senthilkumar
7. M. Minimol
8. J. Ramesh Kumar
9. Alice Jeby Joseph
10. R. Amutha

Trainees in PC cell

S. Thamarai Selvan
T. Balamurugan
P. Karuppan
A. Nallayan
B. M. Kuppusamy
P. Hariharan

6.4.3. New Facilities / Equipment Added:

Additions:

Electronic class room

A state of the art electronics class room with 20 pcs for students and one PC for the instructor has been commissioned during the July- December semester. The PCs are equipped with multimedia

facilities. Classnet hardware has been implemented connecting these machines for effective monitoring/guidance of the students by the instructor. Roof mounted LCD panel facilities are being ordered to augment these facilities.

HARDWARE

The following hardware have been installed.

(i) ICOSER Machine:

In addition to the existing HP cluster consisting of HP high end servers, graphic servers and Linux cluster consisting of 15 PCs an Octane SGI workstation with 256 MB RAM, 250 MHZ, 4 GB HDD and 128 MB RAM was also installed under ICOSER project.

(ii) S-390 system with 227 2w processor, 1048 MB memory, 18 GB hard disk and magnetic tape subsystem

(iii) 21 nos HCL Infinity Series with Pentium II 400 MHZ processor with 64 MB SDRAM , 4.3 GB ultra DMA ATA HDD, 17" VGA monitors and multimedia kit.

(iv) 11 IBM PCs with 32 MB RAM and 6.4 GB HDD

(v) ERGOTRON customisable modular rack system for housing the servers.(The servers in the computer centre have been relocated in the printer room using the ERGOTRON racks.)

6.4.4 Software

Quiz Master software
Signal processing toolbox for MATLAB
Windows 98
Office 97
Visual Studio
Novell Netware 5.0 with Oracle 8
Windows NT Server

NETWORKING

The ATM based backbone network connecting all the buildings has been implemented by Computer Centre. Mostly, the existing conduits laid for running the Siemens systems cables have been used for installation of the fibre optic cable. The three nodal points for the backbone are Computer Centre, Hydraulics Lab and RSIC. The ATM small switches are placed in R&AC, MES and administration building. The edge devices are placed in optimal locations in each one of the buildings, so that any next level switch can be reached within the UTP CAT5 cable length limitation of 100 meters. Buildings with large spread (BSB, HSB, Workshop Lab complex) have been provided with multiple fibre drops to enable full coverage. In each one of the buildings, the local network is implemented based on a structured design for scalability using enhanced CAT5 UTP cable. To implement the campus network, 3 ATM (622 Mbps) backbone switches, 3 ATM (155 Mbps) small switches, 25 edge devices with ATM (155 Mbps) uplink, 80 Ethernet switches, 7 kilometers UTP components are used. The network provides about 200 ports at the 100 Mbps (lab/server) level and about 1500 ports at the 10 Mbps (desktop) level.

GATE AND JEE RESULTS ON THE WEBSITE.

Mr. SK Ramesh and Mr. V. Ravichandran, System staff of the computer centre published the results of the GATE on the IIT website.

Staff served in Committees:**R. Dheenadayalu**

- a. Selection committee for trainees in Central Electronics Centre
- b. Selection committee for trainees in Computer Centre and PC Maintenance Cell.
- c. Selection committee for the selection of Senior Project technician for Civil Engineering department projects

S Jayaprakash

- a. Selection committee for trainees in Computer Centre

Baman Banavath

- a. Selection committee for trainees in PC cell and Computer Centre, and Central Electronics Centre.
- b. Selection Committee in Technical & Lab assistants in CSE Department.

V. Ravichandran

- a. Board Member for IC & SR.

6.4.5. Institute Projects:

S. No.	Title	Coordinators
1.	Campus Network	Dr. S. Jayaprakash
2.	Hospital Information System	Mr. R. Dheenadayalu
3.	JEE Data Processing	Mr. C.S. Sourirajan Mr. Banavath Baman Mr. C.N. Vijayaraghavan
4.	GATE Data Processing	Mr. S.K. Ramesh Mr. V. Ravichandran
5.	M. Tech Admission	Mr. S.K. Ramesh Mr. V. Ravichandran
6.	CARS/ARMS System Management	Mr. P.Y. Sreekumar
7.	Stores & Purchase Management	Dr. (Mrs.) Sirohi
8.	Library Automation	Mr. S. Ramalingam
9.	Hostel Mess Management	Mr. C.S. Sourirajan Mr. V. Ravichandran
10.	Hostel Billing System	Mr. C.S. Sourirajan
11.	Taramani Guest House Automation System	Mr. Banavath Baman
12.	Faculty Academic Profile	Mr. Banavath Baman
13.	Hostel Employees Payroll	Mr. V. Ravichandran
14.	Teachers Evaluation (processing)	Mr. C.S. Sourirajan
15.	Teachers Evaluation (on line feedback)	Mr. P.Y. Sreekumar

6.4.6 Consultancy Projects:

Sl.No.	Title	Period	Funding Agency	Amount (Rs.in lakhs)	Coordinators
1.	GIS Lab. For Engg Appl. Under Thrust Area in Tech. Education	1996-1998	AICTE	7.00	Mr. S.K. Ramesh
2.	Educational Software Module for Systems Design	1999-2000	TCS	4.00	Dr. S. Jayaprakash

6.4.7 Visits Abroad by Faculty:

S. No.	Name of Faculty	Country Visited	Date	Purpose of visit
1.	R.Dheenadayalu	Malaysia	March 1999	Educational consultancy for CEMPAKA institutions
2.	V.Ravichandran	USA	May 99-June 99	Curriculum training on S390

6.4.8 Research Publications:

Books

R.Dheenadayalu, Computer Science for ICSE, Vol I, 2/e, Tata McGraw- Hill publishing Company, New Delhi

7. CENTRAL SERVICES

7.1 Central Workshop:

“Workshop is an educational platform where science is translated into technology”

Central Workshop was established to meet the above objective in 1959 with three major production processes i.e. Metal cutting, Metal joining, Metal forming with shop as follows:

Shops	Facilities
Carpentary	Turning, Thickness reducing – Polishing and Slitting
Fitting Shop	Filing, Drilling, Tapping – Zig Boring Tool Milling, Engraving – Marking Slotting and Grinding
Machine Shop	Shaping – Milling – Turning – Planing – Radial drilling Tool & Cutter grinding and Work cutting
Gear Shop	Spur, Helical, Bevel Gear cutting
Pneumatics	Festo Training Kit with different valves for students' Demonstration + some practical applications
Electrical Shop	Simple wiring and winding
Instrument Shop	Pressure testing facilities upto 100 Kg N.C. Trainer Lathes
Welding Shop	Arc and gas welding, Brazing and soldering
Electronic	Soldering practice, Measurements, Oscilloscope PLCs Battery Charging unit
Foundary	Oil fired furnace, Cupola and Sand Plant
Smithy	Hand forging and a power hammer
Hydraulics	Weight lifting equipment for demonstration from Eukon Bosch Hydraulic kit for different valves for students' demonstration. Bosch Training Kit.

Besides the above, Central workshop also bears the responsibility of maintaining Institute Automobiles.

Central Workshop very effectively caters to the undergraduate programmes by imparting individual practical training in various shops cited above. During 1999-2000, 442 undergraduates (I B.Tech) got training under the assigned course of ME 107, ME 108, titled Workshop Training – I & II bearing 2 credits each. For II year undergraduates ME 203 and ME 207 titled Workshop III and Advanced Workshop Training with 2 credits each for Workshop III and 3 credits for Advanced Workshop Training Programme were given.

In addition to the undergraduate training Central Workshop executed fabrication of equipments and accessories related to Ph.D., P.G. and U.G. Project works. 507 work orders were executed during 1999-2000.

Recently fabrication work for two major sponsored projects (Thermal stripping circuits (Rs. 15 lakhs), Buckling of inner vessels (Rs. 20 lakhs) co-ordinated by Applied Mechanics Department were completed.

Some of the industries like BHEL, CVRDE and KCP used Central Workshop facilities for gear cutting, gear inspection, pressure gauge calibration and rack cutting.

Calibration of Gauges for L&T and Nycer for Rs 10,000 and Bevel Gears for M/s Purushotham Mills, Villupuram for Rs 20,000 were done. In the process of modernizing the workshop training programme to B.Tech students FRP & Plastics Laboratories are getting ready.

7.2 Central Photographic Section

This 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 caters to the requirements of research students/faculty. It extends facility for colour photography, however, the processing and printing is done outside as the volumes handled are not commercially viable. The Central Photographic section handled 325 job orders during 1999-2000 to a value of Rs.55,000/-. 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, Independency day, Sports day etc. |

7.3 Air Conditioning Unit:

This is a central facility of the institute which is responsible for the planning, installation, servicing, maintenance and operation of all Central and package airconditioning plants, window air conditioners, water coolers, refrigerators and research equipment and machines which incorporate cooling and airconditioning systems such as thermostats, humidity chambers, chemical process equipment etc.

7.4 Central Gas Supply Unit:

The Central Gas Supply 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 and Hydrogen

Special gases: High Purity Argon, High Purity Oxygen and High Purity Nitrogen

The following are the quantity ordered and issued to various departments during the year 1999-2000:

Industrial Gases:

Item	Order	Consumption
1.Oxygen	2250 Cu.m	1680 Cu.m
2.Dry Nitrogen	2250 Cu.m.	1638 Cu.m
3.Dissolved Acetylene	225 Cu.m.	210 Cu.m
4.Hydrogen	225 Cu.m.	202 Cu.m

Special Gases:

1.Argon Gr.I	1400 Cu.m	1309 Cu.m
2.High Purity Nitrogen Gr.I	300 Cu.m.	300 Cu.m
3.Zero Air	275 Cu.m	275 Cu.m

7.5 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.

Number of work orders received and completed during April 1999 to March 2000 is 196.

During the above period Rs.27,143 was earned as service charges.

7.6 Educational Technology Cell:

The activities at the Educational Technology Cell can be classified generally under the following four heads.

1. Video recording of Semester lecture courses / video programmes produced.
2. Workshops conducted and CAI development.
3. Video shooting for analysis and research projects.
4. Video coverage of Institute functions.

1. Video recording of Semester lecture courses :-

- a) "Fluid Mechanics" by Prof.P.A.Aswathanarayana, of the Dept of Applied Mechanics.
- b) "VLSI Design" by Dr.Nandita Das Gupta, of the Dept of Electrical Engg.
- c) "X-Ray Photo electron spectroscopy" by Dr.T.Pradeep, of the Dept of Chemistry, & RSIC.
- d) "Motor Control" by Amitava Das Gupta" of the Dept of Electrical Engg. (on going)
- e) "Measurements in Thermal Sciences" by Prof.S.P.Venkateshan of the Dept of Mechanical Engg. (on going)
- f) "Computational methods in Design and analysis" by Dr.R.Krishna Kumar of the Dept of Mechanical Engg. (on going)
- g) "Environmental Biology & Microbiology " by Prof. D.V.S.Murthy of the Dept of Chem Engg. (on going)
- h) "Industrial wastewater management" by Prof. D.V.S.Murthy of the Dept of Chem Engg. (On-going)

2. Workshops conducted & CAI development :-

- a) A Major workshop was conducted to commemorate the 40th anniversary of IIT-Madras on 15th April 1999, "ETC-CCE project on Computer Aided Instruction". The moto was "One faculty one CD"
- b) A core group of about 25 faculty members drawn from all branches have been formed to lead the project. A workshop was conducted for this core group members on 15th May 1999. "Application of various software for production of CDROM".
- c) A special lecture on "Authorware and setting up commercial website for education software" by Mr.Adam Halstead, MCH Multimedia, Montreal, CANADA, was conducted on 2-3 & 3-3-2000.

3. Video shooting for Analysis / Research projects :-

- a) "Vortices in Nuclear power reactors" for Prof.B.H.L. Gowda, Dept of Applied Mechanics.
- b) "Analysis of air flow in turbines" for Dr.M.Govardhan, Dept of Mechanical Engg.
- c) Video coverage for Traffic analysis for Dr.V.Thamizh Arasan, Dept of Civil Engg.

4. Video coverage of Institute functions :-

- a) Video coverage of Bose & Einstein lecture on 30-10-99.
- b) Video coverage of handing over of Training equipment at Central Workshop.
- c) Video coverage of visit of the Chairman, Exim Bank, USA, 23-2-2000.
- d) Video coverage of Symposium on "The emergence of India as a Knowledge Superpower on 29-1-2000.
- e) Video coverage of the 36th Convocation.
- f) Video coverage of MILCONRES -2000, (Millenium international conference on renewable energy Technology on Feb - 9-11- 2000.
- g) Video coverage of COPEN- 2000 Conference on Precision Engg. On 12-1-2000.
- h) Video coverage of Inter - IIT sports meet.

• Distinguished visitors to the Department :-

Thomas Crampton, Correspondent, Herald Tribune, Bangkok, Thailand.

8. 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 Science and other new emerging areas. The Central Library holds 3,42,575 lakhs unique collection, 848 current journals catering the needs of 4,014 members. The major activities undertaken in the Central Library during the period as reported are listed below:

8.1 ISO 9001

The Central Library participated in ISO activities along with other units of the Institute. Some of the major activities are listed below:

1. Librarian received a copy of ISO-9001 certificate along with memento from the Chief Guest Mr. N. Kumar, Managing Director, Chemplast - Sanmar in the presence of Director of the Institute. The other library staff members also received mementos from the Director on 12-05-1999.
2. 1st Meeting of the Quality Circle was held on 05-04-1999. Dr. S.S. Gokhale, Management Representative, ISO-9001 also addressed the members.
3. Conducted various meetings of Quality Classification Group and also classified 500 books after having deep professional discussions with the members.
4. ISO 9001 Surveillance Audit completed on 22-03-2000.

8.2 Library Software

1. The Library Automation Software - CLAM which is based on Integral-SQL RDBMS, has been modified and upgraded to overcome the Y2K problem.
2. Special demonstrations of library software packages from M/s. Soft Link Asia Private Limited, New Delhi and M/s. Frontier Information Technologies, Hyderabad were arranged for updating and understanding the Indian Library software packages.
3. Micro Soft Office was procured and installed in various sections for generating in-house reports.
4. Book Bank has been totally automated with bar-coded transactions.

8.3 Bar-coding

The Central Library initiated the bar-coding of library books and also digitised the entire membership records of the members including industrial associates. Since 1st January, 2000, the issue of books against traditional library cards has been stopped and the members are using the bar-coded membership cards for all library transactions.

8.4 CD-ROM Networking:

The Central Library has provided remote access to the library's CD-ROM network server to various departments/centres/laboratories/sections of the Institute for searching and retrieving literature from CD-ROM databases under LAN/WAN environment.

8.5 Resource Sharing:

The Central Library actively participated in Resource Sharing activities with various organizations including other IITs. Some major activities undertaken in resource sharing are listed below:

1. Contents pages of the journals from other IIT's were arranged and sent to the Department of Computer Science and Engineering, Aerospace Engineering, Electrical Engineering and Humanities and Social Sciences.
2. Arranged the extended borrowing facility to the faculty from Anna University on mutual basis with effect from February 9, 2000.
3. The exercise regarding the subscription of journals under Consortium plan has been completed and the status has also been informed to all participating libraries in discussion with Chairman Library Advisory Committee.
4. Librarian attended the library resource-sharing meeting organised by Director, DESIDOC at New Delhi on 28.05.1999 and also at IIT Kharagpur on 2nd & 3rd, September, 1999.
5. The Central Library implemented the resource-sharing programme. Under this, the list of spare copies of current journals available with IIT Madras was prepared and sent to all IITs.

8.6 New Facilities / Equipments added:

1. Aquaguard a new water purifier has been fixed in the II floor.
2. EPSON LQ 1070 + Dot-matrix printer installed for daily transactions in the data processing room.
3. WIPRO Dot Matrix 3 printers for Book Bank, Journals Information Section, Acquisition and Processing Section.
4. Two HP Office Jet PRO R: 45 Printer-cum- copier-cum-scanner were installed for Journals Information Section, Circulation & Reference Section for providing the contents page and document delivery services.
5. HP JET colour laser 4500 DN printer for printing the bar-coded membership cards and also providing central facilities for other departments.

The following equipments were also purchased under AR&DB project

1. Intel Pentium III PC
2. HP CD-writer plus 7500 series
3. HP Scan jet 6350 C
4. Signature III CD colour printer

8.7 Activities for New Library Building:

1. Before shifting, Pooja was performed at New Library Building, Deputy Director, Dean, Academic Research, Dean Academic Courses, Chairman, Estate and Works Committee, New Library Building Monitoring Committee Members and Library Staff attended the Pooja on 12-03-2000.

8.8 Book Exhibition:

Under the auspices of Books Exhibition Committee and in associations with Publications Division, Ministry of Information and Broadcasting, Government of India, the Central Library organised Books Exhibition from **27-03-2000 to 31-03-2000**.

8.9 Donation:

A cheque for \$400 has been presented by Dr. Sivakumar Tadikonda an alumnus of IIT Madras towards the subscription to the Journal of "Micromechanics and Micro Engineering" for the year 2000.

8.10 Special Presentation

1. Springer Verlag made presentation on 19-11-1999 regarding link an On-line Journals database.
2. Book Supply Bureau made special presentation on Indian Standards on CD-ROM on 26-11-1999.

8.11 Distinguished Visitors:

Sl. No.	Name of Visitor	Date of Visit	Purpose of visit
1.	Dr.Brian Lang, Chief Executive & Deputy Chairman, British Library, UK	15-02-2000	To visit the Library and discuss with Director
2.	Dr.Francis J. Devadasan, Director, Centre for Library & Information Resources, Asian Institute of Technology, Thailand	21-04-1999	To visit the Library and discuss with Librarian
3.	Prof.J.L. Sardana, President, Indian Library Association, New Delhi	09-05-1999	To visit the Library and discuss with Librarian
4.	Mr.Arun Mahizhnam, Deputy Director, Institute of Policy Studies and Member, National Library Board, Singapore	03-07-1999	To visit the Library and discuss with Librarian
5.	Prof.Navalani, Former Head, Department of Library and Information Science and Dean, Faculty of Arts and Science, Punjab University, Patiala	06-08-1999	To visit the Library and discuss with Librarian

8.12 Faculty Publications

1. Harish Chandra, Financial resource generation and shift to electronic information era at the Central Library of IIT Madras. Proceedings of 44th All India Library Conference. Hyderabad 1999, p. 67-75
2. Harish Chandra, Information technology based library and information services: a case study of Indian Institute of Technology Madras. National seminar on challenges before the university libraries in India in the 21st Century. Vadodara. ILA. 9-12 August 1999 p. 277-284
3. Harish Chandra, Application of ISO-9001 in the Central Library of IIT Madras: Some experiences. Special Publication No 39 " Information management in the context of fast emerging information society. Agra, IASLIC, December 1999. p151-156
4. Harish Chandra, Relevance of total quality management for university and college libraries: An overview. Library Vision 2010: Indian libraries and librarianship, Hisar, ILA, 1999, p. 669-677
5. Harish Chandra and R.K.Bhatt, Challenges to Indian librarians with specific reference to developments in information technology: Current scenario, Library Vision 2010: Indian libraries and librarianship, Hissar, ILA, 1999, p. 328-334
6. Bhatt R.K, Harish Chandra and J.P.Srivastava, Development of university and college libraries in India during pre and post independence period: A historical study. Library Vision 2010: Indian libraries and librarianship, Hissar, ILA, 1999, p. 1-15

8.13 Short term courses /workshop/ seminar/ symposium/ conferences/ training/ meeting/ attended by faculty/ in recognized academic institutions and public sector units:-

Sl.No	Name of the Faculty	Title	Institution	Period/ Duration
1.	Dr. Harish Chandra	Workshop on Net Working of Libraries	Science City, Chennai	28-07-1999
2.	Dr. Harish Chandra	Meeting on Indian Patent Law	CII, Ministry of Industry, Govt of India	06-08-1999
3.	Dr.Harish Chandra	Workshop on Leadership and Team Building	IIT Madras	23-07-99 to 25-07-99
4.	Dr.Harish Chandra	Ph.D. Viva Voce Examination	University of Madras	07-07-1999
5.	Dr.Harish Chandra	Session on Digital Libraries of Technology based Learning Symposium	Montersey Tech Virtual University (TEL)	19-05-1999

6.	Dr.Harish Chandra	Library Work Study Committee	Pondicherry University, Pondicherry	23-08-1999
7.	G. Kumar, SPA	Attended Seminar on Emergency Preparedness for Fire Threats	Indian Institute of Security Management Madras	24 & 25 th March, 2000
8.	17 Library Staff	Campus Network & Internet Facilities	Computer Centre, IIT,	17-02-2000

8.14. Special Lectures Delivered by Faculty in other Institution.

S.No	Name of the Faculty	Topic of Lecture	Venue and Date
1.	Dr.Harish Chandra	New concepts and technique in information technology and retrieval system.organised by the Regional Training Institute of AIR.	All India Radio, Chennai 08-07-1999
2.	Dr. Harish Chandra	ISO 9001, Experience of IIT, Central Library	MALA 25-06-1999
3.	Dr. Harish Chandra	Building up a Virtual Library	MGR Medical University 28-2-2000

8.15 Staff User Meet:

The following staff user meets were organised followed by special lectures

S.No	Name of the Speaker	Topic	Date
1.	Mr. Mohan H.R. Chief System Manager. The Hindu, Chennai	Web Publishing	12-04-1999
2.	Prof. M.A. Gopinath, Visiting Professor North Caroling Control University,	Knowledge Based System Design and Development	20-07-1999
3.	Dr. S. Ravi, Coordinator and Head Library and Information Sciences, Annamalai University,	Time Management	29-10-1999

4.	Dr. M. Nagarajan Reader Department of Library and Information Sciences, Annamalalai University	Public Relations in S & T Libraries	07-12- 1999
5.	Prof. Subbiah ArunachalamMSSRF Distinguished Fellow, Chennai-113.	Changing face of Science Communication	18-02- 2000

8.16 Library and Information Services Statistics:

a. Membership

Institute Members	1999 – 2000	Total
Staff	45	1189
Retired Faculty	19	28
Students	1502	2504
Alumni Members	17	23
Corporate Members	17	29
Industrial Associateship Members	83	212
Special Members	29	19
Project Coordinators	3	10
	-----	-----
	1715	4014
	-----	-----

b. Collection

Books	2809	1,91,601
Theses	209	2,481
Pamphlets and Reports	5	62,121
Microfilms/Fische	12	1,842
Book-Bank (General)	26	4,526
Book-Bank (Weaker Section)	37	6,546
Current Periodicals by Subscription	762	--
Current Periodicals by Exchange/Gift	86	--
Back Volumes of Periodicals	1751	75,300
	- - - - -	- - - - -
Total	5698	3,42,575
	-----	-----

c. Services**Circulation**

Number of Readers visited	1,97,550
Number of Books/Journals issued	84,729
Number of Books issued through Bank Book (General)	2,400
Number of Books issued through Bank Book (Weaker Section)	4,300
Consulation cards issued to users	394
Overdue & other charges collected	2,40,487
Xerox Charges Collected	3,38,742.90

Reservation of Books

Registered	4,707
Fulfilled	3,232

Loans

Department Lan (under issue)	5680
Permanent Loan issued:	501

Inter Library Loans

Borrowed from other Libraries	133
Loaned to other Libraries	221

Literature Search

CD-ROM search by users	4,900
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Reprint Service

From International Sources i.e	
British Library	206
INSDOC etc.	
Supply of reprints to other libraries	513

Reprography Service

Number of Xerox copies supplied	8,05,766
Number of copies printed on Rotoprint	3,61,231
Barcode – ID cards Produced Black & White	750

Binding

Number of Books and journals bound (internal)	2,000
Number of Miscellaneous publication bound (internal)	800
Number of Books & journals bound through external binders	3,100
Departments work (Miscellaneous)	3,700

9. STUDENT AMENITIES AND ACTIVITIES

9.1 Hostels

All students admitted to IIT Madras are required to reside in the hostels in the campus. There are 11 men's hostels and 1 hostel for ladies with a total of 2398 single rooms and 163 triple rooms accommodation. During the period under report, there were 2510 men and 274 women students in the hostels.

A Warden and an Assistant Warden administer each hostel. A Hostel Council consisting of Student Secretaries and Assistant Warden in day-to-day functioning of the hostel assists the warden. The Hostel Management is a centrally administered body and is overall charge of the functioning of all the Hostels and the Central supplies Unit. There are 259 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. S. Kumaraswamy Professor of Mechanical Engg.
Assistant Registrar	Sri. V. Ganesan

Name of the Hostel / Unit	Warden
Alakananda	Dr.A Mani Asso. Professor of Mech Engg
Brahmaputra	Dr.N. Ramesh Babu Asso. Professor of Mechanical Engg.
Central Supplies Unit	Dr.S Kumaraswamy Professor of Mech Engg.
Cauvery	Dr Amitava Das Gupta Asso Prof of Elec Engg
Ganga	Dr.Shreesh Chaudhary Professor of Hum. & Soc. Sciences Upto 27.4.99
	Dr G Sundararajan Asso Professor of Chemistry From 28.4.99
Godavari	Dr.L. Vijayaraghavan Asso. Professor of Mechanical Engg.
Jamuna	Dr.Job Kurian Asso. Professor of Aerospace Engg.
Krishna	Dr.S. Santhakumar Professor of Aerospace Engg. Upto 31.12.99
	Dr S Mohan Asso Professor of Civil Engg From 1.1.2000

Mandakini	Dr.U.S. Paramananda Shet Professor of Mechanical Engg. Upto 11.8.99
	Dr R Ambalavanan Asso Professor of Civil Engg From 12.8.99
Narmada	Dr.C. Pandurangan Professor of Computer Science & Engg. from 30.04.1998
Saraswathi	Dr.K. Ganesh Babu Professor of Ocean Engg. Centre
Sarayu	Dr Hema A. Murthy Asst. Professor of Computer Science & Engg. From 25.09.1998
Tapti	Dr.R. Palaninathan Professor of Applied Mechanics Upto 31.5.99
	Dr A Subrahmanyam Asso Professor of Physics From 1.6.99

9.2 Central Supplies Unit

A Warden administers the Central Supplies Unit. It procures milk from Tamilnadu Co-operative Milk Producers' Federation Ltd. and distributes it to the student hostels. Under the Provision Supply Scheme, the unit procures the items of major consumption from the wholesale Supplies and distributes them to the hostels, thus economising the mess expenditure in the hostel messes.

9.3 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 13.5- Campus Amenities.

A sum of Rs.46,871 was reimbursed to 10 students / scholars for the treatment undertaken by them from the Medical Emergency Fund during the year 1998-99.

9.4 NCC

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 1998-99:

- Small arms training (weapon training) as to how to handle rifles, Revolver and 12 Bore Gun.
- Rifle Range Firing carried out at AF Station Tambaram on 31 Jan 99.
- 12 Bore Gun Firing carried out at IIT Miniature Range on 13, 15 & 16 Feb. 99.

Highlights of the community development activities:

Blood donation camp was organised at NCC Building through the Indian Red Cross Society on 20 Feb 99 in which 65 Cadets donated blood.

Clothing items were collected by 100 Cadets and the items were donated to Indian Red Cross Society on 20 Feb 99; Cloths, books and toys were collected by 25 Cadets and those were donated to the Cheshire Home India for handicapped on 28 Mar 99.

Anti-dowry Pledge was taken by 100 Cadets on 20 Feb 99.

Donation of Eye Will was signed by 81 Cadets on 20 Feb 99. 25 Cadets motivated 30 IIT civilians to sign Eye Will on 21 Feb 99. An eye-care lecture was given by Sankara Nethralaya on 20 Feb 99.

Under social services, 40 cadets cleaned the unit premises on 22 Dec 98; 80 cadets cleaned IIT temple & unit premises on 14 Mar 99; 68 cadets participated to clean IIT hospital area on 21 Mar 99; 60 cadets cleaned IIT staff club area on 27 Mar 99. 30 Cadets participated in watering and maintenance of plants at Unit premises on 20 Feb, 14 Mar and 27 Mar 99; 25 cadets participated in watering and maintenance of plants at Cheshire Home India for Handicapped on 27 Mar 99.

Fire-fighting lecture was given by PI Staff of Fire Section of AF Station Tambaram on 21 Mar 99 in which 68 Cadets participated.

Traffic control lecture given by DCP (Traffic) Office on 27 Mar 99 was attended by 60 cadets.

Adult Education classes were taken to 30 inmates of Cheshire Home by 15 cadets on 27 Mar 99; Also entertaining activities like games/drawing were carried out by 32 cadets on the same day.

Dental Health Camp was conducted by TN Dental College in the Staff Club premises on 28 Mar 99; Treatment/checkup was undertaken for 73 cadets, 25 civilians and PI Staff of the Unit.

The NCC Unit helps to a sense of discipline, comradeship, a spirit of adventure and quality of leadership in the minds of the Cadets of the Institute.

Offg Commanding Officer	:	Lt Col P Sangili
Associate NCC Officers	:	Fg. Offr. A Mani Plt. Offr. S Neelamani

9.5 Gymkhana

Sports Activities

Inter Collegiate Invitation Tournament (Sportfest)

The Institute Gymkhana organised SPORTFEST from 20th to 23rd October 1999 in the following Sports : Badminton, Basket Ball, Foot Ball and Volley Ball for men colleges. Basket Ball for women colleges.

Our teams performed creditably well in all the events. Our basket ball team reached the finals and played a superb match against the winners YMCA College of Physical Education in which many University players represented. Our Badminton, Volley Ball and Foot Ball teams performed well in their matches. This tournament helped a lot to formulate and select our Institute Team for Inter IIT Sports Meet held at IIT Madras, during December 1999.

IIT Sanmar Cricket Tournament

The prestigious Inter Collegiate Cricket tournament in the city with new sponsors "Sanmar Group". The IIT-Sanmar Cricket Tournament was conducted from 26th January to 20th February 2000 with twenty teams participating for top honour witnessed a high level competition.

In one of the semifinal matches, our IIT Madras team lost to R.K.M. Vivekananda College. RKM Vivekananda College won the trophy defeating Pachaiyappa's College in the final.

Inter IIT Aquatic Meet

Inter IIT Aquatic meet was held from 18th September to 20th September 1999 at our IIT Swimming pool. Four IITs excluding IIT Guwahati and Kanpur participated in the above meet in which our contingent finished third in the swimming events and won the Gold in Inter IIT Water polo Championship.

Inter IIT Sports Meet

This year, the Inter IIT Sport meet was hosted by IIT Madras from 15th to 20th December 1999. IIT Madras won the Gold in the following events – Athletics, Badminton (M), Basket Ball, Hockey, Table Tennis and Water polo, Silver in Cricket, Weight Lifting and Bronze in Swimming, Tennis and Volley Ball. IIT Madras won the overall Championship with 88 points ahead of IIT Bombay with 49 points. IIT Kharagpur won the Women Championship with 32 points.

All India Inter Collegiate Invitation Basket Ball Tournament

This tournament which was conducted from 14th to 19th January 2000, attracted outstation teams this year from Karnataka and all over Tamil Nadu. The large number of spectators who attended this tournament witnessed many exciting matches.

Our boys played some excellent matches beating Sri Ramachandra Medical College, Porur in the initial round and beat Dr. G R Damodharan College, Coimbatore in the pre-quarter final stage and fought closely with Sri Mahaveer Jain College (M) Bangalore which won the Second place in the Men's section. Loyola College Madras won the Gerhard Fischer Cup for men colleges and Sri Mahaveer Jain College (W) Bangalore won the Kokila Rajaiah Trophy for the women colleges.

Non Media Tournaments

Apart from the Inter Hostel tournaments the following Non-Media Tournaments were conducted for the students – 3-a-side Basket ball, 3-a-side Volley ball, 9-a-side Tennis ball Cricket, Freshies 9-a-side Tennis ball Cricket, 6-a-side Hockey and 6-a-side Foot ball. This promotes larger participation and chance for every one in the hostel and as usual attracted large participants and students spectators.

All the Gymkhana facilities like Fitness Club, Badminton Club, Tennis Club and Swimming Club functioned well during the period under report.

Swimming Pool

The Swimming Pool is functioning very well and it is maintained well with high standards. 'Learn to Swim' summer coaching campus for beginners will be commenced from first week of April 2000 onwards. The users are generally satisfied with the well maintained swimming pool.

National Sports Organisation (NSO)

As per the Government of India's decision for improving sports with special reference to keep fit, our Institute is taking necessary steps for encouraging students to participate in various games and events and in Physical Fitness as well.

This year nearly 150 first year under-graduate students were registered under this scheme. Officials / Experts from various Games Federation were engaged for coaching our students.

The noteworthy performance of sizable first year students at the various tournaments viz., Inter IIT Sports Meet, and All India Inter Collegiate Invitation Basket Ball Tournament is worth special mention here.

Other Events – Inter University Competition

IIT Madras participated at the South Zone Inter Varsity Cricket Tournament held at Madras and played their first match against University of Hyderabad and won the match. In the second round IIT lost their match against University of Bangalore.

CULTURAL ACTIVITIES

The academic year 1999-2000 saw an eventful cultural year with lots of cultural activities and enthusiasm and growing interest for participation among our students.

The cultural year began with the '**fresher open**' events which are held to familiarize the new entrants with the different literary and cultural events held during the year in our Institute. The first of the events held was the quiz. This event drew an enthusiastic response from the fresher with the CLT packed to its capacity. Tintoretto, Pictionary, Dumb-charades, Light and Western Music (solo) were held.

In contrast to previous practice, this year the **Lit-soc** events were spread to both odd and even semesters. This change gave scope to avoid crowding of events and promote better and more active participation. The 1st of this event was the Main Quiz (prelims) followed by Tintoretto, Pictionary, Cross-work, Light Music (solo), Scrabble and Western Music solo. Other events held during the odd semester are Dramatics, Pot-porri, Cluedo, JAM and Dumb-charades.

Freshies Nite

The freshers were given a chance to demonstrate their talents and put up a cultural show at the '*Freshies Nite*' held on August 12, 1999, which turned out to be a wholesome and entertaining affair.

Fresh men presented song, dances and skits of high quality. This was very well attended and held in SAC.

Bharat Utsav '99

The Bharat Utsav '99 (BU '99) was held between the 1st to 3rd of October 1999. The festival was inaugurated by the Director incharge, Prof. M.S. Ananth. The professional cultural event for the evening was '*Dances of India*' a medley of dances of different genres such as Classical, folk and tribal performed by a 70 members troupe from the *Kalakshetra Foundation, Chennai*. This show was liked by one and all and drew the largest ever audience for any professional show at BU. The next evening show was by the *Swathithirunal School of Music, Trivandrum*, who rendered a similar medley of different forms of Indian music. This show called "*Music of India*" had a very good attendance and was very well appreciated. Being **Gandhi Jayanthi Day**, a couple of pieces were dedicated as a mark of our respect to Mahatma Gandhi.

A variety of literary and cultural events such as India quiz, Classical music, Nostalgia and Choreography (folk) etc. were held as competition events during the festival. The *heritage quiz and Antakshari* were the most popular events.

Talks and lecture demonstrations, which impart a lot of **educational value to the festival**, were also featured. Ms. Vasumathy of CRY spoke on 'Status of the girl child in India', Ms. Sudha, a disciple of Sri Vempati Chinnaasathyam rendered a dance recital on 'Kuchupudi style of Indian dance', Commander V.J. Prasad of the Southern Command, Indian Navy spoke on the 'security environment in the continents and our defence preparedness', Ms. Christine Devin of Auroville, Pondicherry, presented a sound and light show called 'Genius of India' and Prof. S. Srivatsan of the school of Architecture and Planning, Anna University, spoke on 'Evolution of Architecture in India'. 'Evolution of cartooning in India' an interactive question and answer session by Keshav renowned Cartoonist turned out to be the most popular of the talks/lectures. Fine arts competitions held include painting, clay-modeling, collage and rangoli. The **new events** introduced this year viz. Mehendi artwork and soap-carving, received a very good response. Pottery, glass blowing, Palmcraft, Puppetry, Face painting and Astrology workshops were also held. The latter two workshops were well attended with requests that they will be conducted over a longer duration. Informals held in the festival area was very well attended. The festival concluded with the screening of the movie '**From Indus valley to Indira Gandhi**'.

It is heartening to note that BU '99 received a much better response compared to the previous years and also the most of the participants were IITians. External participation was not significant due to cultural festival of atleast two other colleges held at the same time. One hopes that this trend (increase in participation of IITians) will continue and improve further in coming years.

Saarang 2000

The Saarang 2000 was held from 21st to 26th January 2000. The festival was inaugurated by Prof. C.R. Muthukrishnan, Deputy Director, IITM. This was followed by the classical dance show by Ms. *Shoba Natarajan*, (NRI, residing in USA) disciple of Sri Vempati Chinnaasathyam. The next evening, OAT played host to the choreography competition with a jam packed OAT. Both the western and eastern chore entries were of a very high quality and the teams performed with a high degree of professionalism.

The show for the following evening was the 'Fusion Nite' by "*Millenium Z*" featuring **Mr. Prasanna (X IITian)** on guitar and vox, Kenwood Dennard on drums and keyboard and Alponso Johnson on bass. For the first time, Saarang-2000 featured artists of International fame coming all the way from USA. The audience was treated with a blend of *carnatic music and jazz*. No doubt all the 3 musicians are extremely talented at playing their respective instruments and the highlighting feature of the evening was Kenwood Dennard who put up a one man orchestra by playing drums and keyboards and singing, all at the same time. The Lbnewolf quiz lived up to its reputation of being one of the best in terms of quality and audience appeal. The highlight of this year's quiz is that a 1st year student of IIT Madras who won the prize by beating all the seasoned quizzers from different colleges from all over Southern India. The much awaited *light music nite* featuring Sri. S.P. Balasubramaniam, S.P.B. Charan and S.P. Sailaja was held the following evening. The audience present was easily the largest that OAT has seen in the past 4 years. He established an excellent rapport with the audience, performing many audience requests. This show was *telecast live on Vijay TV*. The last pro-show was the *Big-bang a Western music* show by artistes from Juravi, Burn, Moksha and Nemesis Avenue. Probably the only show in Chennai where almost all genres of western music were covered on one night and the show had a special appeal to youth. The artists covered '*sing'along*' popular numbers from the 60's through the 90's.

All the literary events conducted during the festival attracted a very good response and posed challenge to the organisers to adhere to the schedule. The feedback received from the students of other colleges was that all the literary events were of very high quality and standard. The informal games also received tremendous response. So was Saarang's very own personality contest - "**Mr. And Ms. Saarang**".

A common feeling among the students in their 4th year was that this was the best of the 4 Saarangs they had seen owing to better proshows, better organised events, with lots of new features, and much improved overall participation.

Yoga class : Yoga classes were organized in the staff club for the benefit of students and other campusites. The classes were conducted by Smt. Raji Ramakrishnan of the International Sivananda Yoga Vedanata Centre.

Vivekananda Study Circle : A student body on our campus also received support and encouragement from Gymkhana to some of their events and special lectures which were very well attended by our campus community.

9.6 Placement of Students

Placement Office of this Institute maintains a symbiotic, vibrant and purposeful interaction with industries across the country. About 150 industries drawn both from the private and public sectors are in this office list. About 80 companies visit our Campus every year for conducting interviews. These can be either hardcore engineering industries, software companies, manufacturing organisations, engineering consultancy firms, management consultancy set-up or R and D laboratories.

Similarly the types of jobs available to the graduates are of wide variety – it can be a graduate engineer trainee, a management trainee, a software profession, a purely R & D job or a career involving consultancy or design.

Details relating to number of students placed during the period under report are given below as against those registered during 1999-2000.

SI No.	Branch	Number Placed		Total	No. Placed More than one job
		OC	SC/ST		
I B.Tech					
1.	Aerospace Eng.	12	-	12	1
2.	Chemical Eng.	41	3	44	8
3.	Civil Eng.	27	-	27	-
4.	Computer Science & Eng.	22	4	26	-
5.	Electrical Eng.	53	-	53	2
6.	Mechanical Eng.	52	4	56	3
7.	Metallurgical Eng.	26	-	26	2
8.	Naval Architecture	10	-	10	-
Total I		243	11	254	16
II . M.Tech					
1.	Aerospace Eng.	1	-	1	-
2.	Applied Mechanics	8	1	9	2
3.	Chemical Eng.	17	1	18	1
4.	Civil Eng.	21	1	22	2
5.	Computer Science & Eng.	17	3	20	2
6.	Electrical Eng.	18	1	19	-
7.	Ind. Management	15	1	16	-
8.	Mechanical Eng.	35	9	44	-
9.	Metallurgical Eng.	2	-	2	-
10.	Ocean Engg. Centre	3	2	5	-
11.	Solid State Tech.	2	-	2	-
Total II		139	19	158	7
III . Ph.D, M.S. and M.Sc.		NUMBER PLACED			
		Ph.D	M.S.	M.Sc	
1.	Aerospace Eng.	-	4	-	
2.	Applied Mechanics	-	9	-	
3.	Chemical Eng.	-	3	-	
4.	Chemistry	-	-	1	

5.	Civil Eng.	1	7	-
6.	Computer Scinece & Eng.	-	7	-
7.	Electrical Eng.	-	19	-
8.	Ind. Management	-	-	-
9.	Mathematics	-	-	6
10.	Mechanical Eng.	1	16	-
11.	Ocean Eng.	-	7	-
12.	Metallyrgical Eng.	-	-	-
13.	Physics	-	-	8
	Total III	2	72	15

During the year 1999-2000, 501 students / scholars were placed in different industries.

10. 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 1999-2000 are as follows:

10.1 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 50 students benefitted. The year-wise details of number of students benefitted are given in Table 10.1.

SC/ST students admitted to the B.Tech. programme upto the academic year 1999-2000 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 31.3.2000, 38 students benefitted. The year-wise details of number of students benefitted are also given in Table 10.1.

Table 10.1

Year	MCM Scholarship	SC/STScholarship
1	26	18
2	7	7
3	8	9
4	9	4
Total	50	38

The Institute also sanctioned notional prize of Rs.100/- to 25 top ranking (in the JEE) first B.Tech. students.

In July 1999, the income limit of the parents of SC/ST and General Category students of the B.Tech programme was raised to Rs one lakh per annum.

In addition to the Institute assistantship, other agencies assistantship are also available for B.Tech students. The following are the details of agencies and the number of beneficiaries:

Sl.No.	Name of Scholarship	Fresh	Renewal
1.	National Talent Search Scheme Scholarship	38	163
2.	National Merit Scholarship-TamilNadu	8	4
3.	National Merit Scholarship-Delhi	1	-
4.	National Merit Scholarship-Karnataka	-	4
5.	National Merit Scholarship-Kerala	2	3

10.2 M.Tech:

Students who joined M.Tech. programme through GATE were awarded Half-time Teaching Assistantship (HTTA) at Rs.3,000/- per month. During the period under report 231 fresh assistantships and 215 renewed assistantships were given. The department-wise details are given below:

Table - 10.2
No. of HTTA awarded

Sl.No.	Discipline	Fresh	Renewal	Total
1.	Aerospace Engineering	4	3	7
2.	Applied Mechanics	12	7	19
3.	Chemical Engineering	27	25	52
4.	Civil Engineering	39	32	71
5.	Computer Science and Eng.	14	18	32
6.	Electrical Engineering	40	31	71
7.	Industrial Management	21	23	44
8.	Mechanical Engineering	52	53	105
9.	Metallurgical Engineering	13	13	26
10.	Ocean Engineering	3	5	8
11.	Solid State Technology	6	5	11
Total		231	215	446

10.3 M.Sc:

39 Students admitted to M.Sc. programme were sanctioned Rs.300/-p.m. merit scholarship together with exemption from payment of tuition fee. Another 20 students were given tuition fee exemption only. In addition, 27 students were given 50% tuition fee waiver. The department-wise details of all the above are given below:

Table 10.3

Sl No	Department	Fresh			Renewal		
		Merit Scholarship	Tuition Fee Waiver		Merit Scholarship	Tuition Fee waiver	
			Full	50%		Full	50%
1.	Chemistry	7	3	8	6	3	2
2.	Mathematics	7	3	5	6	3	1
3.	Physics	7	4	5	6	4	6
Total		21	10	18	18	10	9

10.4 M.S:

The scholars admitted to M.S. programme through GATE are given Half-time Teaching Research Assistantship (HTRA) of Rs.5000/- p.m. for three years. During the period under report 194 scholars received this assistantship of whom 56 were fresh scholars. The department-wise details of the HTRA awarded and renewed are given below:

Table 10.4
Number of HTRA awarded

Sl.No.	Department	Fresh	Renewal	Total
1.	Aerospace Engineering	6	11	17
2.	Applied Mechanics	9	15	24
3.	Chemical Engineering	5	8	13
4.	Civil Engineering	5	17	22
5.	Computer Science & Eng.	7	22	29
6.	Electrical Engineering	8	31	39
7.	Humanities & Social Sciences	5	3	8
8.	Mechanical Engineering	6	21	27
9.	Metallurgical Engineering	2	2	4
10.	Ocean Engineering	3	8	11
	Total	56	138	194

10.5 Ph.D.

The scholars admitted to Ph.D full time programme in Engineering are sanctioned Half-time Teaching/Research Assistantship (HTRA) of Rs.6000/- per month. Scholars admitted to the Ph.D fulltime programme in the Science subjects through GATE or other equivalent exams are sanctioned Rs.5000/- p.m. During the period under report 177 students obtained assistantships of whom 34 were fresh scholars. The department-wise details of the assistantships awarded and renewed are given below:

Table - 10.5
Number of HTRA awarded

Sl.No.	Department	Fresh	Renewal	Total
1.	Aerospace Engineering	-	1	1
2.	Applied Mechanicals	2	5	7
3.	Chemical Engineering	1	18	19
4.	Chemistry	9	40	49
5.	Civil Engineering	4	13	17
6.	Computer Science & Engineering	-	7	7
7.	Electrical Engineering	-	4	4
8.	Humanities & Social Sciences	2	7	9
9.	Mathematics	3	12	15
10.	Mechanical Engineering	6	18	24
11.	Metallurgical Engineering	1	4	5
12.	Ocean Engineering	1	3	4
13.	Physics	5	11	16
	Total	34	143	177

10.6 Other Organisation Scholarship:

In addition to the Institute assistantship to the M.S. and Ph.D. scholars, other organisations are giving assistantship. The details of those scholarships are given below:

Sl No.	Name of Fellowship/ Scholarship	Fresh	Renewal
	Ph.D.		
1.	Avesta Sheffield Fellowship	-	1
2.	CSIR Scholarship	7	14
3.	CSIR Post-Doctoral Fellowship - Research Associates	-	9
4.	Infosys Fellowship	2	-
5.	MRL Fellowship	-	2
6.	NIOT Fellowship	1	3
	M.S.		
7.	IBM Fellowship for M.S. scholars	1	-
8.	CBSI Fellowship for M.S. Scholars	2	-
	Total =	13	29

10.7 Financial Assistance to research scholars for presentation of paper abroad:

This Institute is encouraging the Research Scholars to present papers in international conferences for which they are given financial assistance to the tune of Rs 5000/- with registration fee of US \$ 100. During the period under report, 2 Ph.D. scholars were given this benefit.

11. WEAKER SECTION AND FOREIGN STUDENTS

11.1 B.Tech:

As per the GOI orders 15% and 7.5% of seats are reserved for SC and ST students respectively 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. In July 1999, 49 SC and 12 ST students joined the B.Tech programme. During counselling, prior to admission, the Adviser explained to each student the requirements of different branches. This helped the students to choose a suitable branch based upon their capability and interest. When a student finds the chosen branch is tough, he is allowed to switch over to lower JEE cut-off branch at the end of his first semester.

Details of SC/ST students in B.Tech through JEE admission

Year	Total Sanctioned intake (GC +SC+ST)	Sanctioned Intake		No. joined through JEE	
		SC	ST	SC	ST
July 1999	477	69	38	49	12

Details of PC SC/ST (1998 batch) students joined B.Tech in July 1999

Year	SC		ST	
	Offers issued	Joined	Offers Issued	Joined
July 1999	27	14	15	7

SC/ST students admitted against reservation are given the following benefits:

- * Travelling allowance (II Class train fare/ordinary bus fare) from the place of residence to Madras to join the B.Tech. programme.
- * Tuition fee waiver.
- * Free lodging and messing (basic menu only) and pocket allowance of Rs.70/- p.m. provided their parents' income is Rs.1,00,000/- net per annum or less.

- * 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 with requirements that are lower than those for the general category.

11.2 SC/ST Preparatory Course :

A preparatory course of one academic year duration 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 Joint Entrance Examination (JEE) merit list of SC/ST students who did get admission under the relaxed norms referred to above. After successfully qualify for completing the preparatory course at IITM, they become eligible to join the B.Tech programme without writing the JEE again. In the year 1999-2000, 16 SC and 13 ST students were offered admissions.

Details of SC/ST students admitted to Preparatory Course in July 1999

Offer issued		No. joined		Successfully completed and qualified for B.Tech Admission in July 1999	
SC	ST	SC	ST	SC	ST
27	15	16	13	9	7

11.3 M.Tech.:

Seats are reserved for SC and ST candidates as per the Government of India orders. They are admitted through GATE with a relaxation. In the academic year 1999-2000, 63 SC/ST students were admitted to the M.Tech programme.

Among the above 63, 45 belong to SC (Boys 44 and 1 girl) and 18 belong to ST (Boys 17 and 1 girl).

11.4 M.Sc:

Admission was made to the M.Sc. programme through entrance examinations only. Two SC students were admitted. These students were given tuition fee waiver.

M.Tech and M.Sc students admitted against reservation are given the following benefits:

- * Book Bank facility 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 these students as per Govt. of India norms.

11.5 Foreign National Students and Indian National Residing Abroad:

IIT Madras admits foreign national students and the Indian nationals residing abroad in all the programmes on the stipulated terms and conditions. During the period under report, 30 students were admitted in the following programmes from the countries noted against each.

Sl.No.	Programme	Country	No.of Students
1.	B.Tech	USA Indian National	3 23
2.	M.Tech	Bangladesh Nepal	1 1
3.	M.Sc	U.S.A.	1
4.	Ph.D.	Iran	1
Total			30

At the end of March 2000, 16 foreign nationals and 102 Indian nationals residing abroad were on the rolls of the Institute as per the details given below:

B.Tech

S. No	Branch	Nationality	GoI Scholarship		Self Financing		Total		
			Male	Female	Male	Female	Male	Female	Total
1.	Aerospace	American	-	-	2	-	2	-	2
		Sri Lankan	-	-	1	-	1	-	-
		Indian NRI	-	-	12	4	12	4	16
2.	Chem. Engg.	American	-	-	1	-	1	-	1
		Indian NRI	-	-	6	10	6	10	16
3.	Civil Engg.	Indian NRI	-	-	5	7	5	7	12
4.	Comp. Sci.&Eng	Indian NRI	-	-	9	3	9	3	12
5.	Electrical Engg.	Kenyan	-	-	1	-	1	-	1
		Malaysian	-	-	1	-	1	-	1
		Indian NRI	-	-	10	5	10	5	15
6.	Mech. Engg.	American	-	-	2	-	2	-	2
		Korean	-	-	1	-	1	-	2
		Indian NRI	-	-	26	-	26	-	26
7.	Met. Engg.	Indian NRI	-	-	3	-	3	-	3
8.	Nav. Arch.	Indian NRI	-	-	2	-	2	-	2
		Total	-	-	82	29	82	29	111

M.Tech

S. No	Branch	Nationality	GoI Scholarship		Financing by Kathmandu Univ.		Total		
			Male	Female	Male	Female	Male	Female	Total
1.	Mech. Engg.	Bangladesh	1	-	-	-	1	-	1
		Nepali	-	-	1	-	1	-	1
		Total	1	-	1	-	2	-	2

M.Sc.

S. No	Branch	Nationality	GoI Scholarship		Self Financing		Total		
			Male	Female	Male	Female	Male	Female	Total
1.	Mathematics	American	-	-	1	-	1	-	1

Ph.D.

S. No	Branch	Nationality	GoI Scholarship		Financing by Iran Embassy		Total		
			Male	Female	Male	Female	Male	Female	Total
1.	App. Mech.	Iranian	-	-	1	-	1	-	1
2.	Chem. Engg.	Iranian	-	-	1	-	1	-	1
3.	Elect. Engg.	Iranian	-	-	1	-	1	-	1
4.	Hum.& Soc.Sci.	Iranian	-	-	1	-	1	-	1
		Total	-	-	4	-	4	-	4

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.

12. CAMPUS AMENITIES

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.

The Engineering Unit of the Institute is responsible for construction of new buildings and the maintenance of the campus.

During the year under report the following works were undertaken:

Departmental Buildings:

	Rs. in Lakhs
1. Reburishment of Admn block (ground floor & fifth floor)	18.32
2. Construction of Laboratory Building for Material Development programme of COMPTECH Centre.	21.10
3. Extension of One bay at ME & MH Lab of NIDT	6.14
4. Extension of building at Ocean Engineering Centre	20.00
5. Additional construction of Lecture Hall Complex	135.00
6. Extension of III Floor over IC&SR Building	80.00
7. Construction of additional Lecture/Class rooms at MSB	212.85
8. Construction of 3 rd floor over FOSSAP building at CSD	23.00
9. Construction of 2 nd floor over Computer Centre	148.20
10. Construction of Ladies Hostel (yet to be commenced)	560.00
11. Construction of office room for Gas booking at Shopping Centre	3.44

Hostel:

1. Construction of First and Second Floor over common room of Tapti and Narmada Hostel	50.00
2. Improvements of toilets in various hostels	52.10
3. Construction of additional room and toilets for Krishna and Cauvery Hostels	551.40

Staff Quarters:

1. Construction of C2 type quarters – One block of 12 flats Phase II	120.50
2. Construction of E1 type quarters – One block of 12 flats phase II	50.00

Many other minor works had been taken up and completed during 1999-2000.

12.1 Housing Facilities:

As on 31.3.1999, there were 956 quarters in the campus. In addition to this there were 140 servant quarters also in the campus.

12.2 Horticulture:

A Separate Horticulture unit is functioning under Engineering Unit. During the year 1998-99, this unit developed two landscape lawns, one in front of administrative block and another near ingate besides planting of trees and sapplings in the campus.

12.3 Telephone facilities:

A telephone exchange with 128 P & T lines is functioning. It supports 1350 lines. Telephone facility had been given upto Scientific Officers level in the department and upto Assistant Professor level in the quarters. A new facility to reach an IIT extension without going through the operator is provided.

12.4 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.

12.5 Hospital:

Institute hospital serves far about 2150 employees, 7900 dependents, 3000 students and about 500 project staff. In total about 13,100 persons were registered in the hospital.

Doctors:

Dr. N.A. Jayavelan, MBBS, (MD)	Chief Medical Officer i/c
Dr. C.Sridevi, MD, DCH, M.Sc.	Medical Officer
Dr. S.Aruna, MBBS	Medical Officer
Dr. A. Mahalakshmi M Ravi, MBBS	Medical Officer
Dr. K. Sundarajan, MBBS	Junior Medical Officer
Dr. G. Vezhaventhan, M.S. (Gen. Surgery)	Junior Medical Officer
Dr. R. Mala, 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
Dr. Jayashree Murthy, MBBS, DNB (O&G)	Gynaecologist

Paramedical Staff:

Staff Nurses	:	8
Pharmacists	:	4
Lab. Technician	:	2
Male & Female Helpers	:	8
Others	:	7

Out-Patient Service:

Institute hospital has fully computerised the O.P. card registration system for all the staff/students and others. In 1999-2000, 72,306 out-patients were treated in the hospital.

In-Patient Service:

Hospital has 35 beds for treating in-patients. In 1999-2000, 462 patients were treated as inpatients.

Emergency Service :

Emergency service is available round the clock for all the 24 hours of the day with a duty doctor and supportive staff. 2,732 emergency cases were attended during non OP hours in 1998-99. About 196 cases referred to outside hospital due to lack of treatment facilities at our hospital. An ambulance service is available on call.

Clinical Laboratory Service :

A well equipped clinical laboratory with two Laboratory Technicians is available. 14,719 clinical laboratory tests and 5,450 biochemical tests (blood sugar and urea) were done in 1999-2000. A modern computerised ECG recorder facility is available round the clock. 806 ECGs were recorded during 1999-2000.

Operation Theatre :

A well equipped operation theatre with sophisticated operating microscopes, instruments for IOL surgery, Pulse oximeter, cardiac monitor etc., along with regular equipments are available. In 1999-2000, 68 general and 97 minor surgeries, 12 ENT and 21 Eye surgeries were done at the hospital. This includes successful fixing of six intra ocular lenses.

A regular power supply with a diesel operated 5 KVA generator is available in the hospital.

Immunization Programme :

Under the preventive health care, during the year 1999-2000 with the help of Lion's Club of East Chennai, Hepatitis B vaccination was given to about 800 students and about 300 staff members at a subsidy rate. Anti typhoid vaccination was given to about 250 students. About 300 children were immunised under regular immunisation programme.

Treatment for Non-entitled :

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.15.50 Lakhs in 1999-2000.

All the drugs purchased at the hospital are decided by the hospital drug committee. To ensure that the drugs are of superior quality, we call for quotations from recognized drug companies only.

Hospital Office:

Apart from dealing with the administration of the hospital, this office processes medical reimbursement claims and a sum of Rs.25,20,562/- was reimbursed in the year 1999-2000.

C.M.E. Programme :

5 CME Programs for updating the current medical knowledge for our medical officers and paramedical staff were conducted during the period under report. Institute Hospital had

cosponsored to organise an "International Meeting on Cardiology 2000" by Cardiology Department of SRMC (Deemed University) in Sept. 1999, at CLT of this Institute.

Other Activities :

One day picnic of hospital staff to Koney Falls in September 1999 was arranged, 'Annual Day of Hospital' with cultural programs and dinner on 31.12.1999 were also conducted.

12.6 Bank:

State Bank of India IIT Branch is functioning on the campus. An extension counter of Canara Bank is also functioning on the campus.

12.7 Post Office and Telecom centre:

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. A 24 hours telecom centre is functioning to cater to the need of the staff, students and residents of the campus .

12.8 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.

12.9 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.

12.10 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.

12.11 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.

12.12 Creeche:

A Creeche is functioning in the Campus for the benefit of staff/working women. There were about 40 children in the Creeche during the period under report.

12.13 Transport Services:

The Institute has 6 buses which provide transport facility within the campus to the staff, students and residents of the campus.

12.14 Campus News:

A Campus News is published every Friday highlighting the important events of the Institute.

13. 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 Controller and Auditor General of India.

The 60th Finance Committee of the Institute in its meeting held on 24.11.99 recommended the Non-Plan revised estimates 1999-2000 (Gross) for Rs.8,444.37lakhs and the Budget Estimates 2000-2001 for Rs.8,883.95 lakhs. The committee also recommended the Plan Revised Estimates and Budget Estimates of Rs.4234.90 and 3018.50 lakhs respectively for 1999-2000 and 2000-2001 respectively subject to review at a later date.

The following are the details of the Budget Estimates for the financial year 1999-2000 and 2000-2001.

(Rs. in Lakhs)

Head	Budget Estimates for 1999-2000 (as proposed & approved by Board of Governors.	Revised Estimates 199 2000 as per Board of Governors approval	Budget Estimates 2000-2001 (as proposed
I Non-Plan:			
Income			
Income Generated	1300.19	1354.00	1595.83
Grant demanded from MHR	6587.51	7090.37	7288.12
Total	7887.70	8444.37	8883.95
Expenditure			
1. Recurring	7787.70	8344.37	8783.95
2. Non-Recurring	100.00	100.00	100.00
Total	7887.50	8444.37	8883.95
II Plan:			
Income:			
Grant demanded from MHRD	2375.50	3378.78	3018.50
Opening Balance	856.12	856.12	-
Total	3231.62	4234.90	3018.50
Expenditure:			
Committed Expenditure	*856.12	*856.12	
1. Recurring	-	40.00	60.00
2. Non-Recurring	3231.62	4194.90	2958.50
Total	3231.62	4234.90	3018.50

* - Carry over from 1998-99 Account and represents irrevocable commitments.

13.1 Audit:

The accounts of the Institute for the year 1998-99 was audited by the Accountant General between May 1999 - July 1999. The audited report (both English and Hindi versions) on the accounts of the Institute for the year 1998-99 was sent to the Ministry of Human Resource Development, Government of India for placing the same on the table of the parliament.

Extract of Audited Receipts and Payments account for the year 1998-99 is given below:

Receipts:-	(Rs. in Lakhs)	
Opening Balance		4000.70
Grant Received from Ministry during 1998-99		
(a) Special Grant of 1997-98 received in 1998-99	300.00	
(b) Non-Plan Grant of 1997-98 received in 1998-99	<u>140.00</u>	440.00
(c) Plan Grant (Normal) of 1998-99	400.00	
(d) Non-Plan Grant of 1998-99	<u>4450.75</u>	4850.75
(e) Grant in respects of Projects/Modernisation Schemes/CSIR.Sch. etc.		3127.01
<u>Institute Receipts:-</u>		
Receipts from Students towards Tuition Fees, Examination Fees etc.		891.93
Library Receipts		7.04
Hostel Receipts		23.81
Central Administration Receipts including interest on investments		275.10
Other Receipts		390.47
Deposit/Suspense Receipts		755.04
		Rs.14761.85
Payments -		
(Rs. in Lakhs)		
A.Capital Account: Payments for works		291.20
Purchase of Equipments/Furniture/Vehicles etc.		249.62
Purchase of Library books/journals etc.		158.47
B. Revenue Payments		
1. Pay & Allowances and other incidental expenses relating to Departments/Sections		1887.90
2. Scholarship payments		237.05
3. Centre Expenses		569.00

4.	Pay & Allowances and other expenses like Power, water, telephone, stationery etc. relating to Central Admn.	805.98
5.	Pay & Allowances and other expenses relating to Stores, Hospital, Security, Workshop etc.	274.12
6.	Works & Maintenance:	351.90
	Pay & Allowances and other expenses	
7.	Contribution to PF scheme/pension etc.	1030.00
8.	Payments relating to CSIR Scholarships/Project Accounts/Modernisation Schemes A/c.	2638.86
9.	Deposits Refund/Advances to staff and other payments	1630.47
	Closing Balance (All accounts put together)	4637.28
	Total	Rs.14761.85

THE SENATE

Chairman

R Natarajan

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Prof H Achyutha	Prof O V Krishnaiah Chetty
Prof Ajit Kumar Kolar	Prof C S Krishnamoorthy
Prof M S Ananth	Prof R Krishnamurthy
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Prof Ashok Jhunjhunwala	Prof S H Kulkarni
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Prof N Ganesan	Prof S Narayanan
Prof V Ganesan	Prof T T Narendran
Prof K Ganesh Babu	Prof N R Neelakantan
Prof L S Ganesh	Prof R Palaninathan
Prof S S Gokhale	Prof T Panda
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Prof T A Gonsalves	Prof P R Parthasarathy
Prof D R Gopalakrishna Achar	Prof S D Pathak
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Prof V Kalyanaraman	Prof U S Premananda Shet
Prof (Mrs.) Kamala Krithivasan	Prof J Raamachandran
Prof M P Kothiyal	Prof K Radhakrishna Rao
Prof K Krishnaiah	Prof S Radhakrishnan

Prof V Radhakrishnan
Prof S Raghavan
Prof S V Raghavan
Prof N Rajagopalan
Prof R Rajagopalan
Prof K V S Rama Rao
Prof V S Ramachandra Rao
Prof V Ramachandran
Prof V Ramakrishnamurthy
Prof V Ramamurti
Prof R Raman
Prof T K Ramanujam
Prof K Ramar
Prof V Ramjee
Prof G Rangarajan
Prof V R Rengaraju
Prof P Sankaran
Prof S Santhakumar
Prof L V L N Sarma
Prof V V Sastry
Prof D V Seetharamamurthy
Prof S K Seshadri
Prof Shreesh Chaudhary
Prof M S Shunmugam
Prof M Singaperumal
Prof R S Sirohi
Prof N Sivaprasad
Prof B M Sivaram
Prof G Sridhara Rao
Prof Y.G.Srinivasa
Prof S.Srinivasamurthi
B Srinivasa Prabhu
Prof P Srinivasa Rao
Prof K Srinivasan
Prof V Sriramulu
Prof U N Srivastava
Prof S Subba Rao
Prof P V Subrahmanyam
Prof G Subramanian
Prof SP Subramanian
Prof V Sundar
Prof T Sundararajan
Prof S Sundaresan
Prof Surendranath Majhi
Prof B S Thandaveswara
Prof E G Tulapurkara
Prof S Vancheesan
Prof T K Varadan
Prof C P Vendhan
Prof V Venkat Rao

Prof C S Venkatachalam
Prof C Venkateshaiah
Prof A Venkatesh
Prof S P Venkateshan
Prof P Venugopal
Prof Vijay R Raghavan
Prof B Viswanathan
Prof B Yegnanarayana
Dr.Harish Chandra

**Three Educationists from outside
the Institute**

Prof.A.Sridharan
Prof U Sankar

Student Representatives

N Mahendar Reddy
Ravi Kiran Nalla

Invitee (Administration)

Shri K Panchalan

Secretary

Prof R C Janakarajan

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