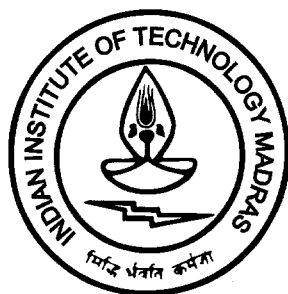


ANNUAL REPORT

1998 - 99



INDIAN INSTITUTE OF TECHNOLOGY MADRAS
CHENNAI

FORTIETH ANNUAL REPORT

1998 - 99



INDIAN INSTITUTE OF TECHNOLOGY-MADRAS
CHENNAI

THE VISITOR

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Andhra Pradesh

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Government of Tamil Nadu

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Government of Karnataka

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Chief Engineer, DRIQ Board
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Thiruvananthapuram

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Scientific Adviser to the
Defence Minister, GoI
New Delhi

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Chennai (from 31.3.99)

Mr Mantosh Sondhi
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New Delhi (upto 13.11.97)

Mr Mahendra Nahata
Group Chairman, M/s Himachal
Futuristic Communications Ltd.
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Masjid Moth, Greater Kailash-II
New Delhi 110 048(from 31.3.99)

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SPIC Limited, Madras(upto 30.3.99)

Mr Raghupati Singhania
Director, J.K. Organisation
New Delhi (Upto 30.3.99)

Dr Jagdish Shettigar
Economist, 11, Ashok Road,
New Delhi 110 001(from 31.3.99)

Nominees of the Senate

Prof C S Venkatachalam
Dept. of Chemistry

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

Secretary

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 five 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.

In a recent Survey of Universities and Technical Institutions in the Asia-Pacific region, conducted by the influential Asiaweek Magazine, our Institute has been ranked Fifth. The parameters considered for this assessment



were Academic reputation; Student selectivity; Faculty resources; Research output; Financial resources; Median annual pay of Teachers and Researchers; Students per teacher; Citations in international journals per teacher; and Internet bandwidth per student. It is a matter of pride for us that RWTUV, Germany, has conferred the ISO-9001 Certification on our Institute. We are the First Higher Educational Institution to receive this Certification.

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

Our Contributions to Manpower Development

In July 1998 Convocation, a total of 880 degrees were awarded : 104 Ph.D., 82 M.S., 279 M.Tech., 63 M.Sc., and 352 B.Tech. These degrees cover a wide range of disciplines and specialisations offered by the nine Engineering Departments, three Science Departments and the Department of Humanities and Social

Sciences. Among the Graduands were 28 QIP candidates (teachers from other colleges), and 61 sponsored candidates (sponsored by Industry and Government Agencies). The graduands included: 90 ladies, comprising 19 Ph.D., 13 M.S., 16 M.Tech., 30 M.Sc., and 12 B.Tech.

At a Special Convocation held on November 16, 1998, the degree of Doctor of Philosophy, Honoris Causa, was conferred on Prof. Dr. rer. nat. Reimar Lüst, President, Alexander von Humboldt Foundation, Germany.

We have introduced new M.Tech. programmes, most of them need-based and user-oriented ; a couple of them with international collaboration. In addition to one user-oriented M. Tech. programmes started last year, this year an M.Tech. programme in Automotive Engine Technology in collaboration with Indian Society for Automotive Technology was started. Two more M. Tech. programmes are going to be introduced in July 1999 viz. an 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) Limited. The Centre for Finite Element Analysis and Design is planning to offer a user-oriented programme in Computational Engineering.

Beginning last year, the intake through the Joint Entrance Examination (JEE) was increased by 25 per cent; these students enter a 5- year dual-degree programme, leading to both B.Tech. and M. Tech. degrees.

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

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

Our Contributions in Academic Research

During the year under review, apart from the Ph.D. and M. S. theses, our faculty and research scholars published 447 research papers in refereed international and national journals, and presented 414 research papers at international and national conferences. Many of our research papers secured high citation rating, and our faculty and research scholars were the recipients of several Best Paper Awards. Many of our faculty members are Editors / Members of Editorial Boards of several prestigious international and national journals. Many also served as Reviewers of papers for publication in journals and presentation in Conferences.

Academic Distinctions Secured by Our Faculty Members and Research Scholars

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 :

Awards :

Prof. K. A. Bhaskaran, Mechanical Engineering Department, had been conferred the Eminent Engineer Award for his outstanding contributions during the last three decades in the field of Mechanical Engineering by the Institution of Engineers (India).

Prof. T. S. Chandra, Chemistry Department, had been presented the Louis Pasteur Triennial Award for the year 1998 in recognition of her Outstanding Contributions in Microbiology by the Association of Microbiologists of India.

Prof. Ashok Jhunjunwala, Head, Electrical Engineering Department, was awarded the Bhatnagar Award in the area of Engineering Sciences.

The Rotary Club of Madras Central was conferred the For the Sake of Honour Award on Prof. Ashok Jhunjunwala.

Prof. R. Natarajan, Director, was conferred the Eminent Engineer Award for his outstanding contributions during the last three decades in the field of Mechanical Engineering by the Institution of Engineers (India)

Dr. Mrs. Sohini PalDey, Assistant Professor, Metallurgical Engineering Department, was selected to receive the 1999 Extraction and Processing Science Award for the Paper entitled Synthesis of Ultrafine Particles of Intermetallic Compounds by the Vapor-Phase Magnesium Reduction of Chloride Mixtures : Part I and Part II, co-authored with H. Y. Sohn of University of Utah, and published in the Metallurgical and Materials Transaction B, April 1998.

Prof. Tapobrata Panda, Chemical Engineering Department, received the National AIBA Award (1997-98) instituted by the All India Bio-tech Association, New Delhi, in recognition of his achievement in promotion of Bio-technology.

Prof. N. Rajagopalan, Civil Engineering Department, was selected by the National Design and Research Forum of the Institution

of Engineers (India), for the Prestressed Concrete Design Award for the year 1998.

Shri V. Raman, M.Tech. (1998) in Ocean Engineering, was selected for the INAE Award for Students' Innovative Potential Project at Master's level for his M.Tech. thesis work entitled Performance of Armoured Caisson Breakwater. The work was carried out under the guidance of Dr. J. S. Mani.

Dr. S. Sankara Narayanan, Associate Professor, Chemical Engineering Department, and his earlier associate Dr. P. B. R. Nair, were awarded the NOCIL Award for Excellence in Design / Development of Process Plant / Equipment, 1998 by the Indian Institute of Chemical Engineers.

Shri K. Y. Sastry, M.Tech. (1998) in Metallurgical Engineering, was selected for the INAE Award for Students' Innovative Potentials Project at Masters level for his M.Tech. thesis titled Stress Corrosion Cracking of 18% Ni maraging Steel Weldments in 3.5% NaCl Test Environment. This work was carried out under the guidance of Prof. S. K. Seshadri.

Prof. R.S. Sirohi, Physics Department was awarded the Third Amita De Memorial Award by the Optical Society of India in recognition of his long research contributions in the field of Optics, and his dedicated service to the Optics Community, in general, and to the Optical Society of India, in particular.

Fellowships

Prof. M. S. Ananth, Chemical Engineering Department, was elected a Fellow of the Indian National Academy of Engineering.

Ms. Hamsa Balakrishnan, III B.Tech. (Aero.), was selected for a Fellowship under Summer Research Fellowship Programme of Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, for the year 1999.

Prof. K. N. Bhat, Electrical Engineering Department, was elected a Fellow of the Indian National Academy of Engineering.

Dr. P. Bhyrappa, Assistant Professor, Chemistry Department, was awarded the Humbolt Fellowship for the year 1999 by the Alexander von Humbolt Foundation, Germany.

Dr. R. Dhamodharan, Assistant Professor, Chemistry Department, was awarded the Senior Fullbright Fellowship of the Fullbright Research Foundation for the year 1999-2000.

Dr. S. B. Pattnaik, Associate Professor, Civil Engineering Department, was awarded the Japanese Society for the Promotion of Sciences (JSPS) Invitation Fellowship for Research in Japan at the Toyohashi University of Technology for a period of ten months.

Prof. B. S. Prabhu, Applied Mechanics Department, was elected a Fellow of the Indian National Academy of Engineering.

Prof. R. S. Sirohi, Physics Department, was elected a Fellow of the Indian National Academy of Engineering.

Prof. B. Yegnanarayana, Computer Science and Engineering Department, was elected as a Fellow of the Indian National Science Academy.

Membership of Editorial Boards

Prof. P. R. Parthasarathy, Mathematics Department, was invited to serve on the Editorial Board of the American Journal of Mathematical and Management Sciences, published by Syracuse University.

Prof. R. S. Sirohi, Physics Department, was invited to serve on the Editorial Board of the International Journal Optik.

The Research Council of National Institute of Science Communication, (CSIR), New Delhi nominated Prof. R. S. Sirohi, Department of Physics, as a member of the Editorial Board of the Indian Journal of Pure and Applied Physics for a three-year term, April 1999 - December 2001.

Dr. G. Sundararajan, Associate Professor, Chemistry Department was invited to become the Regional Editor (India) for the Electronic Journal Molecules.

Prof. B. Viswanathan, Department of Chemistry was selected as a Member of the Editorial Board of the Indian Journal of Chemistry, Sec. A, for the period April 1999 - December 2001.

Prof. B. Viswanathan, Chemistry Department was selected as a Member of the New Editorial Board of the Journal Indian Journal of Chemical Technology for the period 1st April 1999 - 31st December 2001.

Membership of Scientific / Technical Committees

Prof. D. V. S. Murthy, Chemical Engineering Department, was invited to serve on the Environment Panel of the Confederation of Indian Industry, Southern Region, Chennai.

Dr. N. G. Nair, Head, COMPTEC, was elected as the Chairman, Governing Council of the FRP Institute, a registered Professional Society floated by the Industries concerned for promoting professional interactions on Composites at the National and Global levels.

Dr. T.S. Natarajan, Associate Professor, Physics Department, was invited to be a member of the International Advisory Committee (IAC) of the International Competition for High School Students, known under the name First Step to Nobel Prize in Physics.

Prof. E. G. Tulapurkara, Aerospace Engineering Department, was nominated by the Research Council of National Aeronautical Laboratory, Bangalore, as a Member of the Scientific Committee for the Computational and Theoretical Fluid Dynamics activity of NAL.

PRIZES

Dr. A. K. Chincholkar, Prof. O. V. Krishnaiah Chetty and Dr. G. Kuppuswamy, Mechanical Engineering Department, were awarded a Certificate of Merit by The Institution of Engineers (India) for their Technical Paper entitled Stochastic Coloured Petri Nets for Modelling and Performance Evaluation of Automated Storage and Retrieval Systems published during the year 1996-97.

Dr. M. Govardhan, Associate Professor, Mechanical Engineering Department was awarded The Sir Rajendra Nath Mookerjee Memorial Medal by the Institution of Engineers (India) for the Paper entitled Study of the Flow Field of an Axial Flow Fan Rotor Subjected to Circumferential Inlet Flow Distortion and Swirl, co-authored by K. Viswanath.

Prof. Nainan P. Kurian, Civil Engineering Department, and Mrs. N. C. Nirmala Devi, former M. Tech. Student, were awarded the Biennial Prize for Shallow Foundations by the Indian Geotechnical Society for their paper entitled Performance of Skirted Footings in Sand.

Mr. Harsha Venkatesh Madhyastha, first year B. Tech. student, was awarded the Second Prize, a Silver Medal, at the XXX International Physics Olympiad, held at Padua, Italy, on July 26, 1999.

The paper titled Building Ethics and Human Values in Corporate Finance Function by Prof. L. V. L. N. Sarma and Shri B. Hariprasad, Humanities and Social Sciences Department, presented at the Southern Regional Conference of the Association of Indian Management Schools (AIMS) held on April 25-26, 1999 at Visakhapatnam, was adjudged the Best Research Paper and was awarded a cash prize of Rs.3,000/-.

The Paper entitled Helical Gear Shaping Cutters - Design and Analysis, authored by Prof. M. S. Shunmugam, Dr. V. Jayaprakash and Shri S. V. R. Surya Narayana, Mechanical Engineering Department, was selected for the Corps of Electrical and Mechanical Engineers Medal by the Institution of Engineers (India).

Industrial Consultancy and Sponsored Research

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

During the year under review, 130 faculty members were involved in 168 sponsored projects (as Principal Coordinators), of a total value of Rs.260.5 million, and 134 faculty members were involved in 679 consultancy projects, of a total value of Rs.56.5 millions. These include 11 consultancy projects of value more than rupees one million and 28 sponsored projects of value more than rupees two million.

The ISRO-IITMadras Cell and the IGCAR-IIT Madras Cell have been functioning effectively through periodic monitoring and review. An MoU was signed with DRDL for undertaking joint research projects. Currently, the faculty of the Departments of Aerospace Engineering, Applied Mechanics, and Electrical Engineering, and Ocean Engineering Centre have undertaken projects under this MoU for a total value of Rs.96.16 millions.

In addition to Projects for Industry, National Agencies and Central Government Departments, several assignments were undertaken for the Tamil Nadu Government over the years. Among these are consultancy projects for Tamil Nadu Minerals, Tamil Nadu Pollution Control Board, Tamil Nadu Electricity Board, Corporation of Madras, Madras Metropolitan Development Agency,

ELCOT Power Control Systems, Tamil Nadu Explosives, etc., and sponsored projects for the Animal Husbandry Department, Tamil Nadu State Council for Science and Technology, Tamil Nadu Small Industries Corporation, Ennore Thermal Power Station, Tamil Nadu Housing board and Tamil Nadu Police Department.

IIT-Madras is the Lead Institute for two Technology Development Mission (TDM) Projects, viz., Advanced Materials and Energy-Efficient Technologies. These TDMs are national projects, identified by the Planning Commission for implementation by the 5 IITs and the IISc. Each of the 7 TDMs requires industrial participation to the extent of a minimum contribution of 25% of the project cost, including 10% cash contribution. We have signed 9 MoUs under the two TDMs with Industry. Both the TDMs will be completed by September 1999.

The Industrial Associateship Scheme has now more than 300 members, and enables formal arrangements for interaction with industry. The Centre for IC & SR releases regular Newsletters and organizes Technology Appreciation Programmes for the benefit of these Industrial Associates. So far, 64 such programmes have been conducted, including 5 this year.

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

As India readies itself for facing global competition in R & D, IPR issues and Patents assume tremendous significance ; this year, we have filed 4 patent applications, of which 1 has been registered. To date, IIT-Madras has filed more than 140 patent applications, and nearly 70 among them have been registered.

New Centres

The following New Centres are in the process of being established for promoting R & D and Consultancy activities :

- Centre for Computational Fluid Dynamics
- Centre for Micro Electro-Mechanical Systems
- Centre for Non-Destructive Evaluation
- Precision Engineering Centre
- Centre for Sustainable Development.

Curriculum Design

Our UG and PG programmes have received International Recognition for their Excellence. These programmes are constantly reviewed and updated and innovative changes are introduced from time to time. A completely revised and redesigned B. Tech. programme with many innovative features has been introduced from July 1998.

At the PG level, the Institute offers a three-semester programme leading to the Master of Technology (M. Tech.) in 34 disciplines, and a four-semester programme leading to Master of Science (M.Sc.) in 3 disciplines. Curricula are continuously upgraded in order to keep them up-to-date and relevant.

We have redesigned our Student Evaluation of Teaching and Teachers by offering a Cafeteria-type System which will provide flexibility and choice to the teachers for designing their own evaluation forms, subject to certain guidelines. Our Computer Centre has developed an on-line version of this system,

which incorporates features to protect the identity of the students while ensuring integrity of data.

Our Contributions to the National S & T Education System

One of the roles which the IITs have been playing effectively over the years is in providing guidance and assistance to the other Engineering Institutions in the country. In this context, we have been implementing the Quality Improvement Programme (QIP), which provides opportunities for Teachers of Engineering Colleges to upgrade their qualifications to Ph.D. and M.Tech. Currently we have 63 QIP scholars on roll. Our faculty members conducted 10 Short-Term Courses under the QIP during the year under review for the benefit of Engineering College Teachers.

The All India Council for Technical Education and the National Board of Accreditation have utilized 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 second year in succession, our Institute shouldered the responsibility of coordinating a programme for Gifted Youth, in which faculty of our Institute along with faculty of Anna University, Indira Gandhi Centre for Atomic Research, M. S. Swaminathan Research Foundation, Central Leather Research Institute and the Institute of Mathematical Sciences, interact with selected group of gifted children from schools across the country for about three weeks.

International Collaboration

In order to exchange information and to keep abreast of the rapidly expanding knowledge base in the globalised world of to-day, IIT-Madras has signed Memoranda of Understanding (MoUs) for co-operation in research and exchange of faculty and students with many Universities in USA, Europe and South-East Asia.

We will be signing MoUs (Memoranda of Understanding) with the following Universities abroad during the year :

University of Waterloo, Canada

University of Montana, USA

The Friedrich-Alexander-University,
Erlangen-Nuremberg, Germany

Georgia State University, Atlanta, USA

Kaiserslautern University, Kaiserslautern,
Germany

Christelijke Hogeschool Windesheim, The
Netherlands

Nagaoka University of Technology, Japan

Universiti Sains Malaysia, Penang

With these, the total number of MoUs signed by IIT-Madras with international universities amounts to 32.

We have also signed MoUs with International Companies for collaborative R & D ; to-date, a total of 15 such MoUs have been signed.

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

The corDECT Wireless in Local Loop System at our Institute, developed in collaboration with Analog Devices, USA, has proved to be one of the most cost-effective Wireless in Local Loop Systems to provide voice communication. The Department of Telecommunication, Government of India, has floated a tender to initially use this system in 25 towns. A major development in the system designed by IIT-Madras is providing an internet access simultaneously with voice using this system. The demonstration system was installed at the Indian Science Congress in January 1999, providing internet access to the Delegates at multiple points at the venue. This has attracted significant attention from the scientific community in India. WordTel, the UK-based Organization, headed by Mr. Sam Pitroda, which has tied up with the Tamil Nadu Government to provide internet service all over Tamil Nadu, has chosen to use the corDECT Wireless in Local Loop technology for this purpose. In a similar fashion, Sathyam is planning to use this technology to provide internet service at Hyderabad and all over Andhra Pradesh. The IIT-M system is expected to go into large scale production and deployment not only in India, but also abroad in the coming years.

Pioneering research work at the Speech and Vision Laboratory, Computer Science and Engineering Department, has led to the

following achievements during the year 1998-99 :

IIT-Madras has become the first Asian academic institution to participate in the speaker verification benchmarking programme conducted by the National Institute of Standards and Technology (NIST), USA

A speaker verification based system for secured access of email over telephone has been designed for AUM Technologies, USA.

In recognition of the sustained activity and the expertise available, Intel India has come forward to set up a state-of-the-art laboratory and to support the Speech Research activity with focus on development of Speech Systems for Indian languages.

Continuing Education and Educational Technology Activities

The Centre for Continuing Education coordinates all professional development activities organized for the benefit of serving teachers in other technical institutions and for working professionals in industries. During the year, our faculty members organized 10 Short-Term Courses under QIP and 27 Short-Term Courses under CEP. The Educational Technology Cell has produced a number of video films, which include 12 Thematic Programmes, 12 Semester Courses, 4 Short Courses, and 3 Video Programmes on consultancy basis for Industries and 2 Programmes for IIT-Madras, viz., "Temple of Excellence", a Documentary on IIT-Madras, and "Changing With Times", a Documentary on IC & SR.

The Humanities and Social Sciences Department, in collaboration with the Small Industries Development Bank of India (SIDBI), has been organizing an innovative Small Industries Management Assistance Programme (SIMAP), to develop prospective managers for small industries.

During the year under review, our faculty members published 26 books.

Recognizing the potential of contemporary developments in Information Technology (IT) and Educational Technology (ET), we have teamed up with the other IITs and IIMs in a Consortium for interaction with the Carnegie Mellon University for promoting Technology Enhanced Learning.

Organization of International and National Conferences

Our Institute possesses an excellent Conference Complex comprising Auditoria, Conference Rooms, Dining Hall and an Exhibition Hall, which served as the venue for 18 national conferences and 2 international conferences during the year. In addition, several Workshops, Professional Society Meetings, Technical Seminars and Training Programmes have been conducted during the year, utilizing these facilities.

International Student Exchange Programme

Over the past few years, many opportunities have been created by the Institute for International Student Exchange. One of the major initiatives in this regard is the Indo-German Agreement between the

IIT-system and the top six Technical Universities in Germany. Under this Programme, we deputed 20 M. Tech. students and 5 M. S. scholars to undertake their project / thesis work in these German Universities last year. It is also expected that there will be a reverse flow of German Ph.D. and Dipl.-Ing. scholars to undertake their projects in our Research Laboratories.

We have entered into an MoU with Ecole Polytechnique Federale De Lausanne (EPFL), Switzerland, which is one of the biggest federated technological institutes in Europe and the biggest in Switzerland, for exchange of faculty and students. Prof. C. Pandurangan and Prof. C. Siva Ram Murthy of Computer Science and Engineering Department, Prof. B. Viswanathan of Chemistry Department and Prof. P. R. Parthasarathy of Mathematics Department, visited EPFL for one month each during Summer 1999. One student from EPFL spent six months, from January to June 1999, in our Institute for doing his Project work. Our students will also go to EPFL in 1999-2000. Last year, four students from Computer Science and Engineering Department went to EPFL for their Project work.

Career Development and Welfare Schemes for the Employees

A Professor-in-charge for HRD was nominated a couple of 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, 18 training programmes were conducted during the year. In order to create a

conducive work ambience and to promote inter-personal relations, a number of Stress Management Programmes were organized during the year, in which 530 employees participated.

Continuous improvement being the hallmark of a learning organization, several 5-S programmes have been conducted. During the summer, two Programmes entitled "Growing Big" were organized for the children of our faculty and staff for Personality Development.

Our Strategic Planning Initiatives

The Strategic Plan for the Institute, designed to provide a long-term Vision, and the Strategy for implementing it, is nearing completion. Inputs have been received from both Faculty and Staff in the Institute, and from Experts from other organizations.

Student Co-curricular and Extra-curricular Activities

As part of the Cultural activities, the Institute Gymkhana organised Bharath Utsav and Saarang during September, 1998 and January, 1999 respectively.

On the Sports side, our Institute participated in the Inter-IIT Sports Meet held during December 1998 and was placed fourth. This year our Institute will play host to the Inter-IIT Sports Meet during December 1999. The beautiful Cricket Ground and Club House, sponsored by Chemplast Sanmar, were put to good use by our students.

Alumni Matters

As of 31.03.1999, our Institute had awarded 21,104 degrees ranging from Ph.D. to B.Tech. The education they had received at the Institute has enabled our alumni to launch themselves into attractive and satisfying professional careers. Many of our alumni occupy top positions in several sectors of Engineering, Technology, Industry and the Academe, and have fully justified the establishment of the IITs for providing Technology Leadership, and inputs to Technology Innovation and National Development.

In addition to the parent Alumni Association on Campus, there are several Chapters spread worldwide. In particular, there are two Chapters in the US -- one at Houston and the other at Boston, -- which are quite active. The 1974 batch is celebrating its Silver Reunion this year. Over the past three years, we are honouring our alumni for their accomplishments through the Distinguished Alumnus Awards.

It has been recognized worldwide that the alumni represent one of the important sources of resources for academic institutions. We have identified a group of influential alumni to help us to mobilize resources from the alumni population towards an ambitious Corpus. We are also creating an Office of Alumni Affairs to coordinate the interaction between the Institute and the Alumni.

Infrastructure Development

A Campus-wide high speed fiber optic ATM / Ethernet back-bone network is being put in place at an expenditure of about Rs.1.5 crores. In the initial phase, which is entering operation now, it covers the Instructional Zone and provides over 1000 connection points. All

faculty offices and laboratories are covered with 10 megabit and 100 megabit switched outlets, respectively. A modem bank (with 32 modems) is also provided, so that faculty can connect from their residences. This will enable maximum use of computational resources available on Campus in an efficient manner and also provide greatly enhanced access to the Internet. In the second phase, to be taken up this year, high-speed connectivity is to be extended to the Hostel Zone.

IIT-Madras has been selected for commissioning of a level III, ICOSER Centre by TIFAC. Under this programme, the Computer Centre, which houses the ICOSER Centre, has received five SUN Workstations, a 3-CPU HP K-class high end compute server, five HP C-class mid-range compute servers and workstations, an HP file server with 100 Gigabyte disk storage and DLT back-up, a Silicon Graphics Octane high-end graphics workstation and fifteen PC type workstations. The Computer Centre has added PC and DEC alpha based workstations to this cluster to create a 20+ node linux workstation cluster.

IIT-Madras was one of the first ERNET nodes to be re-organized under the new ERNET national 2-megabit backbone. Under the reorganization, the networks lab (Computer Science and Engineering Department) is to become a Centre of Excellence in networking technology and also double up as high bandwidth gateway into internet. Adding to the existing VSNL-provided connectivity, this means IIT-Madras has the highest per-student availability of internet bandwidth in India. The campus network makes it possible to make full use of this available bandwidth.

IIT-Madras has received an IBM S-390 mainframe as a Gift from IBM. In keeping with our goals and tradition of excellence, the presence of this system on campus will enable us to expose our students to the latest

mainframe technologies available in the world. This is a level of technology that is presently available only at the best software development companies in India.

The Department of Electronics (DOE) has announced a programme under which the Government will provide an 8-CPU PARAM 10000 at select institutions around India, including IIT-Madras. This will add parallel technology to the variety of computational resources available at IIT-Madras.

In order to accommodate the enhanced intake, a new Class Room Complex is under construction. Several additional class rooms and laboratories are nearing completion. In the hostel sector, several rooms have been added and more are under construction.

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

Our Telephone Exchange was modernized to cater to the increased needs of the Institute. We have rationalized the telephone numbering system in order to make it more user-friendly.

We have inherited a beautiful Campus, which possesses unique and precious bio-diversity. In tune with the principles of Sustainable Development, such as, for example, "meeting the needs of the present generation without compromising the ability of future generations to meet their own needs" (Brundtland Report); "desirable change for the better in the human condition while protecting the Earth we inherit and the Earth we bequeath" (Sir Crispin Tickell); we have launched several initiatives.

Every retiring Employee plants a Tree on the day of retirement. This and our Solid Waste and Resource Management (SWARM) initiative are attempts to maintain a green and clean Campus.

Looking into the Future

It is just a matter of months before we step into the next millennium. We have several strengths which need to be supported and reinforced. We have some weaknesses which need to be removed. The future will pose many challenges, but also will offer many opportunities. We need to overcome the challenges and exploit the opportunities in order to move ahead. We also need to anticipate both the long-term and short-term requirements of the Engineering Profession, and suitably prepare our students, and come up with applicable and commercialisable technology solutions. Quality, Excellence and Relevance must be the guiding principles for all our activities. We need the wholehearted cooperation of all the stakeholders in our journey towards achieving our Vision.

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; and faculty and professionals from other organizations who have assisted our Institute in several of our committees and endeavours. The Institute is very appreciative of the continuous and sustained support of the Ministry of Human Resource Development, Government of India. We would like to place on record our sincere acknowledgment of the invaluable guidance and wise counsel provided by our Chairman, Professor U. R. Rao, and the other Members of the Board of Governors.

2 Administration

2.1 General

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

The 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 Staff position

As on 31.3.99, 338 Faculty, 17 Scientific Staff, 8 Design Staff, 438 Technical staff and 720 Administrative staff were in position. During the period under report, 30 Assistant Professors were appointed and all of them joined. 8 Faculty, Officers and staff retired from their positions, 8 staff members took voluntary retirement, 3 resigned and 1 expired. The details of all the above are given below:

2.2.1 Faculty/Officers who were on Long Leave:

S.No	Name & Designation	Duration	Nature of Leave
1.	Prof.M.Ravindran, OEC	9.11.93-8.11.98	EOL
2.	Prof.V.S.Raju, OEC	9.1.95-8.1.2000	EOL
3.	Prof.Nainan P.Kurian, Civil Eng.	9.9.96-8.9.98	EOL
4.	Prof.R.N.Anantharaman, HSS	18.7.96-17.7.98	EOL
5.	Prof.K.N.Seetharamu, Mech.Eng.	03.05.96-02.05.98	EOL
6.	Prof.R.S.Sirohi, Physics	1.2.97-4.8.97	HPL
		5.8.97 - 4.8.98	
7.	Prof.C.Eswaran, Elec.Eng.	31.7.97-30.7.99	EOL
8.	Prof.Vijay R.Raghavan, Mech.Eng.	1.9.97-30.9.98	Sab.Leave
9.	Prof.C.S.Krishnamurthy, Civil Eng.	15.9.97-14.9.98	EOL
10.	Dr.D.K.Sharma, CPS	8.1.98-12.4.98	EL/HPL
11.	Dr.T.K.Bose, Aerospace	8.7.97-14.8.98	EOL
12.	Dr.K.A.Padmanabhan, Metl.	29.9.97-28.9.2002	EOL
13.	Dr.K.Prasad Rao, Metl.	9.10.97-8.10.98	Sab.Leave
14.	Dr.S.Raman, ASP, CSE	21.8.97-20.8.98	Sab.leave
15.	R.Vengan, Dy.Librarian	16.7.97-15.10.98	EOL
16.	J.T.Sanjeevamurthy, SO.I, CSE.	2.3.98-1.9.99	EOl
17.	V.N.Shukla, SDE, EED	10.5.96-18.7.97	EOL
		17.2.98-21.8.98	E L
18.	Ranjana Shukla, SDE, EED	10.5.96-18.7.97	EOL
		2.2.98-1.5.98	EL
19.	Elizabeth N.Kurian, HSS	24.9.96-23.9.98	EOL
20.	N.Devasahayam, SO.II, RSIC	30.7.96-29.7.98	EOL
21.	Dr.M.Mylrajan, SO.II, RSIC	30.8.98-10.3.99	EOL
		10.3.97-29.8.98	Leave at credit
22.	Dr.(Ms) Vijayalakshmi Sirohi, Sys.Off. Gr.II	5.8.96-12.3.97	Leave at credit
		13.3.97-4.8.98	
23.	P.Sambandam, Asst.Professor, OEC	25.3.96-24.3.2001	EOL
24.	Prof.M.V.C.Rao, Elec.Engg.	01.06.98-31.05.2000	EOL
25.	Prof.K.Ramar, Elec.Engg.	03.08.98-02.08.2000	EOL
26.	Prof,V.V.Sastry, Elec.Engg.	17.08.98 to 16.5.99	EOL
27.	Prof.M.R.Pranesh, OEC	18.1.99-17.1.2000	EOL
28.	Prof.V.Ramamurti, App.Mech.	02.12.98-31.05.99	Vac. + EL
29.	Prof.(Ms)Maha Seshasayee, PHY	22.06.98-04.07.99	Sab.Leave +EL
30.	Prof.S.Srinivasan, Elec.Engg.	18.08.98-16..08.99	Sab.Leave
31.	Prof.K.N.Bhat, Elec.Engg.	28.12.98-27.12.99	Sab.Leave
32.	Dr.S.Sankara Raman, Chemistry	05.05.98-04.05.99	Sab.Leave
33.	Dr.S.S.Bhattacharya, Metl.Engg.	03.08.98-03.10.99	EOL
34.	Dr.S.B.Pattnaik, Civil Engg.	21.12.98-20.10.99	Sab.Leave
35.	Dr.T.J.Kamalanabhan, HSS	09.10.98-08.01.2000	EOL
36.	Dr.M.S.Ramachandra Rao, Physics	03.01.99-31.07.99	EI/Vac/EOL

2.2.2 Faculty/Staff appointed from 01.04.98 to 31.03.99

S. No	Name	Designation	Department	Date of Joining
1.	Dr.Satyanarayanan R.Chakravarthy	Asst.Prof.essor	Aerospace Engg.	17.06.98
2.	Dr.Abjjit P.Deshpande	Asst.Professor	Chem. Engg.	19.06.98
3.	Dr.S.S.Bhattacharyya	Asst. Professor	Metl.Engg.	30.7.98
4.	Dr.V.Subrahmanya Murthy	Asso.Professor	Physics	06.08.98
5.	Dr.B.Raghunatha Rao	Asst. Professor	Metl.Engg.	27.08.98
6.	Dr.(Ms)R.Madhumathi	Asst.Professor	HSS	03.09.98
7.	Dr.(Ms)J.Geetha	Asst.Professor	Mathematics	03.09.98
8.	Dr.Devdoss Menon	Asst.Professor	Civil Engg.	03.09.98
9.	Dr.S.J.Satishkumar	Asst. Professor	Civil Engg.	10.09.98
10.	Dr.(Ms)M.Thenmozhi	Asst.Professor	HSS	16.09.98
11.	Dr.Udayachandran Chakkingal	Asst.Professor	Metl.Engg.	21.09.98
12.	Dr.C.Balaji	Asst. Professor	Mech.Engg.	08.10.98
13.	Dr.S.Kasi Viswanathan	Asst. Professor	Physics	20.10.98
14.	Dr.T.S.Sampath Kumar	Asst. Professor	Metl.Engg.	22.10.98
15.	Dr.Anju Chadha	Asst.Professor	Chemistry	26.10.98
16.	Dr.Satyajit Roy	Asst. Professor	Mathematics	27.10.98
17.	Dr.V.Babu	Asst. Professor	Mech.Engg.	30.11.98
18.	Dr.Sanjay Kumar	Asst. Professor	Chemistry	03.11.98
19.	Dr.V.Vetrivel	Asst. Professor	Mathematifs	30.11.98
20.	Dr.S.Baskaran	Asst. Professor	Chemistry	07.12.98
21.	Dr.S.Ponnuswamy	Asst. Professor	Mathematics	07.12.98
22.	Dr.YVS Surya Sanyasi Raju	Asst. Professor	Mathematics	14.12.98
23.	Dr.Krishna Vasudevan	Asst. Professor	Elec.Engg.	14.12.98
24.	Dr.Bhalla mudu Sreenivasamurthy	Asst.Professor	Civil Engg.	14.12.98
25.	Dr.A.Kannan	Asst. Professor	Chem.Engg.	21.12.98
26.	Dr.Ramaswami Devanathan	Asst. Professor	Metl.Engg.	28.12.98
27.	Dr.T.G.Venkatesh	Asst. Professor	Elec.Engg.	04.01.99
28.	Dr.V.Subramanian	Asst. Professor	Physics	24.12.98
29.	Dr.R.Sarathy	Asst. Professor	Elec.Engg.	03.02.99
30.	Dr.P.B.Sunil Kumar	Asst. professor	Physics	19.02.99

2.2.3 Faculty/Staff who have Retired

S.N	Name	Designation and Department	Date
1.	Dr.N.Sundaram	Asst. Professor, Chemistry	30.04.98
2.	Dr.A.Kuppurajulu	Professor, Elec.Engg.	31.05.98
3.	Dr.M.R.Udupa	Professor, Chemistry	31.05.98
4.	Dr.T.Venkatram	Professor, Chem.Engg.	30.06.98
5.	Sri C.Narayanan Kutty	Asst.Registrar	30.06.98
6.	Dr.T.S.Chennabasavan,	CDE, Mech. Engg.	30.06.98
7.	Dr.A.Krishnan	Professor, Aerospace Engg.	30.06.98
8.	Dr.M.Balakrishnan	Professor, Appl. Mechanics	30.06.98

2.2.4 Voluntary Retirement:

S No	Name	Designation and Department	Date
1..	Sri S.Bhoopathy	Scientific Officer Gr.I, Mech/.Engg.	05.06.98
2.	Dr.O.Prabhakar	Professor, Metl.Engg.	24.07.98
3.	Dr.T.K.Bose	Professor, Aerospace Engg.	20.08.98
4.	Dr.A.Ganesan	CMO, Hospital	09.09.98
5.	Dr.K.N.Seetharamu	Professor, Mech.Engg.	11.09.98
6.	Sri N.Devasahayam,	Scientific Officer GrII, RSIC	07.01.99
7.	Smt.Vatsala	Systems Engineer Gr.I Comp.Centre	01.02.99
8.	Dr.M.Mukunda Rao	Professor, Elec. Engg.	04.02.99

2.2.5 Resignation:

S.No	Name	Designation and Department	Date
1.	Dr.Paul Mario Koola	Asst. Professor, OEC	10.08.98
2.	Dr.R.Sarathi	Lecturer, Elec.Engg.	30.10.98
3.	Dr.K.Swaminathan	Asst. Professor, Metl.Engg.	24.12.98

2.2.6 Death:

1. Dr.G. Kuppuswamy, Associate Professor, Mech. Engg. on 28.11.98

2.2.7 Staff Welfare:

Review Promotion Scheme:

Review promotions are given to B,C and D class employees after a stipulated years of service. Under this scheme, 826 employees benefited in 1998-99.

Training:

A Professor-in-charge for HRD was nominated , in order to plan and implement programmes for providing opportunities to 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, this year, 18 training programmes were conducted and 267 staff participated. Besides these, 6 Stress Management Programmes were also organized during the year, in which 530 employees participated.

Computer Allowance:

To encourage the use of modern computing facilities, 80 employees were so far granted special allowance of Rs.40/- p.m. for using personal computers.

Hindi Coaching:

In accordance with the directions of the Government of India, Hindi classes were conducted regularly to both technical and administrative staff members to improve their knowledge in Hindi. As on 31.3.1999, 781 staff members were offered this course. In 1998-99 alone, 108 staff members were offered this course.

Supply of Uniforms and other:

All Class D, Security and certain categories of C and B staff were provided with uniforms. During this year, 800 staff members were provided with uniforms.

Footwear were also provided for those who work in the Laboratory/Workshop and also to those who perform hazardous duties besides Security staff. This year 330 staff were provided with shoes and chappels.

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, 46 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 1998-99, 63 Children got benefited.

Advances:

Staff members are provided House Building Advance, Car Advance, Two wheeler advance and cycle advance every year. During the period under report, the following are the No. of sanctions given:

House Building Advance ..	23
Car Advance ..	6
Two wheeler Advance ..	102
Personal Computer Advance ..	3
Cycle Advance ..	25

Employees Welfare Scheme:

Employees welfare scheme is implemented in this Institute from 1976. It helps the employees' family in the event of untimely demise. In the year 1998-99, 4 families got benefited.

Director's Discretionary Fund:

This fund provides financial support to the staff members in case of medical emergency. During the period under report 45 Employees benefited in this fund to the tune of Rs 7.97 lakhs.

Implementation of V Pay Scales:

The Fifth Pay scales were implemented for teaching, non-teaching and for retired staff members during the period under report.

Director
R. Natarajan

Deputy Director
C. R. Muthukrishnan

Deans

Academic Courses	M.S.Ananth
Academic Research	V.Ganesan
Administration	N.Rajagopalan (upto 20.01.99)
	G.Subramanian (wef 21.01.99)
Industrial Consultancy & Sponsored	S.Srinivasa Murthy
Research	
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	K.Elango (upto 09.08.98)
	V.Kalyanaraman (wef 10.08.98)
Computer Science and Engineering	S.V.Raghavan (upto 06.10.98)
	C.Pandurangan (wef 07.10.98)
Electrical Engineering	G.Sridhara Rao(upto 04.08.98)
	A.Jhunjhunwala (wef 05.08.98)
Humanities & Social Sciences	L.V.L.N.Sarma
Mathematics	P.R.Parthasarathy
Mechanical Engineering	K.A.Bhaskaran (upto 13.12.98)
	V.Sriramulu (wef 14.12.98)
Metallurgical Engineering	D.R.G.Achar (upto 20.07.98)
	S.K.Seshadri (wef 21.07.98)
Ocean Engineering Centre	C.P.Vendhan
Physics	B.M.Sivaram

Heads of Centres

Computer Centre	V.V.Sastry (upto 11.08.98)
	P.Sriram (wef 12.08.98)
Composites Technology Centre	N.G.Nair
Material Science Research Centre	K.Gopinath
Regional Sophisticated Research Centre	S.P.Venkateshan

Central Administration

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

Deputy Registrars

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

Internal Audit Officer

R.Esakkimuthu

Assistant Registrars

P.Bharathamani	P.Paramanandam
K.Chidambaram	M.Rajasekaran
V.Ganesan	P.Ramachandran
M.Manickam	B.Ramasamy
S.Mahalingam	K.Sekar
C.Narayanan Kutty (upto 30.6.98)	U.J.Suresh
Chief Security Officer	Lt.Col.K.Rajendran (Retd)
Security Officer (SS)	G.Selvamani
Secretary (SG) to Director	V.V.Natarajan
	G.Natarajan

Engineering Unit

Chairman, Estate & Works Committee	P.Sankaran (upto 30.06.98)
Institute Engineer	P.K.Aravindan (wef 01.07.98)
Executive Engineer	N.Malayalam
Asst. Executive Engineers	C.Ganesan
	S.K.Pati
	S.Swaminathan
	R.M.Parameswaran
	F.John De Britto
	V.Seenivasan
	K. Dharmaraj

Central Library

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

Central Electronics Centre

Senior Instrumentation Engineer	M.Kumaravel
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Centre for Industrial Consultancy & Sponsored Research

Chief Techno Economic Officer	D.Balakrishnan
Senior Techno Economic Officer	R.Sundaram
	V.Suresh

Central Workshop

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

Chairman	P.A.Asathanarayana
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Central Glass Blowing Section

Head	M.Chidambaram
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Central Photographic Section

Convenor	D.K.Sharma
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Central Gas Supplies Unit

Head	K.K.Balasubramanian
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Airconditioning Unit

Head R.Raman

Sports Activities

Adviser B.S.Thandaveswara (upto 31.12.98)
B.Ramamoorthy (wef 01.01.99)

Cultural Activities

Adviser L.S.Ganesh

Training & Placement

Adviser A.R.Balakrishnan

Foreign & Weaker Section Students

Adviser R.M.S.Gowda (upto 29.04.98)
V.R.Rengaraju (wef 30.04.98)

Vigilance

Chief Vigilance Officer K.Krishnaiah (upto 23.08.98)
V.G.Idichandy (wef 24.08.98)

Guidance & Counselling

Head N.Sivaprasad (upto 14.04.98)
D.V.S.Murthy (wef 15.04.98)

N S S

Co-ordinator T.T.Narendran

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 1998-99

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 1998-99 are given in Table 1.

TABLE - 1

S.No.	Department	B.Tech.	M.Tech.	M.Sc.	M.S.	Ph.D	Total
1.	Aerospace Eng.	33	8	-	5	2	48
2.	Applied Mechanics	-	14	-	5	6	25
3.	Chemical Eng.	56	27	-	10	11	104
4.	Chemistry	-	-	26	-	22	48
5.	Civil Eng.	59	50	-	14	4	127
6.	Computer Sci. & Eng.	31	34	-	20	7	92
7.	Electrical Eng.	103	55	-	20	4	182
8.	Hum. & Soc. Sciences	-	24	-	3	3	30
9.	Mathematics	-	-	33	-	7	40
10.	Mechanical Eng.	107	90	-	14	10	221
11.	Metallurgical Eng.	30	13	-	1	2	46
12.	Ocean Eng. Centre	23	13	-	9	1	46
13.	Physics	-	6	42	-	3	51
	Total	442	334	101	101	82	1060

The total 1060 includes the following also:

Foreign Nationals ..	5	QIP Scholars (Ph.D. & M.Tech.) ..	8
DASA (Indian Origin) ..	30	Sponsored Candidates (M.Tech &MS) ..	27
Scheduled Castes ..	95	Project staff (M.S. & Ph.D.)	36
Scheduled Tribes ..	23	External Registration candidates ..	9
Women Students ..	106	User-Orineted Programmed (M.Tech) ..	13
Defence Officers	26	Physically Handicapped students	1

In addition to the above, 54 SC and ST students joined Preparatory Course.

3.2 Students/Scholars Enrolment

The total number of students on roll in the various programmes of the Institute in the academic year 1998-99 are given in Table-2.

TABLE – 2

S.No	Department	B.Tech.	M.Tech.	M.Sc.	M.S.	Ph.D.	Total
1.	Aerospace Eng.	102	14	-	16	9	141
2.	Applied Mechanics	-	34	-	30	26	90
3.	Chemical Eng.	202	63	-	19	39	323
4.	Chemistry	-	-	49	-	105	154
5.	Civil Eng.	184	103	-	36	36	359
6.	Computer Sci. & Eng.	127	85	-	46	15	273
7.	Electrical Eng.	340	101	-	78	19	538
8.	Hum.& Soc.Sciences	-	39	-	9	18	66
9.	Mathematics	-	-	60	-	20	80
10.	Mechanical Eng.	373	183	-	55	64	675
11.	Metallurgical Eng.	113	31	-	5	27	176
12.	Ocean Eng. Centre	81	26	-	18	12	137
13.	Physics	-	12	75	-	28	115
	Total	1522	691	184	312	418	3127

The above total of 3127 includes the following:

Foreign Nationals	18	Project Staff (M.S & Ph.D)	102
DASA (Indian Origin)	79	Physically Handicapped	4
Scheduled Castes	234	Institute staff(M.S. & Ph.D.)	2
Scheduled Tribes	60	External Registration (M.S. & Ph.D.)	
Women Students	276		11
QIP Scholars (Ph.D. & M.Tech)	51		
Sponsored Candidates(M.Tech &M.S.)	55		

Besides the above 3127 students, 19 CSIR Research Associates and 54 Preparatory Course students were on the roll.

3.3 New disciplines/stream introduced

In July 1998 an user oriented M.Tech.discipline in Automotive Engine Technology was introduced in collaboration with the Indian Society for Automotive Technology. 13 students joined this programme.

3.4 Courses Offered

In the academic year 1998-99, 904 courses were offered of which 445 courses in July – Nov 98 and 459 courses in Jan – May 99. 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 1998			No of courses offered in Jan-May 1999		
		Core	Elect.	Total	Core	Elect.	Total
1.	Aerospace	23	8	31	21	4	25
2.	Applied Mech	15	14	29	10	14	24
3.	Chemical Eng	18	10	28	17	16	33
4.	Chemistry	12	17	29	14	16	30
5.	Civil Eng	42	22	64	38	20	58
6.	Comp Science	18	9	27	22	7	29
7.	Electrical Eng	43	16	59	24	21	45
8.	Humanities	8	13	21	6	18	24
9.	Mathematics	15	4	19	10	11	21
10.	Mech Eng	35	11	46	54	19	73
11.	Metallurgy	19	17	36	25	11	36
12.	Ocean Eng	26	7	33	12	15	27
13.	Physics	15	5	20	13	15	28
14.	Comptech	3	-	3	5	1	6
	Total	292	153	445	271	188	459

3.5 Convocation

The 35th Convocation was held on 31.07.1998. His Excellency Sri Krishan Kant, Vice President of India, delivered the Convocation Address. 880 candidates were awarded various degrees. 618 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.	23	13	-	5	8	49
2.	Applied Mechanics	-	14	-	8	6	28
3.	Chemical Eng.	48	19	-	4	5	76
4.	Chemistry	-	-	22	-	20	42
5.	Civil Eng.	49	40	-	7	9	105
6.	Computer Sci. Eng.	29	37	-	14	6	86
7.	Electrical Eng.	71	31	-	14	5	121
8.	Hum.&Soc.Sciences	-	18	-	2	6	26
9.	Mathematics	-	-	22	-	2	24
10.	Mechanical Eng.	84	85	-	22	14	205
11.	Metallurgical Eng.	30	10	-	2	3	45
12.	Ocean Eng.Centre	18	10	-	4	6	38
13.	Physics	-	2	19	-	14	35
	Total	352	279	63	82	104	880

With this Convocation the number of degrees awarded so far by the Institute is 21,104, the details of which are as follows:

Ph.D.	2063	M.Tech	6904	B.Tech	9118
M.S.	1229	M.Sc	1525	DIIT	245
B.Sc(Tech)	20				

Special Convocation

A special convocation was held on 16th November 1998. Prof. Dr. rer. Nat. REIMAR LUST, President of Alexander von Humboldt Foundation, Germany, was conferred the Degree of Honoris Causa.

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 ..	Sriram, R.	B.Tech. Comp. Science & Engg.
Governor's Prize ..	Jayaraman, V.	B.Tech. Comp. Science & Engg.

Other Prizes

Sl.No.	Donor	Department	Name of student
Doctor of Philosophy – Ph.D. /Master of Science by Research – M.S.			
1.	Sudharshan Bhat Memorial Prize	Metallurgical Engg.	1.N.Krishnaraj (PhD)
2.	Prof Langmuir Prize	Chemistry	2.K.Sreedhar (MS)
3.	Prof. Werner Prize	Chemistry	M.Velayutham(MS)
4.	Dr.A.L.Laskar Memorial Prize	Physics	D.Sandhya (PhD)
			1.L.Vettrivel
			2.Sriram,D.
Master of Technology – M.Tech.			
1.	Air India Prize	Aerospace	Mohammad Imtiaz Ali
2.	Indira Sivasailam Merit Prize	Engineering Mechanics	Sunil Kuriakose
3.	Institute Merit Prize	Maintenance Engg.&Mgt.	Dinesh Kumar, P.
4.	Institute Merit Prize	Biomedical Eng.	V.K.Jayasree
5.	Dr.K.Subba Raju Memorial Prize	Chemical Eng	Renganathan, T
6.	Valli Anantharama- krishnan Merit Prize	Civil Eng.	Ramesh Shivagonda Mirage
7.	CMC Prize	Computer Science & Eng.	Mohan Krishna P.R.
8.	Prof.H.N.Mahabala Endowment Prize	Computer Science & Eng.	Vinay Kumar Mittal
9.	Siemens Prize and Dr.Ing.Dieter Kind Prize	Electrical Eng.	Joseph Mahendran V
10.	Prof.Achlm Bopp Endowment Prize	Electrical Eng.	Uma K
11.	K.V.Arunkumar Memorial Prize and Coka Parthasarathy Memorial Prize	Industrial Mgmt.	Talluri Srinivasa Rao
12.	Prof.B.Sengupto Prize & Prof. BVA Rao Endowment Prize	Mechanical Engg.	Magdum Abhijeet Babasaheb
13.	Dr S Vaidyanathan Memorial Prize	Mechanical Eng.	Ramana Naidu M.
14.	Prof Ramamohana Rao Memorial Prize	Mechanical Eng.	Bhandari Praveen Kumar
15.	Mico-Bosch Prize	Mechanical Eng.	Anwar Basha S.K.
16.	Giri Brothers Prize	Mechanical Eng.	P.C.Sajith Kumar

17.	S.Anantharamkrishnan Merit Prize	Mechanical Eng	1.Anwar Basha S.K. and 2.V.Rajan Babu
18.	Sudarshan Bhat Memorial Prize	Metallurgical Eng.	B.Vamsi Krishna
19.	American Bureau of Shipping Prize	Ocean Eng.	Eldho Mathew

Master of Science – M.Sc.

1.	Dr S R Ramadas 60th Birthday Commemoration Award and Ratna Rao Memorial Prize	Chemistry	Sarathy, K
2.	Mrs.Mira Paul Memorial Prize	Mathematics	Arthi, K.
3.	Prof.Chilukury Rama-Sastry Memorial Prize	Physics	Anil Shaji

Bachelor of Technology - B.Tech.

1.	Dr.Shanker Dayal Sharma President of India Prize	Metallurgical Eng.	E.Zachariah Chacko
2.	Bharat Ratna M.Visvesvaraya Memorial Prize	Computer Sci. & Eng.	Sriram, R.
3.	HAL Prize	Aerospace Eng.	Manoj Kumar Bobba
4.	B.Ravichandran memorial Prize and Reliance Heat Transfer (P) Ltd. Prize	Chemical Eng.	B.Jayanth
5.	Prof C A Sastry Endowment Prize	Chemical Eng.	Swarup Dennis
6.	Larsen & Toubro ECC Endowment Medal	Civil Eng	Vinaymuralidhara Yadappanavar
7.	Motorola Prize	Electrical Eng.	Jayaraman, V
8.	Philips (India) Prize and Siemen's Prize	Electrical Eng.	G.V.Rangaraj
9.	Prof.Achim Bopp Endowment Prize	Electrical Eng.	1.Krishna Kiran, M 2.Sriram Viswanath
10.	Banco Foundation Prize and G.V.N.Rayudu Memorial Prize	Mechanical Eng.	Niranjan Nanda Krishore K.
11.	Sivasailam Merit Prize	Mechanical Eng.	D.Kowsigan
12.	Vaidy Krishnan Memorial Prize	Mechanical Eng.	Rajesh Srinivasan R.
13.	Dr.Dhandapani Prize	Metallurgical Eng.	B.Arun Prakash
14.	American Bureau of Shipping Prize	Naval Architecture	Shelly Lawrence H.

3.6.2 Institute Day Prizes:

On the basis of performance during the academic year 1997-98, the following students were awarded Merit Prizes on the Institute day held on 20.4.1998.

Institute Merit Prizes

B.Tech. (I and II Semesters) 1997-98

- | | | | |
|----|--|----------|---------------------|
| 1. | First Prize
(Book value of Rs.500/-) | CS 97179 | Karthik K.L. |
| 2. | Second Prize
(Book value of Rs.250/-) | CS 97172 | Ananthapadmanabha R |

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

- | | | | |
|--|----------------------------|----------|--------------------|
| (Book value of Rs.500/- for each Branch) | | | |
| 3. | Aerospace Engineering | AE 96003 | Hamsa Balakrishnan |
| 4. | Chemical Engineering | CH 96032 | AN Bharathwaj |
| 5. | Civil Engineering | CE 96107 | Srinivasan S |
| 6. | Comp. Sci. and Engineering | CS 96130 | Prasanna G |
| 7. | Electrical Engineering | EE 96141 | Amal Ekbal |
| 8. | Mechanical Engineering | ME 96260 | M.Raghavan |
| 9. | Metallurgical Engineering | MT 96310 | Rajappa, T |
| 10. | Naval Architecture | NA 96334 | Jayanth Krishnan |

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

- | | | | |
|---|---|--------------------|----------------------------|
| (Books value of Rs.500/- for each Branch) | | | |
| 11. | Aerospace Engineering | AE 95006 | J.Giridhar |
| 12. | Chemical Engineering | CH95072 | Yendapalli Sri Ramakrishna |
| 13. | Civil Engineering | CE95103 | Saravanan U |
| 14. | Comp. Science & Engg. | CS95147 | A Aravind |
| 15. | Mechanical Engineering | ME95272 | S.Srinath |
| 16. | Metallurgical Engineering | MT95306 | N Ravi Kiran |
| 17. | Naval Architecture | NA95332 | G.Ramesh |
| 18. | Ramasarma V Kolluri Memorial Prize (Silver Medal) | EE95150 | V.Badrinarayanan |
| 19. | Raghavendra Memorial Prize
(Book value of Rs.580/-) | ME96260 | M.Raghavan |
| 20. | Rajalakshmi Krishnamurthy English Prize (Book value of Rs.200/-) | CS97180 | Krishnaram K N G |
| 21. | Chilikuri Ramasastry Memorial Prize (Cash Prize of Rs.750/- each) | PH97595
PH97582 | N.Sundaram
S.Ramee |

22.	R. Padmanabhan Memorial Prize (Cash prize Rs.1500/-)	CY97524	Williams Joseph
23.	Dr. S. Chandrasekharan Memorial Prize (Cash prize of Rs.1000/-)	ME95239	Krishnan Sriram
24.	Prof. N Venkatarayulu Memorial Prize (Cash prize of Rs.1000/-)	ME97901	R M Wankhade
25.	48th Indian Pharmaceutical Congress Prize (Silver Medal and a Certificate)	CH97683`	Ashish Y Joshi

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. and Ph.D.

2.1 New Courses Introduced:

Sl. No.	Course No.	Title	Faculty
1.	AE 666	Hypersonic Airbreathing Propulsion	Prof.L. Krishnamurthy Dr.S.R.Chakravarthy

2.3. Students on Roll:

Programme	I year	II year	III year	IV year	V year	Others	Total
B.Tech.	32	26	21	21	-	-	100
M.Tech.	7	6	-	-	-	-	13
M.S.	4	8	2	-	-	-	14
Ph.D.	1	1	-	-	2	2	6
Total	44	41	23	21	2	2	133

2.3 Number of Scholarship/Fellowship holders:

Programme	Institute Scholarship	Others	Total
M.Tech.	6	-	6
M.S.	14	-	14
Ph.D.	2	1 (QIP)	3
Total	22	1	23

2.4 Number of Degrees Awarded in the last Convocation:

Programme	Total
B.Tech.	23
M.Tech.	3
M.S.	5
Ph.D.	8
Total	39

3. Faculty and their Development:

3.1 Faculty:

Name and Qualification	Major Area of Specialization
Profesooors	
Gokhale S.S., Ph.D.	Aircraft and missile propulsion, computational methods, simulation and optimization, computer aided instructions
Krishnan S., Ph.D.	Aerospace propulsion
Santhakumar S., Ph.D.	Aerodynamics, flight mechanics, instrumentation
Subramanian G., Ph.D.	Structural analysis, finite element and finite difference Techniques, experimental moire interferometry
Tulapurkara E.G., Ph.D.	Aerodynamics, Fluid mechanics, turbulent flows
Varadan T.K., Ph.D.	Structural mechanics, composite
Gowda R.M.S., Ph.D.	Thermal stress analysis, structural mechanics
Associate Professors	
Job Kurian, Ph.D.	Aero/Gas Dynamics, Shock tube flows and measurements
Ramakrishna M., Ph.D.	Aerodynamics, numerical methods in computer solutions
Sriram P., Ph.D.	Structural mechanics, composites, fatigue & fracture, vibrations
Assistant Professors	
Bhaskar K., Ph.D.	Structural mechanics, composite structures, elasticity
Chakravarthy, S.R. Ph.D.	Combustion, rocket propulsion, fluid mechanics
Rajan S.C., M.Tech.	Aerodynamics, numerical methods in computer
Sujith R.I., Ph.D.	Gasdynamics, optical flow diagnostics, acoustics

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

S. No.	Co-ordinators	Title	Period
1.	Prof.G.Subramanian Dr.P. Sriram Dr.K. Bhaskar	Eighth National Seminar on Aerospace Structures	Oct. 9-10, 1998
2.	Prof.S. Krishnan Dr.S.R. Chakravarthy	2 nd IHMCE (2nd International High Energy Materials Conference and Exhibit)	Dec. 6-10, 1998

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	1 st International and 25th National Fluid mechanics & Fluid Power Conference	IIT, Delhi	Dec.15-17, 1998
Dr.M. Ramakrishna	National Conference on Airbreathing Engines	IISc./GTRE/Bangalore	Dec. 3-5, 1998
	Asian Computational Fluid Dynamics – III	IISc. / NAL/Bangalore	Dec.7-11, 1998
	Workshop on Recent Advances in Solid Mechanics	IIT, Madras	Dec. 16-18, 1998
Dr. P. Sriram	8 th National Seminar on Aerospace Structures	IIT, Madras	9-10 Oct. 1998
Dr.S.R. Chakravarthy	Propellants and Explosives Technology	ISRO / DRDO	6-7 Dec. 1998
	Modeling and Performance Prediction in Rockets and Guns	ISRO / DRDO	6-7 Dec. 1998
Prof.S. Krishnan Dr.S.R. Chakravarthy	Second International High Energy Materials Conference and Exhibit	IIT, Madras	8-10 Dec. 1998
Dr.R.I. Sujith	Indernoise '98	New Zealand Acoustical Society	Nov.16-19, 1998
Prof.S.S.Gokhale	Advance Auditor Training Programme on EMS	Chennai	7-12, Dec. 1998
	Lab Accreditation	Chennai	9-10, Feb. 1999
	Fluent Software Training	Pune	15-19, Mar. 1999
Dr.Job Kurian	IV National Conference on Airbreathing Engines	I.I.Sc., Bangalore	3-5, Dec. 1998
	International Symposium on High Energy Materials	I.I.T., Madras	7-11, Dec. 1998

3.4 Special Lectures Delivered by the faculty in other Institutions :

Name of Faculty	Topic of Lecture	Venue & Date
Prof.E.G.Tulapurkara	Turbulent flows and their prediction series of lectures	H.A.L., Bangalore 12th & 13th June 1998
Prof.S.S. Gokhale	Topics in Optimisation	H.A.L., Bangalore July 1998
	Conducted ZOPP Workshop on Watershed Management for Loktak Lake	Imphal, Manipur 15-17, April 1998
Dr.S.R. Chakravarthy	Characterisation of Hetrogenieous solid propellant in Propellants & Explosives technology short term course	IIT, Madras 6-7, Dec. 1998

3.5 Visits Abroad by Faculty :

Name of Faculty	Country Visited	Date	Purpose of visit
Dr.Job Kurian	France	26-7-98 to 31-7-98	To present two papers at the 21st International Symposium on Rarefied Gas Dynamics, France
Dr.R.I.Sujith	New Zealand	16-11-98 to 19-11-98	To attend Inder-Noise
Dr.R.I.Sujith	U.S.A.	3-12-98 to 1-3-99	Visiting Scientist at Georgia Institute of Technology, Atlanta

3.6 Fellowships of Academies and Professional Societies :

Name of Faculty	Name of the Academy / Professional Society	Level	Year of Admission
Prof.E.G. Tulapurkara	Aeronautical Society of India	Fellow	1995
Prof.S. Krishnan	Aeronautical Society of India	Fellow	1995
	American Institute of Aeronautics and Astronautics	Associate Fellow	1995
Prof.A. Krishnan	Aeronautical Society of India	Fellow	1997
Prof.S. Santhakumar	Aeronautical Society of India	Fellow	1997
Prof.S.S. Gokhale	Aeronautical Society of India	Fellow	1997
Dr.R.M.S. Gowda	Aeronautical Society of India	Fellow	1997
Dr.Job Kurian	Aeronautical Society of India	Fellow	1998

3.7 Books / Monographs authored or co-authored :

Name(s) of Authors(s)	Title of Text Book / Monograph	Publisher
S. Krishnan S.R. Chakravarthy S.K. Athithan	Propellants and Explosives Technology	Allied Publishers New Delhi
S.R. Chakravarthy S. Krishnan	Modelling and Performance Prediction in rockets and Guns	Allied Publishers New Delhi

4. Design and Development Activities :

1. Water Cooled Pressure Sensors
2. B & K Microphone with Amplifiers
3. Technical Professional Suite method
4. PDCR 23D Pressure Transducers
5. Remote Ethernet Bridge R 1000
6. Pentium PCs
7. Colour TV Thomson
8. CCD Camera 8.63x
9. Panasonic VCR
10. Force Transducer Type U9B/5KB

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

- High pressure rotary valve designed for high temperature gases to establish Oscillatory flow in rocket chamber
- Mixed mode bending fracture test fixture

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

Compacted solid waste Resonant incinerator
Microphased and transducers
P II PC with data acquisition for UTM (structural testing)

Rotary valve of generation of high intensity acoustic field computer based data acquisition system.

Digital Image processing facility for studying fluid flow problems solid waste Incinerator, Nd-YAG laser with 2nd harmonic.

5. Research and Consultancy :

5.1 Sponsored Research Projects:

Sl. No.	Title	Period	Funding Agency	Amount (in lakhs)	Co-cordinators
1.	Free edge stresses in composite laminates subjected to transverse loads	1996-98	ARDB	2.714	K.Bhaskar T.K.Varadan
2.	Discontinuity stress in Laminated Composed Pressure Vessels	1997-99	DST	5.25	K.Bhaskar T.K.Varadan
3.	Modeling or impinging plasma jets	1995-98	DAE	10.44	M.Ramakrishna
4.	Analysis of Distributed Computing Flow over and airbreathing Vehicle	1996-99	ISRO	10.65	M.Ramakrishna Janaki Ram (CSE)
5.	Refurbishing of Oscillatory Flow Rig	6 months	NIOT	5.20	S. Santhakumar
6.	Studies on Low-speed turbulent flows in complex enclosures	1993-98	VOFN	20.0	E.G.Tulapurkara
7.	Centre for Computational Fluid Dynamics	Sep.98 to Sep. 2000	DST	358	M.Ramakrishna P.A.Aswalha- narayana T.Sundararajan Srinivas Jayanthi
8.	Theoretical and Experimental Investigation for the Determination of Gc for Composites	1997-2000	ISRO	7.00	P.Sriram

Sl. No.	Title	Period	Funding Agency	Amount (in lakhs)	Co-codinators
9.	Development of Solid Fuel and Combustion Chamber System for Hybrid Rocket Motors	1995-1998	ISRO	7.25	S.Krishnan S.R. Chakravarthy
10.	Further Erosive Burning Studies of Solid Propellants under Transonic and Supersonic Cross flow Mach Numbers	1997-1999	ARDB	3.386	S.Krishnan
11.	Development of 2-D Supersonic Combustors	1996-1998	ISRO	5.96	Job Kurian & R.I.Sujith
12.	Development of Laser Induced Fluorescence to study the flow in Supersonic Chemical Oxygen Iodine Laser	1997-1999	BRNS	8.735	R.I.Sujith
13.	Incineration of Solid Waste in an Acoustically Excited Dump Combustor	1998-2000	MHRD	10.00	C.R.Chakravarthy R.I.Sujith
14	Aerodynamics Study of Helicopter Rotor and Development of computer Code	1997-99	ARDB	3.187	S.C.Rajan M.Ramakrishna
15	Augmentation of Rerefied Gas Dynamics Facility	1998-2000	ARDB	9.8	Dr. R.I.Sujith Dr.Job Kurian
16.	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 lakhs)
1.	E.G.Tulapurkara B.H.L.Gowda	Test on Models of Sails in Wind Tunnel	National Ship Design & Res. Centre	2.90
2.	Prof.G. Subramanian	Design, Fabrication and Testing of Laboratory set-ups	H.I.E.T.	30,500

5.3 RBIC :

Sl. No.	Name of the Investigator/ Co-investigator	Title	Number	Amount (in lakhs)
1.	E.G.Tulapurkara	Aerodynamics & Structural Performance of Airfoils with Mounting BCEL	Best & Crompton	6.00
2.	Job Kurian & R.I.Sujith	Experimental Investigation on Heat Transfer to GSLV and Satellite	RB/96-97/ASE /003/VSSC/JOBK	6.00

Sl. No.	Name of the Investigator/ Co-Investigator	Title	Number	Amount (in lakhs)
3.	S.Krishnan R.I.Sujith S.R.Chakravarthy	Vortex Shedding as a Source of Pressure Perturbations and Associated problems in Segmented Large Solid	RB/98-99/ASE/001/ ISRO/SKRI	12.98
4.	S.Krishnan R.Palanimathan (Applied)	Software for Nozzleless Booster Structural Analysis	RB/97-98/APM/003/ DRDL/RPAL	4.00
5.	S.Krishnan S.C.Chakravarthy	Erosive Burning characteristics of Nozzleless Booster Propellants	RB/97-98/ASE/001/ DRDL/SKRI	5.00
6.	G.Subramanian	Finite Element Algorithms	RB/97-98/ASE/002/ ADA/GUSB	0.55
7.	S. Santhakumar	Transonic Tunnel Development	RB/98-99/ASE/ 002/DRDL/SSAN	2.5
	S. Santhakumar	Low Speed Wind Tunnel Testing Configurations upto High Angle of Attack	RB/98-99/APM/ 001/DRDL/PAAS	2.5

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

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

5.7. Research Publications :

A) In Refereed National Journals:

1. Selvarajan S, Tulapurkara E.G., Vasantaram, V., "A numerical study of flow through wavy walled channels", Int. JI. of Numerical Methods in Fluid, Vol.26, pp.519-531, 1998.
2. Gowda, B.H.L., Tulapurkara, E.G., Swain, S.K., "On the mechanism of reverse flow in channel with obstruction at entry", Fluid Dynamics Research, Vol.23, pp.177-187, 1998.
3. Krishnan, S., and Swami, R. D., "Effect of Burning Rate Modifiers on Subatmospheric Flame Temperatures of AP/HTPB Composite Solid Propellants", Defence Science Journal, INDIA, Vol. 48, April 1998, pp. 211-217.
4. Krishnan, S. And Swami, R.D., "Effect of Burning Rate Modifiers on Sub-atmospheric Flame Temperatures of AT/HTPB.
5. Santhakumar, S. Anand Madhavan and Kulkarni Nilesh Vijay, "Trajectory Simulation of a Thrust-controlled SFRJ Propelled Cannon launched Projectile", JI. of Aero. Soc. of India, Vol.50, No.2, May '98, pp.93-99.

B) In Refereed International Journals

1. Karthik, K, Tulapurkara, E.G., Damodaran, K.A., "Influence of the separated flow on Wing on tail downwash", Proc. 49th AMG of Ae.S.I., Jan, 16-17, 1998, pp.8.1-8.7.
2. Gowda B.H.L., Tulapurkara E.G and Kannababu, A., "Interference effects on Wind Pressure distribution on a low Prognatic Body", Proc.49th AGM of Ae.S.I., Jan, 16-17, 1998, pp.2.1-2.8.
3. Krishnan, S., and Swami, R. D., "Effect of Catalyst Addition on Subatmospheric Burning Surface Temperature of Composite Propellants," Journal Propulsion and Power, Vol. 14, May-June 1998, pp. 295-300.
4. Krishnan, S., and Philmon George, "Solid Fuel Ramjet Combustor Design," Progress in Aerospace Sciences, Vol. 34, 1998, pp. 219-256.
5. Krishnan, S., "Analysis of a Canister Projectile System," Journal of Spacecraft and Rockets, Vol. 35, No. 5, Sept.-Oct. 1998, pp. 721-724.
6. Manoj Kumar, B, and Sujith R.I., "Exact Solution for One-Dimensional Acoustic Fields in Ducts with a Polynomial Mean Temperature Profile", Jl. Of Vibration and Acoustics, Vol.120, pp.965-969, 1999.
7. Prince, E.W., Chakravarthy, S.R., Sambamurthi, J.K., Sigman, R.K., "Details of Combustion of ammonium perchlorate Propellants: Loading Edge Flame Detachment "Combustion Science & Technology, Vol.38, 1998, pp.60-83.
8. Job Kurian, 'Studies on mixing in two dimensional supersonic flow Experiments in Fluids', Vol.24, 1998, pp.340-346.
9. Job Kurian, "Effects of Injector - Combustor Geometry on the Performance of Supersonic Combustor", "Combustion Science & Technology", Vol.132, pp.1-16, 1998.

C) In Proceedings of National Conference

1. Varadan T.K., "Accurate Modelling of Composite Laminates under Mechanical and Thermal Loads", Proc. of Eighth National Seminar on Aerospace Structures, pp.41-50, 9-10, Oct.1998, IIT, Madras, Chennai.
2. Job Kurian, "Freejets from Tab Nozzles" IV NCABE, pp.AP 40-43, Dec. 1998, Bangalore.
3. Karthik, B, Krishna Mohanraj, R, Rajesh Ramakrishnan and Sujith, R.I., "Exact Solutions to One-Dimensional Acoustic Fields in Ducts with an Axial Mean Temperature Gradient and Damping", 4th Technical Session of the Madras India Regional Chapter of the Acoustical Society of America, 1998, August, Madras.
4. Ramesh. R, Pradeep. S, Sriram. S, Muruganandam. T.M. and Sujith R.I., "Mixing of High Speed Coaxial Jets", 4th National Conference on Air Breathing Engines and Aerospace Propulsion, IISc, Bangalore, 3-5, Dec. 1998, IF 47-56.

D) In Proceedings of International Conference

1. "Propellants, Explosives, Rockets, and Guns," Proceedings of the Second International High Energy Materials Conference and Exhibit, Chennai (Madras), Dec. 8-10, 1998, Edited by S. Krishnan and S. K. Athithan, Allied Publishers, New Delhi, 1998.
2. Krishnan, S., and Rajesh, K. K., "Erosive Burning Rate Studies of Composite Propellants under High Cross Flow Velocities," 34th Joint Propulsion Conference and Exhibit, Cleveland, OH, July 13-15, 1998, AIAA 98-3384.
3. Philmon George, Krishnan, S., Varkey, P. M., Ravindran, M., and Lalitha, R., "Fuel Regression Rate Enhancement Studies in HTPB/GOX Hybrid Rocket Motors," 34th Joint Propulsion Conference and Exhibit, Cleveland, OH, July 13-15, 1998, AIAA 98-3188.
4. Job Kurian, "Impingement of low density freejets on inclined flat plate", presented at 21st R G D Symposium, July 1998, Marseille, France
5. Job Kurian, "Ignition and combustion of Aluminium particles in an Oxidising stream", Proc. Of the 2nd High Energy Materials Conference, Madras, pp.114-121, 1998
6. Ramakrishna, M, Sriram, S., "Implementation of tonal modelling using object oriented programming", Third Asian Computational Fluid Dynamics Conference, Vol. 2, pp.324-329.
7. Chakravarthy, V.A.S.K. and Ramakrishna, M., "Numerical Implementation of normally hypinging Jet on a flat plate using hybrid grid, pp.390 - 398.
8. Santhakumar, S, Jayashankar, V, Atmonand, M.A, Pathak A.G, Ravindran, M, Setoguchi, T, Takao, M, Kaneko, K., "Performance of an Impulse Turbine Based Wave Energy Power Plant", Proc. of 8th Int. Offshore and Polar Engg. Conference, Monstrel, Canada, May 24-29, 1998, pp.75-80.
9. Jayashankar, V, Atmonand, M.A, Ravindran, Koola, P.M., Jagadeshkumar, V, Santhakumar, S., "Model Analysis of an OWC based Wave Energy Plant", 17th Int. Conf. on Offshore Mechanics and Arctic Engg., 6-9, July 1998, Lisbon, pp
10. Khoshnevis, A.B, Tulapurkara, E.G., Narasimhan J.L., "Experimental study of Wake boundary layer interaction", Proc.Ist Int. Conf. On FMFP, 15-17, Dec.1998, pp.698-707
11. Sujith, R.I., Karthik, B, Krishna Mohanraj, R, and Rajesh Ramakrishnan "Exact Solutions to One-Dimensional Acoustic Fields in Ducts with an Axial Mean Temperature Gradient and Damping", Communicated to Inter-Noise 98, November 16-19, Auckland, New Zealand.

6. Distinguished Visitors to the Department :

S.No.	Name of the Visitor and Designation	Date of visit	Purpose of visit
1.	Mr.H.K. Kaura Head, Computer Division, B.A.R.C., Mumbai	14-5-1998	
2.	Mr.K.P. Mohanty B.B.S.R., Central Tool Room & Training Centre, Orissa	13-11-1998	Discussion with Faculty
3	Dr.H.N. Chatterjee Coordinator, North-South Study Group of Aachen University of Technology, Germany	20-11-1998	Discussion with Faculty
4	Prof.V.E. Zarko Institute of Chemical Kinetics and Combustion Russian Academy of Sciences, Russia	11-12-1998	Discussion with Faculty

Other Activities:

S. Krishnan - One of the editors of the Proceeding of the Second International High Energy Materials Conference and Exhibit, Dec.8-10, 1998.

Prof.S. Krishnan: Member, BAR, IC & SR Board, Estate Committee

Prof. S.S.Gokhale: Management Representative ISO 9000

Prof. S.Santhakumar: Warden, Krishna Hostel
Member, CEC User Committee
Auditor, Aero. Soc. of India (Chennai)

Dr.R.M.S. Gowda: Warden, Mandakini Hostel

Dr.Job Kurian : Warden, Jamuna Hostel

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, 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	Faculty
1.	AM 781	Chaotic Vibration	Dr. S. Narayanan & Dr. P. Chandramouli
2.	AM666	Signal Processing for Model Analysis	Dr. C.Sujatha Dr. S. Swarnamani Dr.P.Chandramaouli

2.2 Number of applications received and number of candidates admitted:

Programme	No. received	No. selected
M.Tech.(Discipline wise)		20
M.S.	74	10
Ph.D.	16	5
Total	90	35

2.3 Students on Roll :

Programme	I year	II year	III year	IV year	V year	Others	Total
M.Tech	14	20	-	-	-	-	34
M.S.	7	13	10	-	-	-	30
	2	5	3	16	-	-	26
Total	23	38	3	16	--	-	90

2.4 Number of Scholarship/Fellowship holders:

Programme	Institute Scholarship	Others	Total
M.Tech	6	2 (QIP)	8
M.S.	16	-	16
Ph.D.	4	1 (MOT) } 2 (QIP) }	7
Total	26	5	31

2.5 Names of student/scholar attended Conferences/Seminar and symposia abroad/India :

S.No	Name of the Student/Scholar	Programme	Name of the Conf./Seminar/Symposia	Date & Venue
1	K.G. Prabhu	Ph.D.	National Biomed Engg, Conference	April 9-11, 1998 MIT, Manipal
2.	Vimal Kumar	Ph.D	3 rd International Conf. On spinal surgery and workshop on spinal fixation system	Aug 14-16, 1998 Coimbatore
3.	B. Prahlad Rao	M.Tech	National Conf. On Electronic Materials, Devices & System,	Jan 18-20, 1999 Gulbarga
4.	Sarath Kumar	Ph.D.	IV National conference on Air Breathing Engines & Aerospace Propulsion	3-5 Dec. 1998 I.I.Sc., Bangalore

S.No	Name of the Student/Scholar	Programme	Name of the Conf./Seminar/Symposia	Date & Venue
5.	Rame Gowda	Ph.D.	IV National Conference on Air Breathing Engines & Aerospace Propulsion	3-5 Dec. 1998 I.I.Sc., Bangalore
6.	Ramesh, M. (Presented a paper)	Ph.D.	8 th National Seminar on Aerospace Structures (8 th NASAS). Theme: Nonlinear Mechanics	Oct. '98 I.I.T, Madras
7.	Ramesh, M. (Presented a paper)	Ph.D.	IUTAM Symposium on Nonlinearity and Stochastic structural dynamics	Jan. 1999 I.I.T, Madras
8.	A.B. Khoshnevis	Ph.D.	25 th National & International Conf on FM&FP	Dec.98, IIT Delhi

2.6 Number of Degrees Awarded in the last Convocation:

Programme	Total
M.Tech	14
M.S.	8
Ph.D.	6
Total	28

3. Faculty and their Development:

3.1 Faculty

Professors

Name and Qualification	Major Area of Specialization
K.M. Patil, D.Sc	Biomechanics, Rehabilitation Engg.
Megha Singh, Ph.D.	Laser & Ultrasound in Medical Diagnostics, Cardiovascular Hemodynamics
S. Radhakrishnan, Ph.D.	Biomechanics, Rehabilitation Engg.
V. Ramamurti, Ph.D	Vibrations, Stress Analysis and Finite Element Analysis
B.S. Prabhu, Ph.D.	Tribology, Rotordynamics & Maint. Engg.
N. Ganesan, Ph.D.	Vibration, Acoustic & Noise Control and Smart Structures
S. Narayanan, Ph.D.	Random Vibration, Nonlinear Vibration & Chaos- Acoustics and Noise Control Smart Structures
R. Palaninathan, Ph.D.	Solid Mechanics, Composite Structures, Plates & Shells
J. Raamachandran, Ph.D.	Solid Mechanics, Boundary Element Method
V. Ramjee, Ph.D.	Fluid Mechanics

B.H.L. Gowda, Ph.D. Fluid Mechanics

P.A. Aswatha Narayana, Ph.D. Fluid Mechnics

Asst. Professors

S. Swarnamani, Ph.D. Vibration, Acoustics, Diagnostics/Medical Ultrasonic

M.R.S. Reddy, Ph.D. Biomedical Instrumentation and Biosignal Processing

C. Sujatha, Ph.D. Machine Dynamics, Vehicular Vibration, Instrumentation and Signal Processing, Acoustics, Condition Monitoring

G.Santhanakrishnan, Ph.D. Tribology, Manufacturing Engg., Composites Technology

P. Chandramouli, Ph.D. Noise & Vibration Control, Non-linear Dynamics

C. Lakshmana Rao, D.Sc Solid Mechanics, Fracture, Bio-materials

M.S. Sivakumar, Ph.D Solid Mechanics, Plasticity, Smart Materials, Nonlinear FBA

J.Lakshmi Narasimhan, Ph.D. Internal Flows, CFD, Fluid Mechanics

Senior Scientific Officer, Gr.I

G. Thomas, M.Sc. Experimental Stress analysis

Technical Officer

V. Ganesh, M.S. Stress Analysis

3. 2 Short-term Courses/Workshops/Seminar/Symposia/ Conference Organised:

S.No.	Co-Ordinators	Title	Period
1.	Dr. B.S. Prabhu	Advanced Machinery Diagnostics	23-25 July 1998
2.	Dr.S. Narayanan (Co-Chairman)	8 th National Seminar on Aerospace Structures 8 th NASAS. Theme (Non-linear Structural Mechanics)	October 1998
3.	Dr. S. Narayanan (Chairman)	Symposium on Nonlinearity and Stochastic Structural Dynamics	January 1999

S.No.	Co-Ordinators	Title	Period
4.	Dr.B.S. Prabhu	National Symposium on Dynamics	Aug 7, 1998
5.	Dr. C. Sujatha	-do-	-do-
6.	Dr.P. Chandramouli	-do-	-do-
7.	Dr.G. Santhanakrishnan	-do-	-do-
8.	Dr. G. Santhanakrishnan	Predictive Maint. & TPM	20-22 July 1998
9.	Dr. S. Swarnamani	Experimental & Theoretical Modal Analysis	27-31 July 1998
10.	Dr. M.S. Sivakumar	QIP Short-term course on "FE Tech. for Geotech. Engg."	Nov.30- Dec.4, 1998

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

S. No	Name of Faculty	Title	Institution	Period/ Duration
1.	Dr.K.M. Patil	New methods of walking foot pressure analysis for different levels of diabetic neuropathy and footwear for prevention of plantar ulcers	MIT, Manipal	April 9-11, 1998
2.	Dr.K.M. Patil	Stresses in a 3-D two arch model of a neuropathic foot in advanced stage of tarsal disintegration	MIT, Manipal	April 9-11, 1998
3.	Dr.S.Radhakrishnan	3 rd International Conf. On spinal surgery & workshop on spinal fixation systems,	Ganga Hospital Coimbatore	Aug 14-16, 1998
4.	Dr.MRS Reddy	Digital Signal Processing solutions	Texas Instruments Bangalore	Dec 3-4, 1998
5.	Dr.MRS Reddy	National Technology Conference for the visually handicapped	All India Confederation of the Blind, New Delhi	Dec 21-22, 1998
6.	Dr.MRS Reddy	All India Conference on Biomedical Instrumentation Indian perspective	Engineering College, Kota, Rajasthan	Feb, 21-22 1999
7.	Dr. S. Narayanan	8 th National Seminar on Aerospace Structures (8 th NASAS).	I.I.T, Madras	October 1998
8.	Dr. S. Narayanan	IUTAM Symposium on Nonlinearity and Stochastic Structural Dynamics	I.I.T, Madras	January 1999
9.	Dr. S. Narayanan	Continuing Education Programme on Advanced Machine Dynamics and Diagnostics	I.I.T, Madras	23-25 July 1998

S. No	Name of Faculty	Title	Institution	Period/ Duration
10.	Dr. S. Narayanan	National Workshop on Fluid Power Engineering IPROMM 98	I.I.T, Madras	4-5 Sept. 1998
11.	Dr. S. Narayanan	Short term course on Probabilistic Structural Mechanics (AICTE)	I.I.Sc., Bangalore	31-8-98 - 1-9-98
12.	Dr. S. Narayanan	Workshop on differential Equations and Dynamical Systems (AICTE)	I.I.T, Madras	Nov-Dec. 98
13.	Dr. S. Narayanan	Course on Condition Monitoring in Industrial Plants (Indian Society for Non-Destructive Testing).	IGCAR, Kalpakkam	15 th Oct. 1998
14.	Dr. S. Narayanan	World Bank Aided short Term Training Programme on Noise Pollution -Monitoring and Control	University of Roorkee	14 th Oct. 1998
15.	Dr. S. Narayanan	Workshop on High Pressure Testing of Fluid Products and Noise Evaluation Methods.	Fluid Control Research Institute, Palghat	Jan 20-22 , 99
16.	Dr. P. Chandramouli	8 th NASAS	I.I.T. Madras	October 1998
17.	Dr. Lakshmana Rao	WRASMAC	IIT, Madras Engg. Science Group	Dec.16-18, 1998
18.	Dr.M.S. Sivakumar	WRASMAC	IIT, Madras Engg. Science Group	Dec.16-18, 1998
19.	Dr.J. Raamachandran	ISTAM Conf	ISTAM, Coimbatore	Dec.16-19, 1998
20.	Dr. R. Palaninathan	NASAS Conf.	IIT, Madras	Oct.9-10, 1998
21.	Dr.B.H.L. Gowda	13 th Australasian Fluid Mechanics Conference	Monash Univ. Australia	13-18, Dec. 1998

3.4 Special Lectures Delivered by the faculty in other Institutions:

S. No	Name of Faculty	Topic of Lecture	Venue/date
1.	Prof.K.M.Patil	Invited lecture on "Dynamic foot pressure in diabetic neuropathy" in workshop on BME	Vellore Engg. College, Vellore, on March 12, 1999
2.	Prof.Megha singh	Cardiac functional analysis by laser speckle interferometry	P.G.I. Basic Medical Sciences, Madras 28/8/1998
3.	Prof.S.Radhakrishnan	Biomechanics of Head Injuries at the National workshop on Biomedical Engg	March 12-13, 1999 Biomedical Engg, Vellore Engg College, Vellore
4.	Dr. MRS Reddy	National Workshop on Biomedical Engineering – The Indian Scenario	Vellore Engg College, Vellore, March 12-13, 1999
5.	Dr. S. Narayanan	"Flow Induced Vibration" in Continuing Education Programme. Short term course on Advanced Machine Dynamics and Diagnostics.	I.I.T, Madras 24-7-98

S. No	Name of Faculty	Topic of Lecture	Venue/date
6.	Dr. S. Narayanan	"Noise of Fluid Power Components" in the National Workshop on Fluid Power Engineering, IPROMM, 1998	I.I.T. Madras 4-9-98
7.	Dr. S. Narayanan	"Level Crossing Problems Peak Statistics. Problem of First Passage Failure. Maximum value of a random process in a given interval" (2 lectures) "Design of Structural Systems in random vibration Environment" (1 lecture). In AICTE Sponsored Course on Probabilistic Structural Mechanics	I.I.Sc. Bangalore 31-8-98 & 1-9-98
8.	Dr. S. Narayanan	"fundamentals of Vibration" in Indian Society for Non-Destructive Testing sponsored course on Condition Monitoring in Industrial Plants.	IGCAR Kalpakkam
9.	Dr. S. Narayanan	"Noise Control, a few case studies", World Bank Aided Short Term Training on Noise Pollution-Monitoring and Control	University of Roorkee, 14-10-98
10.	Dr. S. Narayanan	"Dynamic Analysis of Chaotic and Nonlinear Systems", AICTE Sponsored Workshop on Differential Equations and Dynamical Systems.	Dept. of Mathematics, I.I.T, Madras November 98.
11.	Dr. S. Narayanan	"Industrial/Environmental Noise Criteria and Evaluation", in 3 day Workshop on High Pressure Testing of Flow Products and Noise Evaluation Methods at FCRI, Palghat	Fluid Control Research Institute, Palghat, Jan. 21, 1999
12.	Dr.C. Sujatha	Experimental techniques in Turbomachinery vibration	27-8-1998 AU-FRG Institute for CAD/CAM, Anna University, Chennai
13.	Dr. V. Ramjee	Confined Jets	IISc, Bangalore Nov. 1998

3.5 Visits Abroad by Faculty:

S.No	Name of Faculty	Country visited	Date	Purpose to visit
1.	Dr. P. Chandramouli (The Ohio State University)	U.S.A	May 1998 July 1998	Research on Automotive Transmission Noise (Summer Term).

3.5 Honours and Awards obtained:

S.No.	Name of Faculty	Name of Award	Awarded by	Year
1.	Dr.N. Ganesan along with Dr.G. Ravichandran Shri. Ragupathi-BHEL, Trichy and Dr.R. Krishnakumar, Mech. Engg. Dept. IIT, Madras	The William H.Houbay Memorial Medal Award 1998, American Welding Society	Excellence of the paper in the field of pipe welding	1998

3.7 Books/monographs authored or Co-authored:

S. No.	Name(s) of Authors	Title of Text Book/ Monograph	Publisher
1.	J.F. Stoltz Megha Singh P. Riha	Hemorheology in Practice	IOS Press Amsterdam 1999
2.	Dr. C. Sujatha	Proceedings of National Symposium on Dynamics	Tata McGraw Hills Publishing Company
3.	Dr.G.Santhanakrishnan	Proceedings of National Symposium on Dynamics	Tata McGraw Hills Publishing Company

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

S. No.	Name of Faculty	Name of the Academy/ Professional Society	Level	Year of Admission
1.	Dr.Megha Singh	National Academy of Medical Sciences	Fellowship	1998
2.	Dr.B.S. Prabhu	Indian National Academy of Engg.	Fellowship	1998
3.	Dr. S. Narayanan	Elected as National Vice- President of the Acoustical Society of India	Fellowship	1998
4.	Dr.V. Ramjee	J.Aero.Society of India	Fellow	Nov. 1996

S. No.	Name of Faculty	Name of the Academy/ Professional Society	Level	Year of Admission
5.	Dr. B.H.L. Gowda	J. Aero. Society of India AIAA	Fellow Assoc. Fellow	1997 1996
6.	Dr.J.L.Narasimhan	IEI, FMFP, AeSI, ISTE, ISWE	Life Member	1989,1987,1989, 1988, 1993

4. Design and Development Activities:

Squeeze Casting Facility for selectively reinforced Pistons
 Computer Software for analysis of viscoelastic structures with major boundary
 Tyre pressure measurement system and software with online calibrator
 Thermal shock application setup.

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

Prof. Megha Singh: - 1. Laser Multipoints tissue Reflectance Imaging system.

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

1. Actuators and Control Hardware for Active Vibration Control- M.D. lab
2. Data acquisition system SYSTEM 5000 from Strain Gauges etc. - SM lab
3. Four Computers for the projects conducted by the division faculty. - SM lab

5. Research and Consultancy:

5.1 Sponsored Research Projects on hand

S. No	Title	Period	Funding Agency	Amount (Rs. In Lakhs)	Co-Ordinators
1.	Development of laser-ultrasound tomographic techniques for early detection of breast cancer	2 years	DST	Rs.7.8 Lakhs	Dr. Megha Singh Dr. S. Swarnamani Dr. Susamma Chacko
2.	Development of Hand held communication Aid for spastic	1997-99	Ministry of Social Justice	Rs.4.91 Lakhs	Dr. MRS Reddy
3.	Vibration Control using Piezo-electric Actuators and Sensors	1997-2000	AR&DB	9.5	Dr.S. Narayanan & Dr.S.Swarnamani
4.	Statistical Energy Analysis of Launch Vehicle Structures	1997-1999	ISRO	8.5	Dr.S. Narayanan & Dr.S. Swarnamani
5.	Metalmatrix Composites for Automative Applications	4 years		84.98	Dr.R. Palaninathan Dr.C.V. Gokularatnam Dr. R. Krishnamurthy Dr.G.Sanathanakrishnan

S. No	Title	Period	Funding Agency	Amount (Rs. In Lakhs)	Co-Ordinators
6.	Studies on Machining of fiber Reinforced Plastics	2 years	ISRO-IIT Cell	4.55	Dr.S.K. Malhotra Dr.R. Krishnamurthy Dr.G.Santhanakrishnan
7.	Development of Bio Degradable Natural fiber Composite	3 years	DST	7.00	Dr.C.L. Rao Dr.S.K. Malhotra Dr. A.K. Despande Dr.G.Santhanakrishnan
8.	AE Studies on Aerospace Matls. Such as TC Alloys/AL. Alloy.	3 ½ years	ISRO-IIT Cell	3.00	Dr.R. Krishnamurthy Dr.S.K.Malhotra Dr.G. Santhanakrishnan
9.	Metal Matrix Composites for Automotive Application	MHRD	95-98	85.00	Dr.R.Palaninathan
10.	Buckling Investigation of inner vessels	IGCAR	97-98	17.75	G.Thomas Dr.R.Palaninathan
11.	Fatigue investigation of pipelinks	IGCAR	97-98	17.00	Dr.C. Lakshmana Rao
12.	Bamboo reinforced composites	DST	98-99	11.00	Dr. C. Lakshmana Rao
13.	Interaction of Supersonic Jets	1996-1999	ISRO	5.5	Dr.V. Ramjee & Dr.T. Sundararajan
14.	Entrainment in LMFRR Models	1997-99	IGCAR	4.37	Dr. BHL Gowda & Dr.BVSSS Prasad

5.2 Industrial Consultancy :

S.No	Name of the Faculty	Title	Industry	Amount (Rs. In Lakhs)
1.	Dr.C. Sujatha Dr.S. Narayanan Dr. G.Santhanakrishnan	Seismic testing of 400 KV CT of GEC Alsthom UK.	M/s National Thermal Power Corporation Ltd., Rihand-231 223.	0.258
2.	Dr.S. Swarnamani	Testing of Vibration Damper Pulleys for Natural Frequency	M/s Autolec Industries Ltd., Madras-58	0.035
3.	Dr.S. Swarnamani	Testing of Vibration Damper Pulleys for Natural Frequency	M/s Autolec Industries Ltd., Madras-58	0.150
4.	Dr. B.S. Prabhu	Failure analysis of Carbonate Pump Shaft.	M/s Indian Petrochemicals Corporation Ltd., Nagothane – 402 125	0.300
5.	Dr. C. Sujatha Dr.V. Ramamurti Dr. B.S. Prabhu	Seismic Test on 145 kV Bushing.	M/s BHEL, Bhopal 462 022	0.250
6.	Dr.S. Swarnamani	Comments on Air Horns Standardisation and Noise Control	M/s Roots Auto Products P. Ltd., Coimbatore-641 006	0.100

S.No	Name of the Faculty	Title	Industry	Amount (Rs. In Lakhs)
7.	Dr.S. Swarnamani Dr. N. Ganesan Dr.G. Santhanakrishnan	Seismic Test on 120 kV 10 kA Lightning Arresters.	M/s Oblum Electrical Industries Pvt. Ltd. Hyderabad-500 037	0.180
8.	Dr.G. Santhanakrishnan Dr. B.S. Prabhu Dr.S. Swarnamani Dr. C. Sujatha	Testing of Grease and Oil	M/s Chalisery Chemicals and Lubricants, Ollur, 680306	0.104
9.	Dr.C. Sujatha Dr. V. Ramamurti Dr. P.Chandramouli	Testing of 3 phase Transformer and 3 Phase Choke	M/s ABB Daimler - Benz Transportation (India) Ltd., Vadodara - 390 013	0.250
10.	Dr.V. Ramamurti	Estimate the Stress Levels of Resonant Frequencies on the Blade/Disc.	M/s Nuclear Power Corporation, Mumbai-94	0.200
11.	Dr.S. Swarnamani Dr.V. Ramamurti Dr.N. Ganesan	Loco VCB Shock and Vibration Test.	M/s GEC-Alsthom India Limited, Chennai-600 018	0.300
12.	Dr.S. Swarnamani	Testing of Torsional Vibration Damper for Natural Frequency and Damping Characteristics	M/s Autolec Industries Ltd., Chennai- 58	0.002
13.	Dr.C. Sujatha Dr. P. Chandramouli	Fatigue Test of Levers for Resonance Frequencies	M/s Mahindra-Ford, Chennai-32	0.270
14.	Dr.S. Swarnamani Dr.C. Sujatha	Vibration Measurement and Remedy for Survey Launch.	M/s Goodwill Engg. Works, Chennai-8	0.100
15.	Dr. C. Sujatha Dr.S. Swarnamani	Experimental Stress Analysis of Stack Adjuster.	M/s Sundaram Clayton Ltd., Chennai-50	0.120
16.	Dr. V. Ramamurti	Scrutinising and Vetting the Finite Element Investigation on Auto Setting Mill.	M/s Walchandnagar Industries, Walchandnagar	0.250
17.	Dr. S. Narayanan Dr.S. Swarnamani	Noise Emission Study	M/s Bajaj Tempo Ltd., Pune- 411 035	0.080
18.	Dr.C. Sujatha Dr.N. Ganesan Dr.S. Narayanan	Seismic Test on 132 KV CVT.	M/s W.S. Industries (India) Ltd., Bangalore - 562 157	0.250
19.	Dr.P. Chandramouli Dr.S. Swarnamani	Noise and Vibration Problem on Fuel Injection Equipment	M/s UCAL Fuel Systems Ltd., Maraimalainagar, 603 209	0.060
20.	Dr. S. Swarnamani Dr. B.S. Prabhu Dr. N. Ganesan	Seismic Test on 220 KV CT.	M/s Asea Brown Boveri Ltd., Vadodara- 390 001	0.500

S.No	Name of the Faculty	Title	Industry	Amount (Rs. In Lakhs)
21.	Dr. P. Chandramouli	Natural Frequency Measurement of Axial Flow Fan.	M/s Guru Engg. Works, Tiruchirapalli - 620 015	0.150
22.	Dr.B.S. Prabhu	Journal Bearing Performance Calculations	M/s Unitools Industries, Mumbai-400 070	0.120
23.	Dr. C. Sujatha Dr.P. Chandramouli	Vibration Analysis on Dynamometer	M/s Schenck Avery Ltd., Chennai- 1	0.100
24.	Dr.C. Sujatha Dr.S. Swarnamani Dr. P. Chandramouli	Natural Frequency Test for Gas Turbine Compressor Blades.	M/s Madras Refineries Ltd., Chennai- 600 068	0.400
25.	Dr. S. Swarnamani Dr.P. Chandramouli Dr. S. Narayanan	Seismic Testing of 400 KV Pantograph Isolator with Earth Switch.	M/s Elpro International Ltd., Hyderabad, 500 037	0.300
26.	Dr. B.S. Prabhu	Rotor Stability, Seals and Bearings.	LPSC/ISRO	6.000
27.	Dr. B.S. Prabhu	Seismic Testing, Failure Analysis Etc.	Many Industries	2.000
28.	Dr.S. Swarnamani Dr.S. Narayanan	Noise Level Testing of 3-Wheeler Diesel Vehicle.	M/s Eathiraj Auto Udyog Pvt. Ltd., Chennai- 59	0.004
29.	Dr. BHL Gowda & Dr.E.G. Tulapurkara	Tests on Sail Models	NS	2.9
30.	Dr.V. Ramjee Dr.S. Narayanan Dr. Meher Prasad	Wind Loads in Rajiv Memorial at Sriperumbudur		0.50

5.3 RBIC :

S. No	Name of the Faculty	Title	Industry	Amount (in lakhs)
1.	Dr.MRS Reddy Dr.M.S.Shunmugam	Development of ultrasound Mechanical Sector Scanning Transducer	Indus Instruments U.S.A 1998-1999	6.0
2.	Dr. R. Palaninathan	Software for Structural Analysis of Nozzleless Booster	DRDL	4.1
3.	Dr.M.S. Sivakumar Mr.G. Thomas	Thermani Striping limits for PFBR Components	IGCAR	9.00

5.4 Retainer Consultancy :

S. No.	Name of the Faculty	Title	Industry	Amount (Rs. In Lakhs)
1.	Dr.P. Chandramouli	Noise Control in Refrigeration Compressors	M/s Kirloskar Copeland Ltd.	0.125 (One Visit)

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

S.No	Name of the Faculty	Level	Journal
1.	Dr. Megha Singh	Editor	Clinical Hemorheology & Microcirculation
2.	Dr. K.M. Patil	Member Editorial Board	Journal of Foot Surgery

5.6 Research Publications:

a) In Refereed National Journals:

1. Bhatia, M.M, Patil, K.M. and Oommen, P.K, "A new method for quantitative evaluation of foot drop correction surgery in leprosy", Journal of Foot Surgery, Vol. XIII, (special issue) 1998, pp 26-32.
2. Singh, S.S. and Singh, M. Blood flow analysis through complex microvessels by digital image velocimetry. Curr. Sci. 75, 1998, 719-729.
3. Ramakrishnan, S., Grebe, R., Singh, M. and Schmid-Schonbein, H. Hemorheological behaviour of erythrocytes and risk factor profile in patients suffering from W.M. Ind. J. Med. Res. 107, 1998, 128-133.
4. Uma, R. and Singh, M. Ultrasonic three-dimensional visualization of tissue phantoms. J. Pure Appl. Ultrasonics. 29, 1998, 45-56.
5. D. Hanumanna, S. Narayanan and S. Krishnamurthy, "Prediction of Fatigue Life of Gear subjected to varying Loads", Defence Science Journal, 48(3), 277-285, July 1998.

b) In Refereed International Journals:

1. Chacko, S. and Singh, M. Laser transillumination tomographic analysis of human breast models. Innov. Technol. Med. Biol. 19, 1998, 105-111.
2. Nagaprasad, V. and Singh, M. Sequential analysis of the influence of blood storage on aggregation, deformability and shape parameters of erythrocytes. Clin. Hemorheol. Microcir. 18, 1998, 273-284.

3. Vimal Kumar, Y.M., Radhakrishnan, S & MRS Reddy. "A Study on somatosensory evoked potentials for the evaluation of scoliosis" in ITBM, Vol 19, no. 4, pp 325-333, 1998.
4. Joseph.S. Paul, M.R.S. Reddy and V. Jagadeesh Kumar, "Recursive Algorithm for efficient representation of ECG signals", Electronics Letters: An International Publication, Vol.34, No.6, pp 526-528, 19th March 1998.
5. Joseph Paul, M.R.S. Reddy and V. Jagadeesh Kumar, "Data Processing of Stress ECG's Using Discrete Cosine Transform", Computers in Biology and Medicine, Vol. 28, pp:639- 658, 1998.
6. Joseph S. Paul, M.R.S. Reddy and V. Jagadeesh Kumar, "A QRS Estimator using linear Prediction approach", Signal Processing Journal, Vol. 72, pp:15-22, 1999.
7. M.V. Ramesh, K.N. Seetharamu, N. Ganesan, M.S. Sivakumar, "Analysis of Machines of FRP Materials", Int. J. Machine Tools and Materials, V. 38, 1998, 1531-1541.
8. R. Ramaswamy and N. Ganesan, "Vibration and Damping Analysis of Fluid Filler Shells", Computer and Structures, V. 70, 363-376, 1998.
9. M.V. Ramesh, K.N. Seetharamu, N. Ganesan and G. Kuppuswamy, "Finite Element Model of Head Transfer Analysis of Machining of Isotropic Machine", Int. J. Head and Mass Trans, Vol. 42, P. 1569-153, 1998.
10. S. Narayan and P. Sekar, "A frequency domain based numeric-Analytic method for Nonlinear Dynamical Systems", J. Sound and Vibration, 211 (3), 409-424, 1998.
11. K. Renji, P.S. Nair and S. Narayanan, "On acoustic radiation resistance of plates", J. Sound and Vibration 212 (4), 583-598, 1998.
12. S. Narayanan and S. Senthil, "Stochastic optimal active control of a 2-DoF quarter car model with nonlinear passive suspension elements", J. Sound and Vibration, 211 (3), 495-506, 1998.
13. A. Ragothama and S. Narayanan, "Periodic Response and Bifurcations of an SDF System with Orifice Damping", J. Sound and Vibration, 214(1), 183-194, 1998.
14. V. Ramamurti, Nayak A. Vijayendra and C. Sujatha, 'Static and Dynamic Analysis of Spur and Bevel Gears using FEM, Mech.-Mach. Theory, Vol.33, No.8,. pp. 1177-1193, 1998.

c) In Proceedings of National Conference:

1. Palil, K.M., "Mechanics of tarsal disintegration by stress analysis in a 3D finite element model of the neuropathic feet," Proceedings of the 6th National Conference on Biomechanics, Bhopal, 14-16 January 1998.

2. Agrawal, D and Patil, K.M. "New methods of analysis of dynamic foot pressure in diabetic neuropathy and footwear design for prevention of plantar ulcers" Proceedings of the 6th National Conference on Biomechanics, Bhopal, 14-16, January 1998.
3. Prabhu, K.G, Agrawal, D, Patil, K.M, Narayanamurthy, V.B and Parivalavan, R., "New methods of walking foot pressure analysis for different levels of diabetic neuropathy and footwear for prevention of plantar ulcers", Proceedings of the National Conference on Biomedical Engineering, MIT, Manipal, April 9-11, 1998, pp VIII-3 to 5. (Received the best paper Award)
4. Patil, K.M and Shanti, J, "Stresses in a 3-D two arch model of a neuropathic foot in advanced stage of tarsal disintegration", Proceedings of the National Conference on Biomedical Engineering, MIT, Manipal, April 9-11, 1998, pp VIII -6 to 8.
5. S. Radhakrishnan & B. Prahlad Rao. "Analysis of Rectus abdominus muscle by ultrasound imaging" - in Proceedings of National Conference on Electronic materials, Devices & systems, pp541-546, Jan 1999.
6. S. Radhakrishnan, H.C. Nagaraj & S. Srinivasan. "Classification of Brainstem Auditory Evoked Response Signals of Normal & diseased subjects using all pole modelling" Proceedings of All India Conference on Biomedical Inst. Indian perspective, pages 9-16, Feb 1999, Rajasthan.
7. Blissymbols based communication Aid for the Spastic Children, V.P.S. Naidu, S. Karpagam and M.R.S. Reddy, All India Conference on Biomedical Instrumentation: Indian Perspective, Kota, Rajasthan, India, Feb. 5-6, 1999.
8. Sarath Kumar and B.S. Prabhu, Rotating Machinery Condition Monitoring using Expert System, Proc. IV National Conf. on Air Breathing Engines & Aerospace Propulsion, Bangalore, 3-5 Dec. 1998, MR1-MR6.
9. P. Chandrasekhar, D. Ramegowda and B.S. Prabhu, Static and dynamic characteristics of Labyrinth Seals: Effect of Physical Parameters, Proc. IV National Conf. On Air Breathing Engines and Aerospace Propulsion, 3-5, Dec. 1998, Bangalore, IF25-IF32.
10. Chandramouli Padmanabhan, S. Narayanan and A.Ragothama, "Dynamic Response of a two dimensional airfoil with a Structural Nonlinearity", In. Nonlinear Mechnics, Proc. Of the 8th NASAS. 1998, 120-126.
11. A Ragothama and S. Narayanan, "Periodic Response and Chaos in Systems with parametric exciation and time delay", In Nonlinear Mechanics, Proc. Of 8th NASAS, 1998, 214-221.
12. M. Ramesh and S. Narayanan, "On Controlling Chaotic Motions of Composite Plate", In Nonlinear Mechanics, Proc. Of 8th NASAS, 1998, 222-229.
13. Premakumar and Palaninathan, "Geometric Nonlinear behaviour of Laminated Composite Cylindrical Panels", Proceedings 78th NASAS, Oct.9-10, 1998.
14. J. Raamachandran, "42nd ISTAM Conference at Coimbatore, Dec. 16-19, 1998.

15. A.B. Khoshnevis, E.G. Tulapurkara & J.L. Narasimhan, "Experimental Study of Wake-boundary layer interaction subjected to Curvature and pressure gradient", 25th National Conf. On FM&FP, Dec. 1998, pp 698-707.
16. V. Ramjee, T. Sundararajan and S. Vijayakumar, "Study of jet development after a sudden expansion, ASME Conference June 1998.

d) In Proceedings International Conference:

1. Patil, K.M. and Shanti, J., "Stress analysis in a 3D model of a neuropathic foot with tarsal disintegration and plantar ulcers" Proceedings of the Third World Congress of Biomechanics (WCB'98), Osaka, Japan Aug 2-8, 1998.
2. Manjunatha, M. and Singh, M. Digital blood flow visualization through complex mesenteric venular microvessels. In Proc. First Interna. Conf. Fluid Mech Fluid Power, 1998, pp. 324-333.
3. Nagaraj H.C. Radhakrishnan, S. & Srinivasan. S. "Analysis of Brainstem Auditory Evoked Response Signals using Linear Predictive modelling - 3rd World Congress of Biomechanics, pp 298, Aug 988, Japan.
4. Joseph S. Paul, M..R.S. Reddy and V. Jagadeesh Kumar, "Elimination of weak interfering components from Electrocardigraphic signals using Linear Prediction analysis", the 17th Southern Biomedical Conference, San Antonio Texas, Feb 7-8, 1998.
5. Vimal Kumar Y.M., S. Radhakrishnan and M.R.S. Reddy, "Development of an efficient Data Acquisition System for Recording Spinal Somatosensory Evoked Potentials", the 17th Southern Biomedical Conference, San Antonio- Texas, Feb 7-8, 1998.
6. Vimal Kumar Y.M., S. Radhakrishnan, M.R.S. Reddy, "A rule based approach for the evaluation of Scoliosis by using Somatosensory Evoked Potentials". The 9th European Congress of Clinical Neurophysiology, Ljubljana, Slovenia, June 3-7, 1998.
7. Vimal Kumar Y.M., S. Radhakrishnan and M.R.S.Reddy, "Development of an efficient peripheral nerve stimulator for the study of Somatosensory Evoked Potentials". Third World Congress of Biomechanics, WCB'98, Sapporo, Japan, August 2-8, 1998.
8. Joseph S. Paul, M.R.S. Reddy and V. Jagadeesh Kumar, "A residual based Technique for extraction of P and T waves from surface Electrograms", Third World Congress of Biomechanics, WCB'98, Sapporo, Japan, August 2-8, 1998.
9. Vimal Kumar Y.M., S. Radhakrishnan, M.R.S. Reddy and Sriram.K, "Identification and Quantification of Scoliosis Using Spinal Somatosensory Evoked Potentials", Third International Course on Spinal Surgery (ICSS'98) and Workshop on Spinal Fixation Systems, Coimbatore, India, Aug. 14-16, 1998.
10. Joseph S. Paul, M.R.S. Reddy and V. Jagadeesh Kumar, "Computer Detection of P-Waves from Wide QRS Type Arrythmia Recordings", Proce. Computers in Cardiology, Ohio: pp 621-624, Sept. 2-8, 1998.

11. Joseph S Paul M.R.S. Reddy and V. Jagadeesh Kumar, " Eigen Filter Based Extraction of ST-Segment Waveform from Surface ECG's", The 20th IEEE-EMBS., Hong-Kong, Oct.29-Nov.1, 1998.
12. N. Karuppaiah, C. Sujatha and V. Ramamurti, Proc. Of Symposium on International Automotive Technology (SIAT'99), Pune, 13-16 Jan. 1999.
13. Chandramouli, P. 1998, "Structural-Acoustic Response of a panel backed cavity with multiple fluids", NOISE-CON 988, Ann Arbor, Michigan, pp.605-610.

6. Distinguished Visitors to the Department:

S.No	Name of the Visitors & Designation	Date	Purpose of visit
1.	Dr. R. Parivalavan, FRCS, Laparoscopic Surgeon, Sundaram Medical Foundation, Anna Nagar Chennai - 40	6-11-1998	Invited lecture on "Laparoscopic Surgery Today"
2.	Dr.V.B. Narayana Murthy, FRCS, Plastic Surgeon, Sundaram Medical Foundation, Chennai -40	11-3-1999	Invited lecture on "Perspectives in plastic surgery and clinical applications".
3.	Dr. Hans Wagner, Germany	26-11-1998	To deliver lecture
4.	Dr. H.G. Mathies, Germany	17-03-1999	To deliver lecture

7. Other Activities:

1. Prof. Megha Singh and Prof. D. Liepsch, Munchen Develop collaborative research and Teaching
2. Prof. P.A. Aswatha Narayana made a Video Lecture series on Fluid Mechanics for B.Tech.

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	56	50	49	47	-	202
M.Tech	27	36	-	-	-	63
M.S.	6	3	5	5	-	19
Ph.D.	8	3	7	21	-	39
Total	97	92	61	73	-	323

2.2 Number of Scholarship/Fellowship holders:

Programme	Institute Scholarship
M.Tech	41
M.S.	13
Ph.D.	18
Total	72

2.3 Number of Degrees Awarded in the Last Convocation:

Programme	No.
B.Tech	48
M.Tech	19
M.S.	4
Ph.D.	5
Total	76

3. Faculty and their Development:

3.1 Faculty:

Name and Qualification	Major Area of Specilazation
Professors	
M.S. Ananth, Ph.D. (Florida)	Thermodynamics, Mathematical Modelling
A.R. Balakrishnan, Ph.D (Waterloo)	Heat Transfer, Computer Aided Design
M.Chidambaram, Ph.D (IISc)	Non-linear Control, Periodic Operation of Reactors
K.Krishnaiah, Ph.D.(IIT Madras)(Head)	Chemical Reactor Analysis and Design, Fluidization
D.V.S.Murthy, Ph.D (IIT Madras)	Particle Technology, Environmental Engineering
N.R.Neelakantan, Ph.D(Swansea)	Polymer Processisng, Rheology
V.S.Ramachandra Rao, Ph.D (IIT Madras)	Internal Model Control , Adaptive Control
T.K.Ramanujam, Ph.D (IIT Madras)	Environmental Engineering, Particle Technology
S.Subba Rao, Ph.D (Connecticut)	Mass Transfer, Computer Aided Design
T.Panda Ph.D (IIT Delhi)	Biochemical Engineering and Bio Technology, Protoplast Fusion Technology
Associate Professors	
S.Pushpavanam, Ph.D (Florida)	Modelling and Simulation, Non-linear Dynamics
S.Sankaranarayanan, Ph.S (Queens Land)	Optimum Control of Grinding Circuits and other Mineral Beneficiation Processes
P.Sesha Talpa Sai, Ph.D (IIT Madras)	Chemical Reactor Analysis and Design, Rotary Kilns
Shankar Narasimhan, Ph.D (North Western)	Computer Aided Design
T.Swaminathan, Ph.D (IIT Kanpur)	Environmental Management, Biotechnology, Membrane Technology
Assistant Professors	
Abhijit Deshpande, Ph.D (Washington)	Polymers and Polymeric Materials
Kannan. A Ph.D (McMaster Univ., Canada)	Separation Processes, Computer Aided Design
J.Ravi Prakash, Ph.D (IISc)	Mechanics of Granular Materials, Rheology Process Control
Sachin C. Patwardhan, Ph.D (IIT Bombay)	Process Control
Srinivas Jayanti, Ph.D (IIT Bombay)	Computational Fluid Dynamics
Susy Varughese, Ph.D (IIT Kharagpur)	Polymers and Elastomeric Materials

Visiting Faculty

Bhima Sastry, Ph.D RPI, Troy, NY

Coating Structures & Air Pollution Control,
Environmental Engineering, Coating Rheology

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

Sl. No.	Co-Ordinators	Title	Period
1.	Dr. S. Pushpavanam	QIP Course on Mathematical Methods in Engineering.	Dec. 14-18, '98
2.	Dr. T. Swaminathan	Workshop in ISO 14000 - Environmental Management Systems jointly with CSD, IOI.	March 12-13, 1999
3.	Prof. DVS Murthy	a. Industrial Waste Water Management . b. Operation and Maintenance of Waste Water Treatment Plants. c. Principles and Applications of Waste Water Treatment Plants.	July '98 31.8.98 to 4.9.98 20.1.99

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

S. No.	Name Of Faculty	Title	Institution	Period/ Duration
1.	Dr. J. Ravi Prakash	Workshop on Recent Advances in Solid Mechanics	Engineering Science Group, IITM	Dec. 16-19, '98
2.	Dr. T. Swaminathan	Workshop on New Techniques in Environmental Impact Assessment	CIL (SR)	Nov. 26-28, '98
3.	Prof. DVS Murthy	Workshop in ISO 14000 – Environmental Management Systems.		March 12-13, '99

3.3 Special Lectures delivered by the faculty in other Institutions:

Sl. No.	Name Of Faculty	Topic Of Lecture	Venue & Date
1.	Dr. J. Ravi Prakash	a. Processing of Elastomers b. Rheology of Asphalts	MIT, Oct. 10 '98 IOC, Faridabad June 98
2.	Dr. T. Swaminathan	Advanced Water Treatment	ISRO, Bangalore
3.	Dr. Susy Varughese	Rheology of Asphalts	IOC, Faridabad June 98

3.4 Visits Abroad by Faculty:

S. No.	Name Of Faculty	Country Visited	Date	Purpose Of Visit
1.	Dr. Shankar Narasimhan	France	May 15 to Aug 9, 99	Summer Visit Centre de Recherche en Automatique le Nancy, Institut National Polytechnique de Lorraine

3.5 Honours and Awards obtained:

S. No.	Name Of Faculty	Name Of Awarded By	Year	Awarded For
1.	Dr. M. Chidambaram	Kuloor Memorial Award	1998	Best technical paper, published in Indian Chemical Engineers
2.	Dr. T. Panda	National AIBA Award	1998	Contribution in Biochemical and Bio Technology
3.	Prof. M.S. Ananth	Fellow of Indian National Academy of Engg.	1998	
4.	Dr. S. Sankar narayanan	NOCIL AWARD	1998	Excellence in Design & Development of Processor Equipment

3.6 Books/Monographs authored or co-authored:

S. No.	Name Of Author	Title Of Text Book/Monograph	Publisher
1.	Dr. S. Pushpavanam	Mathematical Methods for Chemical Engineering, Sept. 98	Prentice -Hall of India
2.	Dr. M. Chidambaram	Applied Process Control, July 98	Allied Publishers

4. Design and Development Activities:

- a. Developing a computational facility for students as a CAD Center.

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

- a. Design and Development of an Absorber, Adsorber and Cooling Tanker for the Transfer Operations Laboratory.

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

- a. Computational facility for research scholars
- b. One Pentium 166 MHz PC from ICSR under Young Faculty Scheme
- c. D.O. Meter
- d. Atomic Absorption Spectrometer
- e. Data acquisition cards, , ,
- f. Haul-off for an extruder
- g. Refrigerator
- h. Digital Thermometer

5. Research And Consultancy:

5.1 Sponsored Research Projects :

Sl. No.	Title	Period	Funding Agency	Amount (Lakhs)	Co-Orinators
1.	Dst- natural fiber composites for consumer durable components				Dr. Susy Varughese
2.	On-line mounting of anarobic fluidized bed process			6.00	Prof. DVS Murthy Prof. K.Krishnaiah Prof. N.Bala subramanian
3.	Development of a computer aided instructions module for solving chemical engg. Problems using spread sheet software			0.44	Dr. Shankar Narasimhan
4.	Identification and Robust Control	1997-2000		20.00	Dr.VSR Rao
5.	MPC of NL Processes	1996-98	AICTE	7.00	Dr. Sachin C Patwardhan
6.	Heat Pump assisted Agricultural Dryer	1996-99	MHRD	70.00	Prof.A.R.Bala krishnan
7.	Vapour absorption heat pump chiller	1996-99	MHRD	120.00	Prof.A.R.Bala krishnan
8.	Vapour compression heat pump chiller	1997-99	MHRD	100.00	Prof.A.R.Bala krishnan
9.	Effect of Tube Diameter on Gas-Liquid Counter-Flow and Flooding	1996-99	Dept. of S& T	11.92	Prof.A.R.Bala krishnan
10.	Influence of Sea Waves Induced Oscillation on the Forced Convective Heat Transfer in a Barge Mounted Heat Exchanger	1997-2000	Dept. of Atomic Energy	14.20	Prof.A.R.Bala krishnan

Sl. No.	Title	Period	Funding Agency	Amount (Lakhs)	Co-Orinators
11.	Development of HUASB Process			10.00	Prof. T.K.Ramanujam
12.	Biological production of chiral compounds for the optically active pharmaceuticals.	1997-2000	Dept. of S& T		Prof. T. Panda
13.	Studies on Treatment of Wastewater using fluidized bed (RA)	97-2000	CSIR	2.30	Prof. K. Krishnaiah
14.	Modernization of Laboratories (MODROB)	MHRD	1997-98	12.00	Prof. K. Krishnaiah
15.	Simulation of Microfines Sneumatic fines classifier	CSIR	98-2001	3.70	Dr.S.Sankara-narayanan
16.	Development of a CAI module for solving chemical energy problem using spreadsheets	CCE	1998-99	0.44	Dr.S.Sankara Narasimhan
17.	Universal viscometric functions for a dilute solution of polymers in a good solvent.	DST	98-2001	13.61	Dr. J. Ravi Prakash

5.2 Industrial Consultancy :

Sl. No.	Name Of Faculty	Title	Industry	Amount (In Lakhs)
1.	Dr. Susy Varughese	Iwl -solution to the adhesion problem in asphalt topes		
2.	Prof. S. Subba Rao	Design and development of a crystalliser and hd scrubber		
3.	Dr. J. Ravi Prakash	Coal tar based corrosion resistant materials for pipelines	Iwl India Ltd.	
4.	Dr. T. Swaminathan Prof. T.K.Ramanujam Prof. DVS Murthy	CETP projects for TNPCB EIA for hitech industrial park Water treatment plant	TIDCO Neyveli Lignite Corpn.	
5.	Prof. DVS Murthy	Design of water treatment plant	Neyveli Lignite Corpn.	
6.	Dr. Sachin C Patwardhan	Tuning of PID Controllers	KCP Ltd.	0.12
7.	Prof. A.R. Balakrishnan	Spray Drying of Sodium PCMC	RPG-BTP (India) Ltd. Chennai	0.05
8.	Prof. A.R. Balakrishnan	Spray Drying of Protein Products	Protochem Industries (I) Ltd.	0.10

Sl. No.	Name Of Faculty	Title	Industry	Amount (In Lakhs)
9.	Dr. PST Sai	Study on driers	Godrej	0.05
10.	Dr. PST Sai	Manufacture of Salic acid	Trident Chem.	0.05
11.	Dr.S. Sankara Narayanan	Plant study Optimization, Feasibility of jet milling, Mixing studies	Tamin	0.54

5.3 RBIC :

Sl. No.	Name Of Investigator/ Co-Investigator	Title	Amount (In Lakhs)
1.	Dr. S. Pushpavanam	MRL project on "Modeling and Simulation of Trickle Bed Reactor"	
2.	Dr. Shankar Narasimhan Dr. S.C. Patwardhan Dr. Ashok Jhunjhunwala, EE	Development of Intelligent Newwork Control Module based on TLUN Module	1.5

5.4 Journal Editorial Boards :

S.No.	Name Of The Faculty	Level	Journal
1.	Prof. DVS Murthy		Editorial Board Member of Indian Journal of Environment and pollution

5.5 Research Publications :

a) In Refereed National Journals

1. Fuzzy estimator for plasmid-bearing micro organism, Satish.G; Kavitha.S and Chidambaram. M, Bioprocess Engg, 18, 343-346 (1998)
2. Comparison of Online Controller tuning for Nuclear reactors, M. Subramaniam, A. Rajakumar and M. Chidambaram, Indian Chemical Engineer, V 4, Oct-Dec, 317-328 (1998).
3. Robust control of unstable first order plus time delay systems, C. Clement Valentine and M. Chidambaram, Indian Chemical Engineer, V 40, 19-22 (1998)
4. Sensor Network Design for Linear Processes using Genetic Algorithms, Sujoy Sen, Shankar Narasimhan and Kalyanmoy Deb, Computers and Chemical Engg. Vol 22, Pg. 385-390 (1998)

5. Design of PI/PID Controllers for systems with zero, M. Chidambaram, S.N. Jyothi and S. Aravind, Proc. 2nd TIMA (Trends in Industrial Measurements and Automation), (Ed) S. Renganathan, Allied Publishers, 1999. P 298-301
6. Feedforward Control of Hammerstein Non-Linear Systems with Input Multiplicities, M. Chidambaram, S.N. Jyothi, Proc. 2nd TIMA (Trends in Industrial Measurements, and Automation), (Ed) S. Renganathan, Allied Publishers, 1999. P 280-283
7. Closed Loop Identification of Transfer Function Model for Unstable, Systems., M. Chidambaram and S. Ananth, Proc. 2nd TIMA (Trends in Industrial Measurements, and Automation), (Ed) S. Renganathan, Allied Publishers, 1999. P 116-121.
8. Effect of adhesive forces on filtration and regeneration, behaviour of filter cakes, T.Pitz and DVS Murthy, Indian Journal of Chemical Technology, Vol.5, Nov. 1998 pp 355-360
9. Studies in colour removal of distillery spent wash, P. Sekhar and DVS Murthy, Indian Journal of Chemical Technology, Vol.40, Nov. 4, 1998 pp 367-372.
10. Biotechnology - Industries, Academic Institutions in India, T. Panda, AIBA, News Letter, Vol.5, No.5, Sep-Oct, 1998.,
11. Pressure drop and Phase Holdups in multi-stage TBC with down comers, K. Soundarajan & K. Krishnaiah. Indian JI. Chem. Tech. 5, 179-186, 1998.
12. Hydrodynamic Aspects of Multistage Turbulent Contactor, K. Soundarajan & K. Krishnaiah. Indian JI. Chem. Tech. 5, 267-275, 1998.
13. High cell density lactic acid fermentation with cell recycle, bioreactor, B. Chowdry & T. Swaminathan, JI. Sci. & Ind. Res., Vol.10 & 11, 595-99, 1998.
14. Biodegradation of Phenolic compounds using P-Chromosporium, R. Manimekalai & T. Swaminathan, J. Sci. JI. Sci. & Ind. Res., Vol.10 & 11, 833-37, 1998.

b) In Refereed International Journals

1. Nitrification of synthetic wastewater in a cross flow medium trickling filter, S.Amal Raj and DVS Murthy, Bioprocess Engineering. Vol 19, No.2, Aug '98, pp 149-154.
2. Modeling of continuous fertilizer granulation process for control -PARTICLE CHARACTERIZATION, B.C. Reddy, DVS Murthy, M.S. Ananth, Ch.D.P. Rao, Vol 3, pp 156-160, '98.
3. Dynamics of a Continuous Fluidized Bed Dryer, R.C. Panda, V.S. Ramachandra Rao, Iranian Journal of Science, Vol. 22, No.3, Transaction B, pp 219-231, 1998.
4. Nonlinear Internal Model Control using Quadratic Prediction Models, Patwardhan S.C. and K.P. Madhavan, Computers and Chemical Engg. 22, 4/5, 587-601, 1998.

5. Localization of carboxymethyl-cellulase in intergeneric fusants of T.Reesei QM 9414 and S.Cerevisiae NCIM 3288. R. Srinivas & T. Panda Bioprocess Engg. 18(1), 71-73, 1998.
6. Comparative analysis of optimal endoglucanase production by T. Reesei and intergeneric fusants of T.Reesei/S.Cerevisiae Bioprocess Engg. 18(4), 261-266, 1998.
7. Localization of S-1.3-glucanase in T.harzianum. Bioprocess Engg. M. Goni, R. Srinivas, W. Dammertz, M.R. Udupa & T. Panda. Bioprocess Engg. 19(3), 237-241.
8. Optimization of medium composition by response surface methodology for production of tartaric acid by G. Suboxydans. D. Mantha, Z. Aslam Basha & T. Panda. Bioprocess Engg. 19(4), 285-288, 1998.
9. Production of pectolyticenzymes - A review, G. Satyanaraya arayana Naidu & T. Panda, Bioprocess Engg. 19(5), 355-361, 1998.
10. Recovery of citric acid - A review. M. Pazouki & T. Panda, Bioprocess Engg. 19(6), 435-439, 1998.
11. Application of response surface methodology to evaluate some aspects on stability of pectolytic enzymes from A.niger. Satyanarayanarayana Naidu & T. Panda, Bioprocess Engg. 2, 71-77, 1998.
12. pH and thermal stability studies of carboxymethyl cellulase from intergeneric fusants of T.Reesei/S.Cerevisiae. J. Ind. Microbial. Biotechnol, 21, 178-183, 1998.
13. A study on Microbiology of Biological Film layer in torating biological contactors, Venkataraman. R and Ramanujam.T.K. Bioprocess Engg. Vol. 18, No.3, pp 181-186 (1998).
14. In Situ Hypochlorous Acid Generation for Treatment of Tannery Wastewaters, Vijayaraghavan.K, Ramanujam.T.K. JI. Of Environmental Engg. Vol.124, No.9, pp 887-891, 1998
15. Study of Lactic Acid - Aliphatic amines, B. Chowdri, Z.A. Basha & T.Swaminathan, J. Chem. Technl. Biochemical, 72, 11-16, 1998.
16. Lactic acid extraction with trioxtyl amines, B. Chowdri & T.Swaminathan, Bioprocess Engg. 19 (4), 317-320, 1998.
17. Hydrolysis V B Cocum Bioprocess Engg. , MSRC Murthy, Z.A. Basha, & T.Swaminathan, Bioprocess Engg. 19 (6), 475-80, 1998.
18. Sensor network design of linear processes using genetic algorithms, Sujoy Sen, Shankar Narasimhan and Kalyamoy Deb, Computers and Chemical Engg. V 22, pp 385-390, 1998.
19. Nucleation Site Density in Pool Boiling of Binary Mixtures : Effects of Surface Microroughness and Surface and Liquid Physical Properties, R.J.Benjamin and A.R.Balakrishnan, Canadian Journal of Chemical Engineering, 75, 1080-1089, 1997.

20. Transient Analysis of Energy Storage in a Thermally Stratified Water Tank, J.E.B.Nelson, A.R.Balakrishnan and S.Srinivasa Murthy, International Journal of Energy Research, 22, 867-883, 1998.
21. Enhancement of Flow Boiling Heat Transfer on Cylinders using Interference Sleeves, S.Madhusudana Rao and A.R.Balakrishnan, Trans. ASME, Journal of Heat Transfer, 120, 789-792, 1998.
22. Flow Boiling Heat Transfer on a Heating Element Restricted by an Interference Sleeve, S.Madhusudana Rao and A.R.Balakrishnan, International Journal of Heat and Fluid Flow, 19, 661-671, 1997.

c) In Proceedings of National Conferences

1. Studies in degradation of 4-chlorophenol for bio gas generation, P. Sasikala and DVS Murthy, 9th Annual general Meeting of Material Research Society of India, IITM, 11-13 Feb '98.
2. Biological decolourization of Industrial wastewaters - A review. S.V. Srinivasan and DVS Murthy, National Seminar on better world environment through Environmental Education & Management, TTTI, Chennai. Nov 18-20, 1998
3. Studies in nitrification of municipal sewage in an upflow biofilter, S. Chandravadanam and DVS Murthy. CHEMCON 1998 Visakhapatnam, 16-19 Dec. 1998 pp 201.
4. Colour removal of Secondary treated tannery effluent using a low cost adsorbent, S.V. Srinivasan and DVS Murthy, CHEMCON 1998 Visakhapatnam, 16-19 Dec. 1998 pp 120.
5. Multiresponse analysis of microbiological parameters to develop a two-stage inoculum for the production of pectolytic enzymes *Aspergillus niger* - a statistical approach. G.SN.Naidu & T. Panda, Abstracted in Association of Microbiologists of India, 39th Annual Conference, Dec. 5-6, 1998.
6. Optimization of microbial parameters for improved griesofulvin production. V. Venkata Dasu & T. Panda, Abstracted in Association of Microbiologists of India, 39th Annual Conference, Dec. 5-6, 1998.
7. Citric acid production from carbohydrate sources using *Candida lipolytica* NCIM 3472. M. Pazouki & T. Panda, Abstracted in Association of Microbiologists of India, 39th Annual Conference, Dec. 5-6, 1998.
8. Effect of concentration on growth and chitinase production by *Trichoderma harzianum*. P. Arthur Felse & T. Panda. Abstracted in Association of Microbiologists of India, 39th Annual Conference, Dec. 5-6, 1998.
9. Color removal of Industrial effluents using Fluidized Beds, A.K. Sharma & K. Krishnaiah, National Seminar on Better World Environmental through Engg, Education and Management, 18-20 Nov, 1998 held at TTTI, Chennai.

10. Optimization of parametric for charge transfer polymerization & MMA, N.H. Arifunnisa, P.G. Rao and PST Sai, International Conference on Advances in Polymer Science and Technology, Madras, 1998.
11. Production of ultra-fine poders using a fluidised bed jet mill. PBR Nair and S.S. Narayanan, Proceedings on Conference on Industrial Minerals, Federation of Indian Mineral Industries, Vol. I, Udaipur, Sept. 1998, 141-147.
12. Effert of Tube diameter on flooding in counter current simulation flow, M. Vijayan, S. Jayanti, & A.R. Balakrishnan, Proc. of 25th National and I International Conf. On Fluid Mechanics and Fluid Power , pp 603-611, Dec. 15-17, 1998
13. Giving better shape to jet mixing, K.S. Sawant & S. Jayanti, 51st Annual Session of IChE, Dec. 16-19, 1998, paper # 1224, Technical Session 4.1.
14. Experimental Studies on Flow Distribution in Z-type Radial Flow Reactors, L.Muruganandam and A.R.Balakrishnan, Paper No.TS 1103, Indian Chemical Engineering Congress, Chemcon 98, Visakhapatnam, India, December 16-19, 1998.

d) In Proceedings of International Conferences

1. Biodegradation and Decolourization of Remazol green dye using an acclimated mixed culture, S.V. Srinivasan & DVS Murthy, International Conference on Ecological Engg., Calcutta, Nov. 23-27, 1998, pp 192.
2. Biopolymers from fermentation - application, economics and future development, T. Panda & Arthur Felse. Proceedings for Int. Symp. Microbial Biotech. For sustainable dev. & productivity, Nov. 14-16, 1998.
3. Comparison of the stabilities of capsules of some common biopolymers after their encapsulation using polyethyleneimine and their suitability to vertebrates and invertebrate cell lines. R.V. Muralidhar, H. Hubner, T.Panda & R. Buchholz. Bioencapsulation VII - International Work Shop on Microencapsulation, Easton, Maryland, USA, Nov. 20-23, 1998.
4. Utilization of high strength wasterwater for the production of biogas as a renewable energy source using HUASB reactor, Shivayogimath.C.B., Ramanujam. T.K. Proc. of IECEC - 98 - 1218, 33rd IECEC on CD.
5. A comparative study of mathematical model for the reaction of elimenit with char in rotary reactor, S. Ramesh Murthy, S.S. Shastry and PST Sai, CHEMCON 98, waltair.
6. Development of a fluidized bed jet mill, PBR Nair and S.S. Narayanan, III World Congress on Particle Technology, IChemE, London, Paper 0051, 1-8.
7. CFD Study of jet mixing in Vessels, V. Viswanath & S. Jayanti, Proc. of 3rd Asian Computational Fluid Dynamics Conf. Vol. II, pp 92-97, Dec. 7-11, 1998. Bangalore.

8. CFD Simulation of study flow in a pipe, S. Jayanti, III International Conf. On Multiphase Flow, Book of Abstracts, pp 3.3-11, June 8-12, 1998, Lyon, France.
9. Pool Boiling of Saturated Pure Liquids and Binary Mixtures : Effect of Surface Characteristics, A.R.Balakrishnan, Keynote Lecture, Proceedings of the 11th International Heat Transfer Conference, Vol.1, pp.71-87, 23-28 August 1998, Kyongju, Korea,
10. Mixing and Wall Conduction Effects in a Stratified Hot Water Tank, J.E.B.Nelson, A.R.Balakrishnan and S.Srinivasa Murthy, Proceedings of the International Conference on Energy Research and Development, Vol.2, pp.672-682, November 9-11, 1998, Kuwait.
11. Effect of Tube Diameter on Flooding in Countercurrent Annular Flow, M.Vijayan, S.Jayanti and A.R.Balakrishnan, Proceedings of 25th National Conference on Fluid Mechanics and Fluid Power and 1st International Conference on Fluid Mechanics and Fluid Power, Vol.2, pp.603-611, December 15-17, 1998, New Delhi, India.

6. Distinguished Visitors to the Department:

- a. Prof. J.B. Riggs
Dept. of Chemical Engg.
Texas Tech. University
Lubbock, USA.
- b. Dr. S. Devasia
Dept. of Mechanical Engg.
The University of Utah, Salt Lake City, USA

4.4 DEPARTMENT OF CHEMISTRY

1 Introduction:

The Department of Chemistry started functioning as an independent Department in 1961, two years after the establishment of the Institute. In addition to offering instructions at the B.Tech and select M.Tech levels, the Department offers 4 semester M.Sc. 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
Soild 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 Number of applications received and number of candidates admitted:

Programme	No. received	No. selected
M.Sc	306	25
Ph.D.	94	28
Total	400	53

2.2. Students on Roll :

Programme	I Year	II Year	III year	IV year	V Year	Total
M.Sc.	26	23	..	..	..	49
Ph.D.	15	21	12	57	..	105
Total	41	44	12	57	..	154

2.3. Number of Scholarship/ Fellowship holders :

Programme	Institute Scholarship	Others	Total
Ph.D.	37	48	85
Total	37	48	85

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

Sl.No.	Name of the Student / Scholar	Programme	Name of the Conf Seminar/ Symposia	Date & Venue
1.	Venugopal Pujari	International Symposium	Tropical Mycology, Mds.	Jan.1999
2.	S.Vijayalakshmi	-do-		-do-
3.	N. Pappayee	Paper presentation	Photoinduced molecular phenomenon	Oct.98. Saha Instt, Calcutta
4.	J. Shobini	-do-	Photoinduced molecular phenomenon	Oct.98. Saha Instt, Calcutta
	-do-	-do-	National Symposium in Chemistry	27-30 th Jan, 99 IISc., Bangalore
5.	Digambara Patra	-do-	National Symposium on Radiation and Photo-Chemistry	15-17 th Feb,99 Sambalpur Univ.Sambalpur
6.	S.S.Bharathi	-do-	Seminar on Ultrafast Processes in Biology Chemistry and Physics	11-13 th Mar, 99 Madras Univ. Chennai
7.	Vijayakumar Kingston	-do-	National Symposium on Recent Adv. In Inorganic Chemistry	8-10, July,98 IISc., Bangalore
8.	P. Wilson	-do-	14 th National Symposium on catalysis	16-18, Dec,98 Anna Univ., Chennai
9.	N. Sathyamurthi	-do-	XIII Carbohydrate Conference	19-20, Nov.98 Forest Rese. Instt., Dehradun
10.	S.Vijayasradhi	-do-	-do-	-do-
11.	S.A . Sulthan	Oral presentation	New Vistas in synthetic protocols & structural Elucidation in Chemistry	21-22, Apr.'98 Madu.Kamaraj Univ., Madurai
12.	P. Munibaskar	Oral presentation	14 th National Sympo. on Catalysis	16-18, Dec.'98 Anna Univ. Chennai-36
		-do-	XIIIth Carbohydrate Conference	19-20, Nov.'98 Fresh Re. Instt, Dehradun

Sl.No.	Name of the Student / Scholar	Programme	Name of the Conf Seminar/ Symposia	Date & Venue
13.	T.Lakshmanan	-do-	-do-	-do-
14.	H.R. Sahu	-do-	14 th National Sympo. on Catalysis	16-18, Dec.'98 Anna Univ. Chennai-36
15.	V.Vijayalakshmi	Paper presentation	Nuclear & Radio-chemistry Symp.	19-22, Jan'99 BARC,Mumbai
16.	J.Uma Maheswari	-do-	V international Conf.	25-28,Nov.'98 Electrochemical Sci.& Tech., Mds.
17.	M. Raja	-do-	National Conf.on emerging trends in Electrometallurgy and 8 th National convention of Electrochemistry	28-30, Jan.'99 CECRI, Karaikudi
18.	Vidyavathy Balraj	-do-	Conf. On 9 th Annual General Meeting,	11-13, Feb.'99 IIT Madras Materials Re.Society of India, Madras
19.	R. Nandini Devi	-do-	-do-	-do-
20.	N. Sandhyarani	-do-	Nat. Seminar of the Mat.Res.Soc. of India	Jan. 1998
21.	M. Venkataramanan	-do-	-do-	-do-
22.	R. Ramesh	-do-	5 th National Symp. in	NMR Feb.'99 Dehradun UP
23.	B. Sobhana Babu	-do-	XIII Carbohydrate Conference	Mar 19-20 1998 Dehradun UP

2.5 Number of Degrees awarded in the last convocation:

Programme	Total
M.Sc.	22
Ph.D.	20
Total	42

3. Faculty and their Development:

3.1 Faculty :

Professors

K.K. Balasubramanian, Ph.D. (Madras)	Synthetic & Mechanistic Organic Chemistry
N. Balasubramanian, Ph.D. (IITM)	Analytical & Environmental Chemistry
T.S. Chandra, Ph.D. (IISc, B'lore)	Biochemistry & Microbial Biotechnology
M.S. Gopinathan, Ph.D. (IITK) [Head]	Quantum & Theoretical Chemistry, Molecular Spectroscopy, Nonlinear Dynamics & Chaos
K. Lalitha, Ph.D. (Mysore)	Biochemistry & Biotechnology
S. Vancheesan, Ph.D. (IITM)	Organometallics & Homogeneous Catalysis
C. S. Venkatachalam, Ph.D. (IITM)	Electrochemistry
B. Viswanathan, Ph.D. (IITM)	Surface Science, Materials Science, Catalysis

Associate Professors

A.K. Misra, Ph.D. (IITK)	Photophysicalchemistry Fluorescence spectroscopy
S. Sankararaman, Ph.D. (Victoria, Canada)	Synthetic and Physical Organic Chemistry, Organic Photochemistry
M.N. Sudheendra Rao, Ph.D. (IISc, B'lore)	Inorganic Heterocycles, Chemistry of Main Group Elements
G. Sundararajan, Ph.D.(Rutgers, USA)	Organometallic Chemistry
T.K. Varadarajan, Ph.D. (IITM)	Heterogeneous Catalysis
U.V. Varadaraju, Ph.D. (IISc, B'lore) Joint. With MSRC	Solid State Chemistry, Materials Science
R.P. Viswanath, Ph.D. (IITM)	Heterogeneous Catalysis

Assistant Professors

Archita Patnaik, Ph.D. (BHU, Varanasi)	Nuclear Science (Application of Nuclear methods to materials science)
Anju Chadha, Ph.D (IISc.Bangalore)	Bioorganic Chemistry
P. Bhyrappa, Ph.D (IISc.Bangalore)	Bioinorganic Chemistry
S. Baskaran, Ph.D(IIT Kanpur)	Development of New Synthetic Methodology and their application to the Synthesis of Biologically active molecules
R. Dhamodharan, Ph.D. (Mass, USA)	Macromolecular Chemistry
Indrapal Singh Aidhen, Ph.D. (Pune)	Synthetic Organic Chemistry
D. Loganathan, Ph.D. (IITB)	Organic Chemistry, Carbohydrate Chemistry
K. Mangala Sunder, Ph.D. (McGill, Canada)	Theoretical Chemistry, Spectroscopy, Chemical Reaction Dynamics
N. Narasimha Murthy, Ph.D. (IISc, B'lore)	Bio-inorganic Chemistry
T. Pradeep, Ph.D. (IISc, B'lore) Joint with RSIC	Spectroscopy, Clusters, Monolayers
G. Ranga Rao, Ph.D. (IISc, B'lore)	Catalysis & Surface processes
M.V. Sangaranarayanan, Ph.D. (IISc,B'lore)	Electrochemistry
M.S. Subramanian, Ph.D. (IITM)	Analytical Chemistry
Sanjay Kumar, Ph.D (IIT Kanpur)	Theoretical and Computational Chemistry, Quantum Chemistry Molecular Reaction Dynamics
K. Vidyasagar, Ph.D. (IISc, B'lore)	Solid State Chemistry

Emeritus Scientists (CSIR)

C. Kalidas	Electrochemistry
D.V. Ramana	Organic Chemistry

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

S. No.	Co-ordinator(s)	Title of Workshop/Seminar/Symposium/Conference	Period
1.	Dr. M.S. Gopinathan	64 th Annual Meeting of INSA	Dec.29-31, 1998
2.	Dr. T. Pradeep	Materials and Molecules, Modern Trends	Jan.27-Feb.5, 1999.

3.3 Short-term Courses/Workshop/seminar/Symposia/Conferences/ Training attended by the Faculty:

Sl. No.	Name of Faculty	Title	Institution	Period/Duration
1.	Dr. M.S. Gopinathan	Nonlinear dynamics and brain function	I.I.Sc., Bangalore	Feb.5-11, 1998
2.	Dr. M.N.Sudheendra Rao	Frontiers in Inorganic chemistry	I.I.Sc. Bangalore	July 8-10, 1998
3.	Dr. A.K. Mishra	Analysis of exciplex Dynamics, a novel approach based on Steady-state fluorimetry	IGCAR Kalpakkam	Nov.1998
		Fluorescent ESPT probes for liposome membranes	IISc.,Bangalore	Jan 27-30, 1999
		Evaluating Bis-MSB as a fluorescence polarization probe for microheterogeneous media	Sambalpur Univ.	Feb 15-17, 1999
		Fluorescence polarization studies of diphenyl polyenes in liposome	Madras Univ.	Mar 11-13, 1999
4.	Dr. G.Sundararajan	Macro '98, IUPAC Conference on Polymer Chemistry,	CLRI	Jan 5-9, 1998
		Gordon Conference in Organometallic Chemistry,	Salve Regina College, Newport Rhode Island	July 24-31, 1998
		International Symposium on High Energy Materials	IIT Madras	Dec 8-10, 1998
		Polymers '99, Polymers beyond AD 2000.	IIT, New Delhi	Jan. 12-15, 1999
		National Symposium in chemistry	IISc Bangalor e	Jan. 26-30, 1999

Sl. No.	Name of Faculty	Title	Institution	Period/Duration
5.	Dr. K.K.Balasubra Manian	UGC National Symposium	Madu.Kamaraj Univ. Madurai	April 23 1998
		UGC Refresher Course for College Teachers	Bharathidasan Univ. Tiruchi	Nov.4, 1998
		17 th Conference of Indian Council of Chemists	Univ. of Madras Chennai	Nov.26-Dec.8 1998
		ICI International Conference	Goa	Nov 30-Dec.2 1998
6.	Dr. Archiita Patnaik	Frontiers in non conventional energy sources	Loyola College, Madras	
7.	Dr. S.Baskaran	Colloquium of the Alexander von Humboldt Fellows and Awardees in India & Srilanka	Humboldt Foundation Hyderabad	Nov.20-22, 1998
8.	Dr. D.Loganathan	Aspects of a Biomimetic Approach towards carbo Hydrate synthesis using Glycosidases and solid Acids as catalysts	NSA-KOSEF JOINT Seminar IISc., Bangalore	July 13-14, 1998
		Development of a Biomimetic approach towards Enzymatic solid-phase oligosaccharide synthesis	7 th NOST Symp. Grand Bay Hotel Visakhapatnam	Sep.10-13, 1998
		Glycosidase catalysed Oligosaccharide Synthesis using Glycosylasparagine Mimics as Acceptors	XIII carbohydrate conference, Forest Research Instt., Dehradun	Nov.19-20, 1998
		Glycosidase catalysed oligosaccharide Synthesis: Development Biomimetic Approach to Transglycosylation	17 th Annual Conf. of Indian Council of Chemists, Univ. Madras, A.C.College Chennai	Oct.26-28, 1998
		Crystal structure of a N-Glycoprotein Linkage Region Model and Analogues	XXIX National Seminar on Crystallography Univ. of Madras	Dec.21-23. 1998
		Enzymatic oligo-saccharide synthesis using Glycosidases: A powerful Tool in lectin Research.	86 th Session of Indian Science Congress Assoe. Ann .Univ, Chennai	Jan.2-7, 1999

S. No.	Name of faculty	Topic of Lecture	Venue & Date
	Dr.K.K.Balasubramanian	Cathodic reductive cyclisation of N-Cinnamoyl-2-iodoanilines and Reductive ring opening of 3-Bromochranenes and 3-bromo-4-Alkoxychromans-Electrochemical Synthesis of 3-benzyloxy indoles 2-allylphenols and 2-allyphenols	University of College of Science Calcutta Univ Oct.28, 1998
		Novel synthesis of 2 and 3 vinyl indoles, N-Aryl and N-Alkyl-3-Pyrrolenes, 3-Benzyl-Oxyindoles And 3-Benzyl-3-Hydroxy -Oxyindoles	I.I.Sc, Bangalore Jan 27-30, 1999
4.	Dr. S. Vancheesan	Current trends in homogenous catalysis	A C College, Chennai Dec.23, 1998
5.	Dr. A.K. Mishra	Fluorescence Spectroscopy (UGC Refresher Course)	Annamalai Univ
		Photochemistry (UGC Refresher Course)	Madras Univ, Chennai
6.	Dr. M.N.Sudheendra Rao	UGC Refereshar Course	Univ. of Cochin, Jan.98
		-do-	Bangalore Univ., May'98
		-do-	Kuvempu University Oct.23, '98
7.	Dr. Archita Patnaik	Light Emitting diodes And Ion-implantation	Interuniversity consortium for DAE facilities, Calcutta
		Transport in amorphous organic semiconductors	Loyola College Chennai, Dec.11, 1998
		Nuclear Explosion: The Pokhran issue	Lions Club April 1998
8.	Dr. Anju Chadha	"Bioorganic chemistry in Workshop" on Biotech.Education in India	Chem Engg Dept IIT Madras Mar 23, 1999
9.	Dr. S. Baskaran	Quinolones as a novel antibacterials	Wockhardt Research Center. July 21, 1998
		Novel antiulcer agents	Dr. Reddy's Res. Foundation June 6, 1998
		Oxazolidinones as antibacterial agents	DRF April 10, 1998

Sl. No.	Name of Faculty	Title	Institution	Period/Duration
9.	Dr. K.Mangala Sunder	Theoretical Rotational-vibrational spectroscopy	6 th Biannual Symp. on Theoretical Chemistry, Central Univ., Hyderabad	Dec.26-28, 1998
		Materials and molecules modern trends	IIT Madras	Jan 27-Feb 5, 1999.
		Evolution of many-coupled spins in NMR Spectroscopy using a Spherical tensor basis set	5 th National Symp. in NMR IP, Dehradun	Feb.23-26 1999.
		Spin dynamics of quadrupolar nuclei without the secular approximation	-do-	-do-
		Perturbative and Variational methods for solving Floquet spin density matrices: Numerical Schemes,	5 th National Symp in NMR IP Dehradun	Feb 23-26 1999

3.4 Special lectures delivered by the faculty in other Institutions:

S. No.	Name of faculty	Topic of Lecture	Venue & Date
1.	Dr. T.S.Chandra	Louis Pasteur Award lecture	Mangalore, Annual Meeting of Assoc. Microbiologists of India Dec.5, 1998
2.	Dr. M.S. Gopinathan	"Nobel Prize in Chemistry- Mat science. On the density functional theory and computational methods in quantum chemistry	Chennai Nov.2, 1998,
		-do-	CLRI, Chennai Nov.3, 1998
		SCF Theory and Atomic Orbitals	Univ. of Madras Dec.18, 1998
3.	Dr. K.K.Balasubramanian	Radical Mediated Cyclisation reactions – Synthesis of bicyclic eneones	St.Joseph 's College Trichy Oct. 12, 1998
		Synthesis of Petrocarbons Isoflavenes & Jasmone & Bicyclic eneones	-do-

S. No.	Name of faculty	Topic of Lecture	Venue & Date
10.	Dr. R. Dhamodharan	Synthesis and characterization of Nanocomposites Based on Organic-Inorganic Hybrids	NCL, Pune, Nov.27, 1998
		Chemical Modification of Waste polystyrene to PolyC ₄ -Vinyl(phenol)a useful Photoresisting material	DRDO, Hyd. Oct 15, 1998
		Technology behind polymeric Formulations used in Adhesives for outer space Application	Anabond Ltd, Chennai Oct 22, 1998
11.	Dr. Indrapal Singh Aiden	Stereochemical prefixes in naming of carbohydrate	Cochin Univ. of Science & Tech Cochin Mar 2-3, 1999
		Synthesis of L-Hexoses	-do-
12.	Dr. D.Loganathan	Enzymic synthesis and x-ray crystallographic Investigation of N-Glycoprotein Linkage Region models and Analogues	Central University Hyderabad Feb 13, 1998
		Carbohydrates and Glycobiology	IIT Madras
		At the interface of chemistry and biology: Opportunities and challenges in carbohydrate research	IIT Madras
		Environment-friendly methodologies in carbohydrate synthesis	Vivekananda College Chennai
13.	Dr. T. Pradeep	Structure, stability, dynamics and reactivity of monolayers on 2 D surfaces	August 6, 1998. Dept. of chemistry Arizona State University, Tucson, .
		Monolayers in two dimensions Investigated by SERS	May 26, 1998 Dept.of Chemistry, Purdue University, West Lafayette,

S. No.	Name of faculty	Topic of Lecture	Venue & Date
		Structure, stability, dynamics and reactivity of monolayers,	June 3, 1998. Dept. of Chem.Engg Purdue University, West Lafayette,
		Investigations of fullerene derivatives, metcars and tubules,	June 9, 1998. Dept. of Chemistry Purdue University, West Lafayette,
		Surface enhanced Raman spectroscopy of monolayers,	March 20, 1999. Dept. of Physics, IIT Madras,
		Analytical methods for novel materials,	March 29, 1999. Dept. of App.Phy Cochin University of Sci. & Tech , Cochin
		Surface enhanced Raman , spectroscopy of monolayers	March 30, 1999. Dept. of Physics, IIT Madras
		Analytical methods for , novel materials	March 29, 1999. Dept. of App. Phy Cochin University of Sci. and Tech , Cochin.
14.	Dr.M.V.Sangaranarayanan	Density of functional theory of metal electrolyte interfaces	Dec.9, '98 Madras Univ.
		Change transport at chemically modified electrodes	Dec.10, '98 Madras Univ.
		Statistical Mechanics of electrochemical interfaces	Dec,12, '98 Central Univ. Hyderabad

3.4 Visits abroad by faculty

S.No.	Name of Faculty	Country visited	Date	Purpose of visit
1.	Dr. K.K.Balasubramanian	USA	Mar 28-April 10, '98	Present a paper in the 215 th ACS meeting at Dallas USA

S.No.	Name of Faculty	Country visited	Date	Purpose of visit
2.	Dr. G.Sundararajan	Univ. Hamburg,	May 15 – July 15'98	IITMadras – BMBF project
		DuPont, Delaware	July 16-July 23'98	DuPont project discussion
		Salve Regina College	July 24-July31'98	Gordon Conference
3.	Dr. K.Mangala Sunder	McGill and Univ.of Montreal, Canada	May 19-July 26'98	Research
4.	Dr. T.Pradeep	USA	May-July '98	Research
5.	Dr. M.V.Sangaranarayanan	Nobel Laureates in chemistry in Lindau, Germany	June27-July 4, '98	Meeting
6.	Dr. S. Sankararaman	Germany	May 98 – April 99	Humboldt Fellowship

3.6 Honours and Awards:

S. No.	Name of Faculty	Name of Award/Honour	Awarded by	Awarded for	Date
1.	Dr. T.S.Chandra	Louis Pasteur Triennial Award	Association of Microbiologists of India	Outstanding research in in Microbiology in area of Fermentation Technology	
2.	Dr. T. Pradeep	Fulbright Senior Fellowships	Fulbright Foundation	Research	
3.	Dr. S. Sankararaman	AvH Fellowship Foundation	AvH research	Collaborative June 98	

3.7 Books/Monographs authored or co-authored:

Sl. No.	Name(s) of Author(s)	Title of Text Book/Monograph	Publisher
1.	K.S.V. Srinivasan, N. Somanathan A. Narasimhaswamy, & G. Sundararajan	Macromolecules -New frontiers	Allied Publishers
2.	K.Mangala Sunder	Chapter in Frontiers in Physical Chemistry	-do-

Sl. No.	Name(s) of Author(s)	Title of Text Book/Monograph	Publisher
3.	T. Pradeep(Editor)	Frontiers in Physical Chemistry	-do-
4.	S. Sankararaman	Chapter on "Time Resolved Spectroscopy" in Frontiers In Physical Chemistry	-do-

3.8 Fellowships of Academic and Professional Societies:

S.No	Name of Faculty	Name of the Academy/ Professional Society	Level	Year of Admission
1.	Dr. G. Sundararajan	American Chemical Society Materials Research Society of India	Member Member	
2.	Dr. P. Bhyrappa	Humboldt Foundation	Fellow	1999
3.	Dr. S. Baskaran	-do-	-do-	1991
4.	Dr. R. Dhamodharan	Fulbright Foundation	Senior Fulbright Fellow	1998
5.	Dr. K.Mangala Sunder	American Chemical Society	Member	1998
		America Physical Society	Member	1998
6.	Dr.S.Sankararaman	AvH Foundation	Fellow	1998

3.9 Design and Development Activities:

Dr. K.K. Balasuibramanian	Developed a process for the manufacture of DL-2-Aminobutanol, an intermediate used in the manufacture of ethambutol, an important drug for the treatment of TB. This work was done under RBIC project. Based on this, the company has put up a plant near Chennai city and production has started. Vide RBIC project RB 95-96/CHY/004/MCPP/KKBA
Dr. M.N.Sudheendra Rao	A UG Laboratory Course (I B.Tech) was developed.
Dr. Archita Patnaik	The already developed spectrometer was clubbed with a cryostat with solid and liquid sample holders. The necessary connections were made for sample resistivity measurements.

Dr. K. Mangala Sunder	Coauthored –Four CD Roms in elementary Chemistry and physics developed by MCH Multimedia Inc.Montreal, Canada
Dr. T. Pradeep	Developing a evaporation source coupled with Mass spectrometry
Dr. D.Dhamodharan	A Polymer characterization Laboratory is being developed consisting of a Glove Box, a HPLC/GPC System, a photoreactor a UV-VIS spectrometer to study polymer adsorption kinetics. The HPLC/GPC system was built at 1/4 th its market cost by purchasing parts from various sources and assembling it.

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

Dr. S. Baskaran	A novel process has been developed at DRF for the Synthesis of Linezolid, an antibacterial agent.
Dr. R. Dhamodharan	We have built a HPLC cum GPC system at 1/4 th the Market cost by purchasing parts from various Sources and assembling a functional unit..
Dr. K.Mangala Sunder	Chemistry/Physics education using Multimedia Developed for undergraduate curriculum.
Dr. T. Pradeep	Developed methodologies to make metal Clusters and their superlattices

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

Dr. T.S. Chandra	New laboratory set up for biogas work under MNES Project
Dr. Archita Patnaik	New electronic modules for the life time spectrometer along with 2 BaF ₂ detectors were procured from Oxford and Bicon, USA. A low temperature facility for in-situ phase transition various matrices was attached to the spectrometer.
Dr. R. Dhamodharan	An inert-atmosphere MBroun Glove Box A HPLC/GPC dual system A photoreactor (Heber Scientific) for synthesis
Dr. K.Mangala Sunder	A pentium 233 MHZ processor and a HP Kayak workstation through DST Project. A pentium based Linux workstation through CSIR

Dr. T. Pradeep	Quardrupole mass spectrometer
Dr. G.Ranga Rao	Nucon Gas chromatograph with PC data station
Dr. M.V. Sangaranarayanan	MATLAB Toolbox for solving partial differential Equations.
Dr. M.S. Subramanian	Thermostatic waterbath Rotary High vacuum pump, double stage Contamination monitor

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

Patents awarded :

Patents filed	T.S. Chandra - Patent filed for reboflavin enriched poultry feed through DBT
	D.Loganthan, A S. Sulthan and B.Kuberan 'A method for obtaining equilibrated anomeric mixture of reducing sugars using non-aqueous media, Indian Patent, pending, 1998.

5. Research and Consultancy:

5.1 Sponsored Projects on hand:

S.No.	Title	Period Agency	Funding	Amount (in lakhs)	Co-ordinator(s)
1.	Nonlinear dynamical analysis of experimental time series	3 years (97-2000)	DST	10.0	Dr.M.S.Gopinathan
2.	New routes to C-aryl glycosides	4 years (95-99)	DST	13.0	Dr.K.K.Balasubramanian
3.	Control of environmental Pollution from the auto-Mobite exhause by oxide Catalyst	2 years	TN Pollution Control Board	5.53	Dr.R.P.Viswanath Principal Co-investigator N.Balasubramanian
4.	Technology for enhancement of biogas generation at bio temperature	Jan 1998 to Jan 2001	Ministry of Non Conventional Energy sources		Principal Investigator Dr.T.S.Chandra Co-Investigator nil
5.	Novel Phosphine Oxides.... Radioactive wastes	3 years	DAE(BRNS)	5.7	Dr. M.N.S. Rao Dr. P.R.V. Rao Head, FCP, IGCAR Kalpakkam

S.No.	Title	Period Agency	Funding	Amount (in lakhs)	Co-ordinator(s)
6.	Studies on Catalytic... Dehydrogenation reactives	2 years	CSIR	7.18	Dr. R.P. Viswanth
7.	Development of fluorescence based optical sensors for monitoring pollutants in Industrial effluents	3 years	DAE	7.6608	Dr.A.K. Mishra
8.	Development of fluorescence Based analytical techniques With Polycyclic aromatic hydro- carbon (PAH) fluorophores	3 years	CSIR, Delhi	4.9979	Dr. A.K. Mishra
9.	Synthesis of novel polymers and small organic molecules by soluble and tunable olefin metathesis catalysts	3 years	DST	22.4	Dr.G.Sundararajan
10.	Asymmetric catalysis by C _n -symmetric ligands	3 years	CSIR	5.0	-do-
11.	Metathesis and Ziegler-Natta Catalysts	2 years	Dupont	USD 24,000	-do-
12.	Chem .. Fullerenes	4 years	Iuc-DAEF	1.90	Dr.Archita Patnaik
13.	Positrons...polymers	3 years	DST	22.12	-do-
14.	Molecular recognition and Shape selective ligation in Metalloperhalo perphyrius	3 years	CSIR	8.38	Dr. P. Bhyrappa
15.	Harvesting sunlight	3 years	CSIR	7	Dr. R. Dhamodharan
16.	Synthesis and	3 years	DST	26	-do-
17.	Chemical modification..	3 years	DRDO	14	-do-
18.	Development of	2 years	OIDB	48	Dr. R.Dhamodharan with Prof.K.Gopinath
19.	Theoretical rotational /	3 years	DST	7	Dr. K.Mangala Sunder
20.	Dynamics of Nuclear spins	3 years	CSIR	6	-do-
21.	Tandem mass spectro- metry medium/ surface collisions	3 years	DST	48.6	Dr. T. Pradeep
22.	Chemistry of metallocarbohydrates	3 years	DST	15.2	-do-
23.	Catalytic Chemistry of Ceria-based materials	3 years	CSIR	9.5	Dr. G. Ranga Rao
24.	A simple approach towards C-aryl-Glycoside	3 years	CSIR	7.00	Dr.Indrapal Singh Aidhen

S.No.	Title	Period Agency	Funding	Amount (in lakhs)	Co-ordinator(s)
25.	Glycosidase catalysed Oligosaccharide synthesis	4 years	DST	11.7	Dr. D.Loganathan
26.	Analysis of transient Electrochemical techniques	3 years	CSIR	5.0	Dr.M.V.Sangara-narayanan
27.	Extraction studies on uranium & thorium using long chain submitted amides	3 years	BRNS	6.0	Dr.M.S.Subramanian -
28.	Synthesis and structural Characterization of Novel Microporous Metal phosphates and phosphonates	3 years	DAE	7.38	Dr.K.Vidyasagar

5.2 Industrial Consultancy :

Sl. No.	Name of the Faculty	Title	Industry	Amount (in lakhs)
1.	Dr. G. Sundararajan	GPC analysis	M/s Rane Brakes Linings Ltd	Rs.0.02
2.	-do-		Industrial Consultancy	Rs.0.02
3.	Dr.R.Dhamodharan & Prof.N.Balasubramanian	Evaluation of chlorub	CDC Carboline	Rs.0.09
4.	Dr. R. Dhamodharan	Evaluation of percent silicone in an insulator Formulation	Kino Electronics Chennai.	Rs.0.05

5.3 RBIC

S. No.	Name of the Investigator/ Co-investigator	Title	Values (in lakhs)
1.	Dr. R. Dhamodharan	Development of Encapsulation Technology For Anaerobic Adhesives	0.50
2.	Dr. K.K.Balasubramanian	Development of methyl tris Isopropoxy silanes	0.50

5.4 Retainer Consultancy

S. No.	Name of faculty	Title	Industry	Amount (in lakhs)
1.	Dr. R. Dhamodharan	Development of MS Polymer	Anabond Ltd	0.24
	-do-	Development of Toner for Xerography	Technochem Ltd	0.24
2.	Dr.K.K. Balasubramanian Consultant		Shasun Chemicals Ltd	0.3

5.5 Exchange programme with other Universities:

Dr. Archita Patnaik - IUC -DAE facilities, Calcutta & Indore

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

S.No.	Name of Faculty	Level	Journal
1.	Dr. K. Lalitha	Editor	Biological Trace Element Research (International)

5.7. Research Publications:

(a) In Refereed National Journals

1. Dr. R.P. Viswanath, Surface, Analysis of supported Pt catalyasts encapsulation model for metal. Support interaction -An XPS study Ind. J.Engg &Mat.Sci.Vol.5 PP 285-290 (1998).
2. G. Janarthanan, J.Srinivas, G.Srinivasamurthy and M.N.S. Rao, Synthesis & Xray structural heterocycle, Proc. Indian Acad.Scientice (Chem.Sci) 110, 89-95, 1998.
3. G. Janarthanan, J. Srinivas, G.Srinivasamurthy and M.N.S. Rao, Synthesis & Xray structural Primaryamino substituent, Indian Journal of Chemisitry, 37A, 1052-1056, 1998.
4. G. Ranga Rao, Chemistry of Bimetallic Surfaces, Current Science, 75, 901-910, 1998.
5. B.B. Lohray, S. Baskaran, B.Srinivasa Rao, V.Bhushan, 'Intermolecular SM2 ring opening of cyclic sulfate: 6-exo-tet-versus 7-exo-Tet cyclization, Ind.J.Chem, 37B, 209-218, 1998.

(b) In Refereed International Journals:

1. K.Vijayaraghavan, T.K. Ramanujam, N.Balasubramanian, Insitu hypochlores acid generation for tannery waste waters, Journal of Environmental Engineering, Sept 1998, Vol.124, 887-891.

2. N. Palani, A. Chadha , K.K. Balasubramanian, Mechanism of lithium Perchlorate/Diethyl ether-catalysed rearrangement of α and β -endo-and exo Dicyclopentadienyl vinyl ether Use of Deuterium labelling and a chiral probe, *J. Org.Chem.* 63, 5318-5323, 1998.
3. N. Geetha, K.K. Balasubramnian, Trifluoroacetic acid catalysed 1,31 – Rearrangment of Aryl 2-halo cyclohexylmethyl ethers, *Tetrahedron, Lett* 39, 1417-20 1998
4. D. Sriram, S. Srinivasan K.C. Santhosh and K.K.Balasubramnian 6-methyl-3-phenylthiochromon-4- one and 6 methoxy-3- phynylthiochrom on 4-ne; Configurational preference of the Phenyl thiogroup at the third position due to remote substitution, *Acta Crstallogrph Section C*, 107, 75, 1073, 1998
5. R. Sobhna Babu and K.K. Balasubramanian, Mild and Efficient tetrahydropyranylation of alcohols Catalysis by Lithium perchlorate in Diethylether, *Tetrahedron, Lett.*39, 287-88, 1988.
6. Usha Antony and T.S.Chandra, Antinutrient reduction of enhancement of in protein starch and mineral availability in formulas, Finger millet (E.Cocacana) *J.Agric.Food Chem.(Amer. Chem.Soc)* 46, 2578-2582 (1998).
7. Usha Antony, L.G.Moses and T.S.Chandra, Inhibition of S.Typhimurium and E.coli by fermented flow of finger millet (E. Cocacana) *W.J.Microbial Biotechnol, UK*, 14, 883-886 (1998).
8. K. Narayanan, R.B. Govindan and M.S. Gopinathan, Unstable periodic orbits in human cardiac rhythms, *Phy. Rev. E*, 57, 4594-4603 (1998)
9. R.B. Govindan, K . Narayanan and M.S. Gopinathan, On the evidence of deterministic chaos in EEG: Surrogate and Predictability analysis, *chaos*, 8, 495-502 (1998).
10. M. Sreekala and K. Lalitha, Selenium mediated differential response of β -glucosidase and β -galactosidase of germinating *Trigonella foenum-graecum*, *Biol.Trace Elem.Res.*, 64, 247-258 (1998)
11. T.R. Santosh, K. K. Balasubramanian and K. Lalitha, Enhancement of β -glucosidase and β -galactosidase of *Trigonella foenum - graecum* on exposure to mimosine,an allelochemical, *J.Agric, Food Chem.*, 47, 462-467 (1999)

12. K. Johnson, B.Viswanathan, T.K. Varadarajan, Alkylation of toluene with methanol on microporous $M_xH_{3-x}PW_{12}O_{40}$ ($M=K^+CS^+$, NH_4^+ and Tl^+); Reaction Kinetic catal Lett; 63; 365-370; 1998
13. K. Johnson, B.Viswanathan, T.K. Varadarajan, Alkylation of toluene with methanol on Heteropoly compounds: P-Xylene selectivity, studies in surface science & Catalysis; 113, 223-240; 1998,.
14. R. Sumathi, B.Viswanathan, T.K.Varadarajan, Selective oxidation of benzylalcohol on $BAPb_{1-x}Bi_xO_3$ and related peraskite oxides; studies in surface science & catalysis; 113; 937-946;1998.
15. R.Sumathi, B.Viswanathan, T.K.Varadarajan, Selective oxidation and dehydrogenation of benzyl alcohol on $ARB'O_3$ type peroskite oxides –TPR studies, Applied Catalysis, A General; 172; 15-22, 1998
16. A.K. Mishra, Phase Transition in Phospholipid Vesicles: Excited State Prototropism of 1-Naphthol as a Novel Probe Concept, Langmuir, 14, 2256-2262, 1998
17. A.K. Mishra, Fluorescence Quenching of liquid Scintillation Counters by Metal ions. Radiation Measurement, 29, 473-480, 1998
18. G. Manickam & 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)
19. G Sundararajan, V. Vasudevan & K. Audisesha Reddy, "Synthesis of triblock copolymers – (poly A – poly butadiene – poly A) – via metathesis polymerisation", J. Polym. Sci. Polym. Chem., 36 , 2601-10. (1998)
20. Das A, Dhara S and Patnaik A, Fractal nature of π -bonded nanocrystalline clusters : a N^+ beam induced phenomena. Phys. Rev.B59 , 1999.
21. Archita Patnaik and Changlin Li , Evidence for metal interaction in gold metallized polycarbonate films : an X-ray photoelectron spectroscopy investigation, J.Appl.Phys. 83 (6), 3049-3056, 1998
22. A Das, S.Bera, S.Dhara and A.Patnaik , Physical and chemical implications of 100 keV H^+ implantation in laser ablated PPS thin films, Nucl.Instr.Meth. Phys.Res.B 137 , 337 -345, 1998
23. Changlin Li, Youmei Sun, Yunfan Jin , Gang Liu, Mingdong Hou, Fenh Ma and Archita Patnaik, Latent track effects of swift argon ions in polyimide, Nucl.Instr.Meth.Phys.Res.B 135 , 234 - 238 , 1998

24. A. Patnaik, Z.Zhu, G.gang and Y. Sun, Positron Lifetime as a nano probe for free volume distribution in high density Polyethylene-Carbon Black conducting composites, *Physica Status Solidi (a)* 169, 115 - 125 , 1998
25. A.Das, G.Ghosh, S.Dhara and A.Patnaik, N⁺ ion-beam induced nano-cluster formation in poly (2,6 dimethyl phenylene oxide) films : A Raman spectroscopic investigation, *Materials Letters* 38, 82 - 86 , 1999
26. A. Das, S.Bera , N.Sivakumar, N.Joseph and A.Patnaik, Deposition and characterisation of laser ablated poly(p-phenylene sulfide) thin films. *Appl.Surf.Sci.* 135 , 37 - 45 , 1998
27. 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
28. Archita Patnaik and Changlin Li, Interface configuration in Au / Polycarbonate bilayer structure : an insitu study through Ar⁺ depth profiling., *Appl. Surf.Sci.* 140 , 197 - 203 , 1999
29. A . Das, S. Dhara and A. Patnaik , N⁺ ion- target interaction in PPO Polymer: A structural characterization ., *Nucl.Instr. Meth.Phys.Res. B* 149 , 53 - 60 , 1999
30. P. Bhyrappa, S.R. Wilson and K.S.Suslick, ' Supramolecular chemistry. 9, 169-174, 1998
31. P. Bhyrappa, K.S.Suslick, *Journal of porphyrins and pthalocyamines*, 2, 391-396, 1998
32. P. Bhyrappa, G.Vaijayanthimala, K.S. Suslick, *J,Am.Chem.Soc*, 121, 262-263, 1999.
33. B.B.Lohray, S. Baskaran, B.Srinivas Rao, B.Mallesham, K.S.N. Bharath, B. Yadi Reddy, 'Novel quinolone derivatives as potent Antibacteria's, *Bioorg.med.chem.Lett.*, 8, 525-528, 1998
34. B.B.Lohray, S.Baskaran, K.S. Rao, B.Yadi Reddy, 'Enantiospecific synthesis of N-Aryl-1,3-Oxazin-2-one, *Tetrahedron Lett*, 39, 6555, 1998.
35. T. Raghuram, S. Vijaysaradhi, Indrapal Singh, Jaimala Singh, 'Convenient concersion of acids to wemreb amide,' *Synthetic communications*, Vol.18, No.9, 1999.
36. X. Wu, D. Loganathan and RJ Linhardt, 'A sensitive method for the quantitation of β -Glucuronidase activity in Human urine using capillary electrophoresis with fluorescence detection', *J.Chromatogn*, B 708, 61-66 (1998)
37. P M Bhaskar and D. Loganathan, 'Per-O-acetylation of sugars catalysed by montmorillonite K-10 , *Tetrahedron Lett.*39, 2215-2218)(1998)
38. D. Sriram, T. Lakshmanan, D. Loganathan and S. Srinivasan, 'Crystal structure of a Hydrated N-Glycoprotein linkage Region model and its analogue:Hydron bonding and - stacking driven molecular assembly, *Carbohydr.Res.*309, 227-236 (1998).
39. D. Sriram, S.Srinivasan, K. Priya, V. Aruna and D. Loganathan, β -1-N.Benzamido-D-glucopyranose; *Acta.Crystallogy.Sec.C: Struct.Commun*, C54, 1670-1672.

40. Priya K and D Loganathan, β -Galactosidase catalysed Transglycosylation in Aqueous organic media using Glycosylasparagine minics as acceptors, *Tetrahedron*, 55, 1119-1128 (1999)
41. R. Selvan and T. Pradeep, Towards the solid state synthesis and characterisation of metallocarbohedrenes, *Chem. Phys. Lett.*, (1999).
42. T. Pradeep, C. Evans, J. Shen and R. G. Cooks, Ion/surface reactions to distinguish adsorbate geometry, *J. Phys. Chem. B*, (1999).
43. T. Pradeep, J. Shen and R. G. Cooks, C-C and C-F bond activation by transition metals in low energy atomic ion/surface collisions, C. Evans, *Rapid. Commun. Mass Spectrometry*, 13 172-178, (1999)
44. S. Berchmans, V. Yegnaraman, N. Sandhyarani, K. V. G. K. Murty and T. Pradeep, Formation of nickel hydroxide monolayer on Au films through a self assembled monolayer of 5,5'-dithiobis (2-nitro benzoic acid): voltametric, SERS and XPS investigation of the modified electrodes, *J. Electroanal. Chem.*, (1999).
45. M. Venkataramanan, G. Skanth, K. Bandyopadhyay, K. Vijayamohan and T. Pradeep, Self-assembled Monolayers of Two Aromatic Disulfides and a Diselenide on Polycrystalline Silver Films : An Investigation by SERS and XPS, *J. Coll. Interface. Sci.*, (1999).
46. 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.*, (1999).
47. N. Sandhyarani, S. Berchmans, V. Yegnaraman and T. Pradeep, A Combined Surface-Enhanced Raman-X-Ray Photoelectron Spectroscopic Study of 2-mercaptobenzothiazole Monolayers on Polycrystalline Au and Ag Films. , *J. Coll. Interface Sci.*, 209 ,154-161, (1999).
48. K. Bandyopadhyay, K. Vijayamohan, M. Venkataramanan 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*, (1999).
49. J. S. Patrick, T. Pradeep, H. Luo, S. Ma and R. G. Cooks, Gas phase cleavage in perfluorohexane using W-, Si-, P-, Br- and I- containing ions: comparisons with reactions at fluorocarbon surfaces, *J. Am. Soc. Mass Spectrom.*, 9 , 1158, (1998).
50. K. V. G. K. Murty, M. Venkataramanan and T. Pradeep, Self assembled monolayers of 1,4-benzenedimethanethiol on polycrystalline silver and gold films: an investigation of structure, stability, dynamics and reactivity, *Langmuir*, 14 , 5446, (1998).
51. N. Sandhyarani and T. Pradeep, Characteristics of alkanethiol self assembled monolayers prepared on sputtered gold films: a surface enhanced Raman spectroscopic investigation, *Vacuum*, 49 , 279, (1998)

52. M. R. Resmi, K. Smitha, T. N. Arungagiri and T. Pradeep, Spectroscopic investigations of $M(\text{CO})_5\text{-C}_{60}$ ($M=\text{W}, \text{Mo}$) complexes: precursors for metal fullerides, *Fullerene Science and Technology* (1998).
53. V. Bindu, M. Venkataramanan and T. Pradeep, Trapping of molecules in self assembled monolayer matrices, *Mol. Phys.*, (1998).
54. N. Sandhyarani, K. V. G. K. Murthy and T. Pradeep, Simple method for the preparation of surface enhanced Raman active substrates, *J. Raman Spectrosc.* 29 , 359, (1998).
55. V. Bindu and T. Pradeep, Characterisation of alkanethiol self assembled monolayers by x-ray photoelectron spectroscopy, *Vacuum*, 49 , 63, (1998).
56. V. Bindu, K. Smitha and T. Pradeep, Tilted orientation of molecular chains at the surface of a series of perfluoropolyether liquids: an x-ray photoelectron spectroscopic investigation, *Mol. Phys.*, 93 , 85, (1998).
57. G. Ranga Rao, Growth of surface alloy films and chemisorption behaviour of CO on Sm / Ru (001) : XPS and TPD studies, *Studies in Surf. Sci. and Catal.*, 113, 341-347,1998.
58. R. Saradha and M.V. Sangaranarayanan, 'Crystal Face specificity of Electronic and Electrochemical properties of a neutral interface', *J. Phys.Chem.B* 102 ,5099 - 5106, 1998.
59. R. Saradha and M.V. Sangaranarayanan, 'Theories of electrified Interfaces: A combined analysis using density functional approach and Bethe approximation., *J.Phys.Chem.B* 102, 5468 - 5474, 1998
60. R. Aldrin Denny and M.V. Sangaranarayanan, 'Kineticising model formalism for electron hopping in redox polymer electrodes, *J. Solid State Electrochemistry* 2, 67-72, 1998.
61. R. Aldrin Denny and M.V. Sangaranarayanan, 'Flux-Force formalism for charge transport through Supermolecular structures –Part I *J.Phys.Chem.B* 102, 2131-2137, 1998
62. R. Aldrin Denny and M.V. Sangaranarayanan, 'Flux-Force formalism for charge transport through Supramolecular structures –Part II.*J.Phys.Chem.B*.102, 2138-2148, 1998
63. R. Aldrin Denny and M.V. Sangaranarayanan, 'Electron self exchange in redox polymers – Part I, *J.Phys.Chem.B* 102, 8670 - 8677, 1998
64. R. Aldrin Denny and M.V. Sangaranarayanan, 'Electron self exchange in redox polymers – Part II *J.Phys.Chem B*.102, 8678 - 8685, 1998
65. R. Aldrin Denny and M.V. Sangaranarayanan, 'Dynamics of competing diffusion processes.. *J.Phys.Chem A* 31, 7671-7683, 1998.
66. K. Pushpalatha and M.V. Sangaranarayanan, 'Phase transitions at electrochemical interfaces... *Chem.Phys.Letters*..288, 216-224, 1998.

67. D. Sandhya, M.S. Subramanian ' Radiometric determination of trace amounts of zinc using liquid scintillation counting, *Talanta*, 46, 921-926, 1998.
68. Vidyavathy Balraj and K. Vidyasagar, ' Low temperature synthesis and characterization of novel layered Tellurites, $A_2Mo_3TeO_{12}$ ($A=NH_4, Cs$) and Zerodimensional Tellurites, $A_4Mo_6Te_2O_{24} \cdot 6H_2O$ ($A=RB, K$) *Inorg.Chem.*37, 4764-4774 (1998).
69. R. Nandinii Devi and K. Vidyasagar, 'Synthesis and chracterization of new vanadates of antimoney, $A_8V_2O_8$ ($A=KRb, Tl$ or Cs), *J. Chem.Soc.Dalton Trans* 3013-3019 (1998)
70. Vidyavathy Balraj and K. Vidyasagar, Hydrothermal Tellurites of molybdeneen (vs) $A_4MO_6TeO_{22} \cdot 2H_2O$ ($A-NH_4$), *Inorg.Chem.*38, 1394-1400 (1999).

(c) In Proceeding of National Conference:

1. B. Sobhana Babu and K.K. Balasubramanian, LTAN catalysed synthesis of 2,3-unsaturated thio glucopyronorides, XIII Carbohydrate Conference, Dehradun, India, Nov.19-20, 98.
2. R.P. Viswanth, 'Characterisation and catalytic studies of supported chromium catalysts', *Proc.XIV Natl.Conf.Catalysis* Dec.1998,Chennai.
3. R.P. Viswanath, 'Characterisation of supported Pt systems by spectrascopic techniques', *Proc.XIV Natl.Conf.Catalysis*, Dec.1998, Chennai.
4. N.Sathyamurthy, Indrapal Singh, Jaimala Singh, 'Synthesis of potential precussors to 2,3 dideooxy higher sugars, XIIIth Carbohydriate conference, FRI, Dehra Dun, Nov.19-20, 1998
5. S.Vijayasradhi, Indrapal Singh, Jaimala Singh, 'Synthetic efforts toward Anti epilepsy drug, XIIIth Carbohydrate Conference, FRI, Dehra Dun, Nov.19-20, 1998.
6. K. V. G. K. Murty, M. Venkataramanan and T. Pradeep, Self assembled monolayers of 1,4-benzenedimethanethiol on polycrystalline silver and gold films: an investigation of structure, stability, dynamics and reactivity, MRSI Meeting, IIT Madras, January 1998.
7. N. Sandhyarani and T. Pradeep, Alkanethiol self assembled monolayers on sputtered gold films: a surface enhanced Raman spectroscopic investigation, MRSI Meeting, IIT Madras, January 1998.
8. Mangala Sunder Krishnan, Theoretical Rotational-vibrational spectroscopy, Sixth biannual symposium in Theoreticl Chemistry, Hyderabad, Dec.98.
9. K. Subhashini and Mangala Sunder Krishnan, Evolution of Many-couped spins in NMR Spectroscopy using a Spherical Tensor Basis set, 5th National Symposium on Magnetic Resonance, Dehradun, Feb.23-26, 1999
10. K. Sarathy and Mangala Sunder Krishnan, Spin Dynamics of Quadrupolar Nuclei without the secular approximation, 5th National Symposium on Magnetic Resonance, Dehradun, Feb.23-26, 1999

11. R. Ramesh and Mangala Sunder Krishnan, Perturbative and Variational methods for solving Floquet spin density matrices: Numerical Schemes, 5th National Symposium on Magnetic Resonance, Dehradun, Feb.23-26, 1999
12. V. Vidyalakshmi, M.S. Subramanian, T.G. Srinivasan and P. Vasudeva Rao, 'Studies on the effect of structure on third phase formation in the extraction of uranium by N₁N¹ dialkylamides', Page 123 Proceedings of Nuclear & Radiochemistry Symposium, Jan 19-22, 1999.

(d) In Proceedings of International Conferences:

1. N. Geetha and K.K. Balasubramanian, Aromatic (1,3)- Claisen rearrangement in lithium perchlorate/nitromethane medium, 215th American Chemical Society, Dallas. USA, March 29th to 2nd April 1998
2. N. Geetha and K.K. Balasubramanian, Synthesis of 2,3-dihydro spiro (b) benzofurana and hexahydrodibenzofurans from aryl cyclohexenylmethyl ethers, XVIII European Colloquium on Heterocyclic Chemistry, IRCOF-INSA, de Rouen, Cedex, Fran, October 4-7, 1998
3. B. Sobhana Babu and K.K. Balasubramanian, Lithium tetrafluoroborate catalysed Ferrier rearrangement of tri-O-acetyl-D-galactal Facile synthesis of alky 2,3-unsaturated glycopyranosides, 215th American Chemical Society, Dallas, USA, March 29th to 2nd April 1998
4. B. Sobhana Babu and K.K. Balasubramanian, Mild and Efficient Tetrahydropyranylation of Alcohols-Catalysis by Lithium Perchlorate in Diethyl Ether, XVIII European Colloquium on Heterocyclic Chemistry, IRCOF-INSA, de Rouen, Cedex, France, October 4-7, 1998
5. R Lakshmi and K.K. Balasubramanian, Ferrier rearrangement of tri-O-acetyl-D-galactal using Montmorillonite as catalyst, 215th American Chemical Society meeting, Dallas, USA, March 29th to 2nd April 1998.
6. M.Sankar and T.S. Chandra, Clostridial additives to stimulate composting and biogasification of recalcitrant agro-byproducts INDO-VS Workshop on Appl. Of Biotechnol. For clean Env't. & Energy, Bangalore, Aug 5-8, 1998.
7. R. Sumathi, B.Viswanathan, T.K. Varadarajan, Partial oxidation of 2-propanol on perovskites; DGMK Conference "Selective Oxidations in Petrochemistry, Hamburg-Reinbek, Germany, October 1998.
8. R. Manivannan, G. Sundararajan & 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, 1999; pp 190-193.
9. G. Sundararajan, "Metathesis Polymerisation with Photo-Generated Catalysts", Polymers Beyond AD 2000; Ed. A.K. Ghosh, Indian Institute of Technology, NewDelhi, 1999; pp 51-54.

10. Sundararajan, "Solid Propellant modifications using A-B-A triblock copolymers"; in Propellants, Explosives, Rockets and Guns, Eds. S. Krishnan and S.K. Athithan, Allied Publishers Ltd., 1998, 240-245
11. Sundararajan, "Synthesis and characterisation of GAP-PB-GAP triblock copolymer and application as additive in composite propellant", in Macromolecules - New Frontiers, Ed. K.S.V. Srinivasan, Allied Publishers, New Delhi, 1998, pp 1042-45.
12. G. Sundararajan and K. Dhanalakshmi, "Synthesis of conjugated polymers with redox-active end-groups", in Macromolecules - New Frontiers, Ed. K.S.V. Srinivasan, Allied Publishers, New Delhi, 1998, pp 25-28.
13. G. Sundararajan, B. Gita & R. Manivannan, "Study on the nature of active species involved in the metathesis polymerisation reaction using $W(CO)_6/CCl_4/h\nu$ system" in Macromolecules - New Frontiers, Ed. K.S.V. Srinivasan, Allied Publishers, New Delhi, 1998, 37-40.
14. G. Sundararajan, B. Anupkumar & T.A. Vijayaraj, "Controlling molecular weight and distribution in metathesis polymerisation of phenylacetylenes by (arene)Mo(CO)₃ complexes" in Macromolecules - New Frontiers, Ed. K.S.V. Srinivasan, Allied Publishers, New Delhi, 1998, pp 33-36.
15. G. Sundararajan, "Metathesis polymerisation with soluble and tunable metal complexes", in Macromolecules - New Frontiers, Ed. K.S.V. Srinivasan, Allied Publishers, New Delhi, 1998, pp 25-28.
16. Beena George, J.Md.Nasrullah and R. Dhamodharan, 'Photochemical synthesis and characterisation of Hypercrosslinked polystyrene resin, Macromolecules New Frontiers, Vol.1,89, 1998.
17. J.D. Jayaprakash, S. Samuel and R. Dhamodharan, 'Adsorption of carboxylic acid-terminated polystyrene to aerosil from carbon tetrachloride', Macromolecules New Frontiers, Vol1, 441, 1998
18. J. Md.Nasrullah, K.Vijayakumaran, and R. Dhamodharan, 'A novel synthetic route to poly(4-vinyl phenol): A useful photresist material', Macromolecules New Frontiers, Vol 2, 1046, 1998
19. N. Satyamurthi, Indrapal Singh, 'N-methoxy-n-methyl-2 phenyl sulfonyl-acetamide: synthetic equivalent for CH_2CHO and CH_2COR , 18th International Conference on Organic Chemistry of sulphur Florence, Italy, July 13-19th (ISCOS-18), 1998
20. V.Selvamurugan, Indrapal Singh, 'A facile synthesis of 1,4 dicarbonyl compounds with Weinreb amide functionality, 12 International Conferences on Organic synthesis, Venezia, Italy, 28th June-2nd July, 1998/

(e) Others

Science Education

1. Self assembled monolayers, T. Pradeep, Resonance-Journal of Science Education, 3 (1999) 53-62.

6. Distinguished Visitors to the Department:

S.No.	Name of the Visitor & Designation	Date of Visit	Purpose of visit
1.	Dr. Jean Pierre Begue Lab.de Molecules Fluorees Biocis, France	July 30, 1998	Discussion & Seminar
2.	Prof. T.K. Sarkar IIT Kharagupur	July 16, 1998	-do-
3.	Prof. Dietmar Kuch University Bielefeld, Germany	Aug. 1, 1998	-do-
4.	Professor S.Chandrasekaran IISc., Bangalore	Sep 6, 1988	-do-
5.	Professor Axel Muller, University of Mainz, Germany	Dec 26- 28,	-do-
6.	Dr. Prabhakar Rao Varanasi Photoresist Materials Division IBM, New York	Dec. 1998	-do-
7.	Prof. J.F. Normant Laboratoire de Chimie des Organoelements University of Paris V Paris, France	Dec 17, 1998	-do-
8.	Prof. G. Descotes Universite Clagde Ber Nard Lyoni Electronice De Lyon Laboratoire de Chimie Organich France	Jan 27, 1999	Discussion & Seminar

S.No.	Name of the Visitor & Designation	Date of Visit	Purpose of visit
9.	Prof. Phalguni Chaudhuri Max Plank Institut for Strahlenchemie Mulheim Am Ruhr, Germany	Feb 18, 1999	-do-
10.	Prof. Gedanken Bar Illan University Israel	Mar 23, 1999	-do-
11.	Prof. Jean Charles Quirion Laboratoire d'Heterochimie Organique Ircof-INSA De Rouin E-Blondel, BP8 Mont Saint Algnan Cedex, France	April 19, 1999	Discussion & Seminar
12.	Dr. Y.K. Vijay, Associate Prof. Rajasthan Univ., Jaipur	April 2, 1999	-do-

4.5. DEPARTMENT OF CIVIL ENGINEERING

1. Introduction :

The Department of Civil Engineering has been in existence since the inception of IIT, Madras in 1959, and has grown into a full-fledged Department with specialisations in all the major 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 organised into five Divisions. There are fourteen well-equipped laboratories attached to different specializations. Hydraulic 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. New Courses Introduced :

Sl.No	Course No.	Title	Faculty
1	CE 101	Introduction to Civil Engineering Profession	Prof.K.Elango Dr.A.Meher Prasad

2.2 New disciplines introduced:

Dual M.Tech Degree Programme in Infrastructural Civil Engineering

2.3. Students on Roll:

Programme	I Year	II Year	III Year	IV Year	V Year	Total
B.Tech	59	43	43	39		184
M.Tech.	50	53				103
M.Sc.						
M.S.	10	9	11	6		36
Ph.D.	3	5	4	24		36
Total	122	110	58	69		359

2.5. Number of Scholarship/Fellowship holders :

Programme	Institute Scholarship	Others	Total
B.Tech.	--	--	--
M.Tech.	1	--	--
Ph.D.	2	1	3
Total	3	1	4

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

S.No	Name of the Scholar	Programme	Name of the Conf/Seminar/Symposia	Date & Venue
1	Monto Mani	Ph.D	GEOINFORMATICS – BEYOND 2000	Dheradhun March 1999

2.7. Number of Degrees Awarded in the last convocation :

Programme	No
B.Tech.	49
M.Tech.	40
M.S.	7
Ph.D.	9
Total	105

3. Faculty and their Development :

3.1. Faculty :

Name and Qualification	Major Area of Specialization
Professors	
Dr.H.Achyutha, Ph.D. IITM	<u>Structural Engineering</u> - Civil Engineering Materials, Experimental Studies, Mix Designs, Nuclear Structures, Brick infilled Frames, Safety of Structures subject to Impact and Blast Loading
Dr.P.K.Aravindan, Ph.D. (IITM)	<u>Structural Engineering</u> – Reinforced and Pre stressed Concrete Shells, Folded Plates, Soil – Structure Interaction, Tall Towers, Impact Loading on Concrete Structures
Dr.K.Elango, Ph.D. (IITM)	<u>Hydraulic Engineering</u> – Hydrologic Analysis and Design of Surface and Ground Water Systems, Water Quality Modelling, Pipeline Sewerage Design
Dr.V.Kalyanaraman, Ph.D. (Cornell)	<u>Structural Engineering</u> – Steel Structures, Buckling of Steel & Advanced Composite Members, Optimization and Computer Aided Design, Smart Control of Structural Instability
Dr.C.S.Krishnamoorthy, Ph.D. (London)	<u>Structural Engineering</u> – 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. (IIT (Kanpur)	<u>Geotechnical Engineering</u> – Soil Dynamics, Analysis and Design of Foundations and Earth Structures subjected to Vibrations. Foundations for Industrial Machinery and Turbogenerators, Reinforced Soil Structures, Geosynthetics and Natural Reinforcing Materials, Ground Improvement and Modern Techniques in Geotechnical Engineering
Dr.M.S.Mathews. Ph.D. (IITM)	<u>Building Technology</u> – Construction Materials, Maintenance & Repair of Buildings, Restoration of Historic Buildings.
Dr.Nainan P Kurian. Ph.D. (IITM)	<u>Geotechnical Engineering</u> Foundation Engineering, Soil Investigations 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, Geosynthetics and their Applications
Dr.N.Rajagopalan, Dr-Ing (Stuttgart)	<u>Structural Engineering</u> – Tension Structures, Damage Detection and Rehabilitation, Concrete Technology, Infuse Hypertension, Prestressed concrete, Bridges, Tall Structures, Water Towers, Large Span Roofs.

Name and Qualification

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

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

Major Area of Specialization

Transportation Engineering – Pavement Materials, Design and Evaluation of Highway and Airfield Pavements, Traffic and Transportation planning

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 & 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 Modelling 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 & 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 Streamflow, Regionalisation 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

Name and Qualification**Major Area of Specialization****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 Waste Water System Management

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

Building Technology – Computer Integrated Construction , Geographic Information Systems

Dr.N.Kumar Pichumani, Ph.D. (IIT Kanpur)

Geotechnical Engineering – Rock Mechanics, Analysis of Underground Excavators, Engineering Geology, Reinforced Soil Structures

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 Conduits and Avalanche Dynamics, Contaminant Transport

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

Building Technology – Construction 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 University)

Structural Engineering – Damage Assessment, Thin walled Steel Structures, Concrete-filled Tubes, Structural Dynamics, Nonlinear 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 Office 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 M Subbi Reddy M.S.(IITM)

Transportation Engineering

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

S.No.	Co-ordinators	Title	Period
1	Dr.M.S.Mathews Dr.K.Ramamurthy	Habitat Technology for 21 st century	Apr. 27 - May 9, 1998
2	Dr.M.S.Mathews Dr.K.Ramamurthy	Research Methodology	Aug. 21, 1998 onwards every Friday for 10 weeks
3	K.Gopalakrishna	Surveillance of Waste Water Treatment Units	Aug.31 – Sept.4, 1998
4	Dr.S.Mohan and Dr.K.Ananthanarayan an	Fuzzy systems Modelling in Civil Engineering	June 3 - 6, 1998
5	Dr.K.Rajagopal & Dr.M.S.SivaKumar	Finite Element Techniques for Geotechnical Engineers Conducted under QIP and CEP Streams	Nov.30 – Dec.4, 1998
6	Dr.S.R.Gandhi	Foundation on Weak Deposit (QIP & CEP Streams)	Dec.21-25, 1998
7	Dr.A.Meher Prasad (Treasurer)	Workshop on Recent Advances in Solid Mechanics (WRASMec)	Dec. 16-18,1998

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

S. No.	Name of Faculty	Title	Institution	Period/ Duration
1.	Dr.K.Elango	Methodology for Tank Chain Development and Management	Institute for Water Studies, Taramani, Chennai	January 21, 1999
2	Dr.K.Elango	Flood Management in Irrigation System	Anna University, Chennai	March 24, 1999
3.	Dr.B.S.Thandaveswara	Ground Water Hydrology in Deltaic Region	Regional Deltaic Centre, NIH Kakinada	January 4-8,1999
4	Dr.B.S.Thandaveswara	Workshop on 'Water Quality Management'	IIT Madras	March 31, 1999
5.	Dr.S.Mohan	Advances in Waste Water Irrigation	REC Trichi	September 1998
6	Dr.S.Mohan	Methodology for Tank Chain Development and Management	Institute for Water Studies Taramani Chennai	January 21, 1999
7	Dr.S.Mohan	Interdisciplinary Dialogue on Climate, Biotechnology and Food and Water Security	M.S.Swaminathan Foundation, Chennai	Feb. 3-6,1999

S. No.	Name of Faculty	Title	Institution	Period/ Duration
8	Dr.S.Mohan	Bio-Medical Waste Management	Tamilnadu Pollution Control Board, Chennai	Feb. 10-12, 1999
9	Dr.S.Mohan	ISO-14000: Environment Management System	IIT Madras	March 12-13,1999
10	Dr.S.Mohan	Repairs and Rehabilitation of RC Structures	Neyveli Lignite Corporation, Neyveli	March 14, 1999
11	Mr.K.Gopalakrishna	Intedisciplinary Dilogue on Climate, Biotechnology, Food and Water Security	M.S.Swaminathan Foundation, Chennai	Feb. 3-6,1999
12	Mr.K.Gopalakrishna	Bio-Medical Waste Management	Tamilnadu Pollution Control Board, Chennai	Feb. 10-12, 1999
13	Mr.K.Gopalakrishna	ISO-14000: Environment Management System	IIT Madras	March 12-13,1999
14	Dr.K.Rajagopal Dr.N.Kumar Pichumani	National Workshop on Reinforcement of Slopes	IIT Kanpur	Aug. 21-22 1998
15	Dr.K.Rajagopal Dr.A.Boominathan Dr.N.Kumar Pichumani	Indian Geotechnical Conference – 98	IIT Delhi	Dec.7-10 1998
16	Dr.S.R.Gandhi	Fly Ash Utilisation and Disposal beyond 2000	IIT Kanpur	Feb. 4-5 1999
17	Dr.R.Sivanandan	Workshop on Reduction of Traffic Congestion and Improving Air Quality (Sustainable Chennai Project)	Organised by CMDA at Hotel Radha Park INN International, Chennai	July 10, 1998
18	Dr Dr.R.Sivanandan	Symposium on Sustainable Urban Development	Max Mueller Bhavan, Chennai	Oct.10, 1998
19	Dr.R.Sivanandan	International Seminar on Highway Safety Management & Devices	Sponsored by the IRC at Vigyan Bhavan, New Delhi	Nov. 6-7,1998
20	Dr.V.Thamizh Arasan	International Conference on Transportation into the Next Millennium	Organised by Nanyong Technological University Singapore	Sep. 9 –11 1998
21	Dr.V.Thamizh Arasan	Symposium on Sustainable Urban Development	Max. Muller Bhavan, Chennai	Oct.10, 1998
22	Dr.V.Thamizh Arasan	International conference on Urban Public Transportation Systems	Organised by ASCE at Miami, Florida, USA	March. 21-25, 1999

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

S.No.	Name of Faculty	Topic of Lecture	Venue & Date
1.	Dr.S.Mohan	Drought Management: Case Studies	Anna Institute of Management, Tamilnadu March 24, 1999
2	Dr.Nainan P. Kurian	Organised and conducted 16 Short Term Courses for Engineers from the Government Public Sector and Private Sector in Peninsular Malaysia, East Malaysia and Brunei	April 1 – Sep. 7, 1998
3	Dr.K.Rajagopal	Foundations for Large Civil Structures	Refinery Engineering School of Training, Oct 98 Chennai
4	D.S.R.Gandhi	Pile Load Test in Marine Structures	Naval Base, Cochin Feb 2 -3, 1999
5	Dr.R.Sivanandan	Route Planning – Routing and Allocation Using GIS	The Institute of Road Transport (IRT) Chennai, February 22, 1999
6	Dr.V.Thamizh Arasan	Transportation Planning for Indian Conditions	Institut fur Verkehr and Stadtbauwesen Technische Universitat Braunschweig, Germany, July 16 1998
7	Dr.V.Thamizh Arasan	Modelling Mode of Choice of Urban Travellers in India	Dept. of Civil & Environmental Engg., University of Florida, USA, March 26, 1999

3.5 Visit abroad by the Faculty:

S.No.	Name of Faculty	Country visited	Date	Purpose of visit
1	Dr.M.S.Mathews	Germany	Oct. – Dec.1998	DAAD Fellowship
2.	Dr.Koshy Verghese	Thailand	January 1999	International Conference
3.	Dr.K.Elango	UK	June 14 – 20, 1998	In connection with European Commission sponsored Research Project
4.	Dr.S.Mohan	UK	June 10 – Aug. 5, 1998	In connection with European Commission sponsored Research Project
5.	Dr.Nainan P.Kurian	Malaysia	Sept. 96 to Sept. 98	On EOL – served as Principal Consultant to SSP, Geotechnics, the leading Geotechnical consultancy Organisation in Malaysia
6.	Dr.S.B.Pattnaik	Japan	Jan. No.v 1999	Japanese Society for the promotion of Science (JSPS) Invitation Fellowship for Research

S.No.	Name of Faculty	Country visited	Date	Purpose of visit
7.	Dr.V.Thamizh Arasan	Germany	May – Aug. 1998	To work on an Indo-German Collaborative Research Project on "Development of Appropriate Transport System Planning Techniques for Indian Conditions".
8.	Dr.V.Thamizh Arasan	Singapore	Sept. 9 – 11 1998	To present a paper in the International Conference on "Transportation into the Next Millinnium".
9.	Dr.V.Thamizh Arasan	USA	March 19 – 26 1999	To present a paper in the International Conference on Urban Public Transportation Systems

3.6 Honours and Awards :

Sl.No	Name of Faculty				Date
1.	Dr.Nainan P Kurian	IGS Annual Prize	Indian Geotechnical Society	Best paper on Shallow Foundations	1998
2	Dr.K.Ramamurthy	Honoured a plenary session at the 5 th Australasian Masonry Conference	Central Queensland University		July 7. 98
3	Dr.S.Mohan	P.V.Palki Memorial Award	IWWA Bombay	Best paper published in JI. Of IWWA during 1997	April 10, 1998
4	Dr.S.Mohan	Biographic Record in WHO's WHO in the world	Marquis WHO's WHO Publication Board	Outstanding achievement in the specialisation area	August 1998
5	Dr.N.Rajagopal	Pre-stressed Concrete Design Award	National Design and Research Forum		1998

3.7. Books / Monographs authored or co-authored :

S.No	Name(s) of Author(s)	Title of Text Book / Monograph	Publisher
1	Dr.S.Mohan Dr.B.S.Thandaveswara Dr.K.Elango	Irrigation Engineering	Module prepared for IGNOU, Delhi
2	Dr.M.S.Mathews	Conservation Engineering	Self
3	Dr. M.S.Mathews	SITE – Planning Module	IGNOU
4	Dr. K.Ramamurthy	SITE – CLEARANCE (28 pages)	IGNOU
5	Dr. K.Ramamurthy	SITE – ORGANISATION(44 pages)	IGNOU
6	Dr.S.U.Pillai and Dr.Devdas Menon	"Reinforced Concrete Design" (763 pages)	Tata McGraw Hill Publishing Co., Ltd., New Delhi
7	Dr.S.U.Pillai and Dr.Devdas Menon	"Reinforced Concrete Design" Teaching Aid (50 pages)	Tata McGraw Hill Publishing Co., Ltd., New Delhi
8	Dr.R.Ambalavanan	Estimating	IGNOU
9	Dr. K.Elango	Two chapters (a) Land Grading Leveling (b) Agriculture Drainage	IGNOU

3.8 Fellowships of Academies and Professional Societies :

Name of Faculty	Name of the Academy/ Professional Society	Level	Year of Admission
Dr.A.Ramachandraiah	Acoustical Society of India	Fellow	1993
	Acoustical Society of America	Associate Member	1997
Dr.K.N.Saryanarayana	Institution of Engineers (India)	Member	1996
	Indian Society for Technical Education	Member	1996
Dr.Nainan P Kurian	Indian Geotechnical Society	Life Fellow	1984
Dr.N.R.Krishnaswamy	Indian Geotechnical Society	Life Member	1979
	Indian Society of Earthquake Technology	- do -	1980
	Indian Society of Theoretical and Applied Mechanics	- do -	1981
Dr.N.Rajagopalan	Indian Roads Congress	Fellow	1998
	Indian Institute of Bridge Engineers	Member	1992
	Indian Concrete Institute	Member	1986
Dr.P.K.Aravindan	Indian Concrete Institute	Member	1985
	Institution of Bridge Engineers	Fellow	1998
Dr.C.S.Krishnamoorthy	INAE	Fellow	1993
	I.E.	Fellow	1992
	I.Struct. Engg	Fellow	1992
	Com. Society of India	Member	
	Indian Society for Tech. Ed.	Life Member	
Dr. H.Achyutha	Institution of Engineers (India)	Fellow	1983
	Indian Society for Technical Education	Life Member	1980
	Indian Concrete Institute	Life Member	1985

Name of Faculty	Name of the Academy/ Professional Society	Level	Year of Admission
Dr.K.Ramamurthy	British Masonry Society	Member	1998
	International Centre for Fibre Reinforced Composites	Member	1998
Dr.A.Boominathan	International Association for Computer Methods and Advances in Geomechanics (IACMAG)	Member	1996
Dr.B.S.Thandaveswara	Indian Society for Technical Education	Life Member	1985
	Indian Water Resources Engg. Society, Roorkee	Life Member	1989
	Indian Society for Hydraulics, Pune	Life Member	1994
	Indian Association for Hydrologists, Roorkee	Fellow	1994
	Institution of Engineers, Calcutta Fluid Mechanics & Fluid Power,	Life Member	1995
Mr.K.Gopalakrishna	TamilNadu Academy of Science Institution of Environmental Engineers (India), New Delhi	Fellow	1998
Dr.N.Kumar Pichumani	Institution of Engineers (India)	Asso. Member	1982
	Indian Geotechnical Society	Member	1995
	IG – 5 Madras Chapter	Member	1996
	Int. Soc. For Soil mech. & Foundation Engineering	Member	1997
	Indian Society of for Rock Mechanics & Tunnelling Tech.	Life member	1994

3.9 Fellowships of Academies and Professional Societies :

Name of Faculty	Name of the Academy/ Professional Society	Level	Year of Admission
Dr.A.Ramachandraiah	Acoustical Society of India	Fellow	1993
	Acoustical Society of America	Associate Member	1997
Dr.K.N.Saryanarayana	Institution of Engineers (India)	Member	1996
	Indian Society for Technical Education	Member	1996
Dr.Nainan P Kurian	Indian Geotechnical Society	Life Fellow	1984
Dr.N.R.Krishnaswamy	Indian Geotechnical Society	Life Member	1979
	Indian Society of Earthquake Technology	- do -	1980
	Indian Society of Theoretical and Applied Mechanics	- do -	1981
Dr.N.Rajagopalan	Indian Roads Congress	Fellow	1998
	Indian Institute of Bridge Engineers	Member	1992
	Indian Concrete Institute	Member	1986
Dr.P.K.Aravindan	Indian Concrete Institute	Member	1985
	Institution of Bridge Engineers	Fellow	1998
Dr.C.S.Krishnamoorthy	INAE	Fellow	1993
	I.E.	Fellow	1992
	I.Struct. Engg	Fellow	1992
	Com. Society of India	Member	
	Indian Society for Tech. Ed.	Life Member	
Dr. H.Achyutha	Institution of Engineers (India)	Fellow	1983
	Indian Society for Technical Education	Life Member	1980
	Indian Concrete Institute	Life Member	1985
Dr.K.Ramamurthy	British Masonry Society	Member	1998
	International Centre for Fibre Reinforced Composites	Member	1998
Dr.A.Boominathan	International Association for Computer Methods and Advances in Geomechanics (IACMAG)	Member	1996
Dr.B.S.Thandaveswara	Indian Society for Technical Education	Life Member	1985

Name of Faculty	Name of the Academy/ Professional Society	Level	Year of Admission
	Indian Water Resources Engg. Society, Roorkee	Life Member	1989
	Indian Society for Hydraulics, Pune	Life Member	1994
	Indian Association for Hydrologists, Roorkee	Fellow	1994
	Institution of Engineers, Calcutta	Life Member	1995
	Fluid Mechanics & Fluid Power,		
Mr.K.Gopalakrishna	TamilNadu Academy of Science Institution of Environmental Engineers (India), New Delhi	Fellow	1998
Dr.N.Kumar Pichumani	Institution of Engineers (India)	Asso. Member	1982
	Indian Geotechnical Society	Member	1995
	IG – 5 Madras Chapter	Member	1996
	Int. Soc. For Soil mech. & Foundation Engineering	Member	1997
	Indian Society of for Rock Mechanics & Tunnelling Tech.	Life member	1994

4. Design and Development Activities :

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

Dr.M.S.Mathews, Dr.K.N. Satyanarayana and Dr.Koshy Verghese, – Coordinators for activities towards the design & development of the User-Oriented Program on Construction Technology & Management. The design & Development involved in the establishment of a New M.Tech. stream based on Industry requirements.
Dr.K.Ramamurthy: Mini Pug Mill

Dr.N.R.Krishnaswamy Cyclic Triaxial Testing Equipment for on going Research Projects in the Area of Geosynthetics (Under Department)

Fabrication of Testing Tank with Loading Frames for Testing Models of Reinforced Soil Structures (Under DST Project)

Developed retrievable Piezotips to measure pore pressure in earth deposits

Dr.A.Boominathan

Developed Free Vibration Test Set up
Development of Dynamic Pile Testing Facility

Software Development

A program was developed in C++ to estimate frequency-dependent stiffness and damping constants considering dynamic pile-soil-pile interaction. This program allows important factors such as frequency variation, pile spacing, pile length-to-diameter ratio, relative pile-soil rigidity and the pile tip condition to be considered for the evaluation of dynamic group stiffness and damping.

Dr.H.Achyutha

A Loading frame to carry out biaxial tension tests on concrete panels.

An experimental facility to carry out biaxial, tension tests on concrete panels at a cost of Rs.10 lakhs has been set up under an AERB sponsored Projects

Dr.K.Srinivasan

Regional Flood Frequency Analysis by Region of Influence Approach – written in Visual C++ (with data accessed from 3 spread sheet) Computer Aided Instructional Module for Hydrology – under development.

New facilities added and Major Equipment procured through project funds

Electric LVDTs, Strain Meters, Pressure Gauges, Geosynthetic Testing Equipment

5. Research and Consultancy :

5.1. Sponsored Research Projects on hand:

S. No	Period	Title	Funding Agency	Amount (in lakhs)	Co-ordinator(s)
1	Apr. 95 to Mar. 98**	Geosynthetics in Reinforced Earth Embankments **	DST, New Delhi	9.77	Dr. N.R.Krishnaswamy Dr. K. Rajagopal Dr.S.R. Gandhi Dr.A.Boominathan
2.	Apr. 97 to May 99	Investigation of the Strength and Stiffness of Geocell Reinforced Soft Foundation Soils	M/s Netlon India, Vadodara	3.67	Dr.K.Rajagopal Dr.N.R.Krishnaswamy
3	Apr. 98 to Oct. 2000	Investigations on Anchored Retaining Walls for Railway and Highway Applications	MHRD, New Delhi	6.00	Dr.K. Rajagopal Dr. R. Sivanandan

S. No	Period	Title	Funding Agency	Amount (in lakhs)	Co-ordinator(s)
4	Jan. 99- Jan.2001	Modernisation of Traffic Engineering Laboratory	MHRD (MODROBS scheme)	5.00	Dr. R.Sivannadan
5	3 Yrs 3 Yrs 3 Yrs	Optical Design Processor for Structural Systems – Indo US Project KBES for Design of R.C.Multistorey Office Buildings High Performance Finite Element Analysis for Manufacturing Industries Using Parallel Virtual Machine Environment	NSF DST DST	5 4.92 12.59	Dr.C.S.Krishnamoorthy Dr.S.Rajeev & Dr.C.S.Krishnamoorthy Dr.C.S.Krishnamoorthy
6	3 Yrs	Experimental Analysis	AERB	15	Dr.N.Rajagopalan Dr.K.Ramamurthy
7	3 Yrs	Effects of various types and amounts of Fly Ash on Durability & Performance of Concrete	INCCMS	18.41	Dr.M.S.Mathews Dr.S.Somayaji Dr.B.Viswanathan
8	3 yrs	Techniques to improve cyclone resistant characteristics of roofing of industrial sheds	AICTE	7	Dr.M.S.Mathews
9	1995-99	Design criteria for block masonry	DST	4.65	Dr.K.Ramamurthy Dr.R.Ambalavanan
10	1996-99	Cost-effective construction technology	AICTE	5.00	Dr.K.Ramamurthy Dr.R.Ambalavanan
11	98-2000	Interlocking block masonry	BMTPC	7.50	Dr.K.Ramamurthy Dr.R.Ambalavanan
12	95-98	GIS Laboratory for Engineering Applications	AICTE	11	Dr.K.N.Satyanarayana Dr.Koshy Verghese Mr.S.K.Ramesh
13	97-99	Off-Line Planning and Simulation of Multiple Mobile Crane Lifts	DST	9.57	Dr.K.N.Satyanarayana Dr.Koshy Verghese Dr.N.Ramesh Babu
14	97-2000	Development of techniques for classification of urban features from remote sensed data for use in GIS applications	ISRO	4.5	Dr.Koshy Verghese Dr.B.Yegyanarayana (CS) Dr.Sukhendu Das (CS)

S. No	Period	Title	Funding Agency	Amount (in lakhs)	Co-ordinator(s)
15	1997-1999	Enhanced Traffic Management Using Simulation and GIS Tools	IITM (New Faculty scheme – Not an R & D Project)	0.50	Dr.R.Sivanandan
16	1994-98	Development of Appropriate Transport System Planning Technique for Indian Conditions	Volkswagen Foundation, Germany	20	Dr.V.Thamizh Arasan Prof.M.Wermuth, Tech. Univ. of Braunschweig, Germany
17	1993-98	Instability and non-linear behaviour of CFC Elements and Panels	AR & DB	5.21	Dr.V.Kalyanaraman
18	1998-2001	A Knowledge Based Computing System for Integrated Engineering of Steel Railway Bridges	DST	18.4	Dr.V.Kalyanaraman
19	1998-2000	Smart Control of Instability	ISRO	9.33	Dr.V.Kalyanaraman
20	1995-1998	Design and Development of Mechanically Deployable bridges	Technology Mission	68.15	Dr.V.Kalyanaraman Dr.N.G.Nair Dr.S.K.Malhotra
21	1994-99	Ultimate strength of Prestressed Containment Building	AERB	23	Dr.N.Achyutha Dr.V.Paramasivam
22	Ongoing	Standardisation of Damage Frequency Relationships for Flood Damage Assessment	DST	5.04	Dr.B.S.Thandaveswara Dr.K.Srinivasan
23	Ongoing	Reservoir Performance Analysis using Stochastic Stream Flow models	INCOH	6.30	Dr.B.S.Thandaveswara Dr.K.Srinivasan
24	Dec.97 – Mar. 2000	Development of Prioritisation needs in irrigation and drainage wastes using fuzzy set approaches	European Commission	60.00	Dr.K.Elango Dr.S.Mohan
25	Ju.97 – Jan. 2000	Intermittant water supply system	South Bank Univ. & DFID UK	20.00	Dr.K.Elango
26	1998-2000	Modernisation of Public Health Engineering Laboratory	MHRD	13.00	Dr.S.Mohan Mr.K.Gopalakrishna Dr.K.D.Chandrasekaran
27	1997-1998	Software Development for Watershed Analysis	DST	3.96	Dr.S.Mohan

S. No	Period	Title	Funding Agency	Amount (in lakhs)	Co-ordinator(s)
		& Management			
28	1999-2000	Computer Aided Instructional Module for Hydrology	CD Cell IIT Madras	1.10	Dr.K.Srinivasan
29	1996-1999	Development of External Fixators for Bone Fracture Repair	AICTE	2.0	Dr. Devdas Menon Dr.T.S.Gopakumar Dr.MP Chandrasekharan
30	1996-1999	Development of External Tibial Fixators	DST	4.0	Dr.Devdas Menon Dr.T.S.Gopakumar Dr.K.B.M.Nambudripad
31	1998-1999	Developing a Biomechanics Laboratory	MHRD	8.0	Dr.Devdas Menon Dr.K.M.Nambudripad

** Extension of the project till Sept. 1999 has been sought

5.2. Industrial Consultancy :

S. No	Name of the Faculty	Title	Industry	Amount (in lakhs)
1.	Dr.A.Ramachandraiah	Evaluation of Anechoic Chamber	Fluid Control Research Inst. Palghat	0.15
2.	Dr.A.Ramachandraiah	Evaluation of Hemi Anechoic Chamber	Kirolskar, Copeland	.50
3	Dr.A.Ramachandraiah	Assesment of Noise Pollution	MRTS & Indira Industries	0.12
4	Dr.K.N.Saryanarayana	Common-Effluent Treatment Plants Consultancy	TamilNadu Pollution Control Board	2
5	Dr.R.Ambalavanan	Quality Assurance of Building Materials, Concrete Mix Design	Advance Construction co., Ltd. Chennai – 34	0.5
6	Dr.R.Ambalavanan	Evaluation of HTS strands	Tata SSI Ltd., Chennai	0.19
7	Dr.R.Ambalavanan	Quality Assessment Investigation of Building Materials, and Advice	G.K.Shetty Builders Chennai	0.45
8	Dr.R.Ambalavanan	Design of foundation and superstructure for slum clearance scheme	Exec. Engineer TNSCB Salem	.20
9	Dr.R.Ambalavanan	Concrete Mix Design	RPP Constructions (P) Ltd	0.25
10	Dr.R.Ambalavanan	Investigation on Steel Reinforcement Rods	Exec. Engineer TNHB chennai	0.12
11	Dr.R.Ambalavanan	Quality Assessment of Building Materials	East Coast Construction & Industries Ltd., Chennai	0.25
12	Dr.R.Ambalavanan	Concrete Mix Design	Saravana Constructions (P) Ltd., Chennai	0.10

S. No	Name of the Faculty	Title	Industry	Amount (in lakhs)
13	Dr.R.Ambalavanan	Concrete Mix Design	Chief Enginner, Chennai Port Trust	0.10
14	Dr.R.Ambalavanan	Investigations on Construction Materials	M/s. Kier International Ltd., Chennai	0.25
15	Dr.R.Ambalavanan	Investigations on Construction Materials	M/s. Advance Construction Co., Ltd., Chennai	0.50
16	Dr.R.Ambalavanan	Sevice and Inspection of Condition of Foundation of Ammonia Storage	M/s. Nagarjuna Fertilizers and Chemicals Ltd., Kakinada	0.20
17	Dr.R.Ambalavanan	Investigation on Building Materials and Advice on their Suitability	Tamilnadu Housing Board, Chennai	0.40
18	Dr.K.Ananthanarayanan Dr.R. Sundaravdivelu & others	Technical Specification, Tender evaluation, commissioning dredger	Chilka development Authority	
19	Dr.B.S.Thandaveswara Dr.H.Achyutha Dr.K.Rajagopal	Mini Hydel Projects on Guntur Branch Canal – furnishing advice, designs and drawings for specified needs	The KCP Ltd.	0.85
20	Dr.B.S.Thandaveswara Dr.K.Srinivasan Dr.B.S.Murthy	Tirupur Water Supply Project - Strengthening of existing Water Distribution System	New Tirupur Area Development Corporation Ltd.	5.0
21.	Dr.S.Mohan Dr.D.V.S.Murthy Dr.T.Swaminathan Dr.S.Kumaraswamy Dr.R.Ambalavanan Dr.K.Ramamurthy Mr.K.Gopalakrishna Dr.KD. Chandrasekaran	Design of Storm Water Treatment Plant at NLC	Neyveli Lignite Corporation	5.00
22.	Dr.KD. Chandrasekaran	Alkali-aggregate reactivity test for fine and coarse aggregates and advice for the construction of Chennai Bypass (Phase-I)	IJM SCL Ltd., Chennai	0.05
23	Dr.KD. Chandrasekaran	Chemical Analysis of chloride and sulphate content in soil and water samples for location of Naphtha fired combined cycle power plant	Pillaiperumalnaidu village, T.N. KIER International Ltd., Che	0.18

S. No	Name of the Faculty	Title	Industry	Amount (in lakhs)
24	Dr.KD. Chandrasekaran	Efficiency testing of Multi-8 and Advice	Eureka Forbes Ltd., Chennai	0.05
25	Dr.K.Srinivasan Dr.K.Elango Dr.S.R.Gandhi	Technology Study Report – Summer storage reservoir pipe line designs	IFFCO, Nellore	About 2 lakhs
26	Dr.S.Mohan	Long Duration Artificial Recharge by Injection Wells	NLC Ltd.,	6.5
27	Dr.S.Mohan	Water Quality Analysis and Modelling of Ground Water in Neyveli Basin	NLC Ltd.,	17.00
28	Dr. A. Boominathan Dr. K. Rajagopal Dr.N.R.Krishnaswamy	Conducting Pile Load Test at the site of proposed Residential Complex for ONGC at ANWE and Intrepretation of Test Results	Tamil Nadu Housing Board, ANWE, Chennai	0.45
29	Dr.K.Rajagopal	Recommendations for the Repair of Sea Water Tanks at Birla Periclase Plant, Visakhapatnam	Gannon Dunkerley & Co. Ltd., Chennai	0.15
30	Dr.K. Rajagopal	Recommendations for the Construction of Pavement at Container Freight Station at Manali	Balmer Lawrie & Co. Ltd., Calcutta	1.01
31	Dr.K. Rajagopal	Finite Element Analysis of Pile Jetting and its Influence on Axial and Lateral Load Capacity	Florida Atlantic University, Boca Raton, USA	1.16 US\$ 2750.00
32	Dr. K.Rajagopal Dr.N.Kumar Pitchumani	Finite Element Analysis of Struttred Excavation in Colombo, Sri Lanka	M/s UFC Sincon (India) Pvt. Ltd., Chennai	0.15
33	Dr. K.Rajagopal Dr.N.R. Krishnaswamy Dr.N.Kumar Pitchumani	Recommendations for the Repair of Railway Track Near Katpadi Junction	Southern Railway, Chennai	0.40
34	Dr.K. Rajagopal	Testing and Recommendations of Design Parameters for Geosynthetics	Z-Tech (India) Pvt. Ltd., New Delhi	0.12
35	Dr.A.Boominathan Dr.N.R.Krishnaswamy	Insitu Dynamic Tests at 158 MW Diesel Power Plant Near Bangalore	Geo Engineers, Chennai	0.85

S. No	Name of the Faculty	Title	Industry	Amount (in lakhs)
36.	Dr.K.Rajagopal Dr.N.R.Krishnaswamy Dr.A.Boominathan	Foundation Recommendation of Shopping Complex at Koyembedu by CMDA	Chennai Metropolitan Development Authority, Chennai	1.36
37.	Dr. S.R. Gandhi Dr.R. Sundaravadivelu	Construction of fish landing centre at Gopalpur on sea	Gopalpur Port	1.00
38	Dr.S.R.Gandhi Dr. R. Sundaravadivelu	Dhamra Fishing Harbour	Gopalpur Port	6.40
39	Dr. S.R. Gandhi Dr.R. Sundaravadivelu Dr. M.R. Pranesh	Construction of shallow berth for handling gen. container cargo in JNPT	JNPT	9.00
40	Dr. S.R. Gandhi Dr.R. Sundaravadivelu Dr. M.R. Pranesh	Extension of berthing jetty at Vadinar	Kandla Port	10.00
41	Dr. S.R. Gandhi Dr. M.R. Pranesh Dr.R. Natarajan	Construction of slipway at Kandla Port	Kandla Port	12.00
42	Dr. S.R. Gandhi. Dr.R. Sundaravadivelu	Design of coast guard jetty at Port Blair	Navy	3.00
43	Dr. S.R. Gandhi Dr.R. Sundaravadivelu	Deepening of berth No. 10 & 11 at Mormugao Port	Mormugao Port	9.00
44	Dr. S.R. Gandhi	Foundation design for Kerala State Constr. Corporation Ltd.	KSCCL	0.25
45	Dr. S.R. Gandhi Dr.R. Sundaravadivelu	Preliminary design of jetty at BBI Power Company, Krishnapatnam	Simplex Concrete Piles India Ltd	0.20
46	Dr. S.R. Gandhi Dr. A. Ramachandraiah	Vibration study for Turbo Generator Foundation	Andhra Pradesh State Electricity Board.	0.20
47	Dr.S.R.Gandhi Dr.R. Sundaravadivelu	Foundation design	Geotech. Construction Private Limited	0.50
48	Dr.A.Boominathan Dr K Rajagopal Dr N R Krishnaswamy	Soil Liquefaction analysis for PFBR site at Kalpakkam	IGCAR, Kalpakkam	6.90
49	Dr. A. Boominathan Dr. S.R. Gandhi	Dynamic Pile test at Haldia	L & T, Mumbai	0.50
50	Dr.A.Boominathan Dr.N.R.Krishnaswamy Dr.S.R. Gandhi	Dynamic testing of piles at IOCL- DHDS unit, Haldia (WB)	Tecnimont S.p.A India Project Office, Mumbai	2.00
51	Dr. A.Boominathan	Field Vibration Tests for DHDS Project at Cochin Refinery Ltd.	L & T, ECC Construction Group, Chennai	0.50
52	Dr.A.Boominathan	Evaluation of In-situ Dynamic Soil Properties at TG Area, Malco	L & T, ECC Construction Group, Chennai	0.25

S. No	Name of the Faculty	Title	Industry	Amount (in lakhs)
53	Dr.A.Boominathan	Soil Investigation for construction of Kendriya Vidyalaya at GPRA Complex at Anna Nagar, Chennai	CPWD, Chennai - 40	0.06
54	Dr.A.Boominathan	Testing of soil samples for construction of Aquaform Dykes	Oshadira Aquaculture System Private Ltd. Chennai	0.05
55	Dr.N. Kumar Pitchumani Dr.K.D. Chandrasekaran	Recommendations for Foundation Treatment at Sterlite Industries, Tuticorin	Sterlite Industries, Tuticorin	0.18
56	Dr.N.Kumar Pitchumani	Geotechnical Investigations for M/s Sembawang-Sriram Container Freight Station	Dual Structurals (P) Ltd., Chennai	0.40
57	Dr.N.Kumar Pitchumani Dr.S.R. Gandhi	Recommendations for Improvement of Rock for Thiruvalluvar Rock Memorial, Kanyakumari	Tamilnadu Construction Corporation Ltd.	0.26
58	Dr.N. Kumar Pitchumani	Investigations in Rock for Construction of View Tower at Kanyakumari	Tamilnadu Tourism Development Corporation	0.20
59	Dr.P.K.Aravindan	Carrying out varying designs, discussions and site visits	Reliance Industries	2.0
60	Dr.P.K.Aravindan	Structural Design of CRL Head Quarters at Cochin	CCBA	3.0
61	Dr.P.K.Aravindan	Charges of the Analysis, design and preparation of drawing for Napier Bridge	Corporation of Chennai	3.5
62	Dr.P.K.Aravindan	Checking the design calculation and drawing of the proposed houses at Bangalore	Central Govt. Employees Welfare Housing Organisation	3.2
63	Dr.P.K.Aravindan	Checking the design calculation and drawing of the damaged mooring Dolphin	IFFCO	0.6
64	Dr.P.K.Aravindan	Structural design and drawing for III Jetty at Phoenix Bay in Port Blair	Surya Rao	2.5

S. No	Name of the Faculty	Title	Industry	Amount (in lakhs)
65	Dr.P.K.Aravindan	Construction of flyover Cooks Road & B.B.Road across river lines	Corporation of Chennai	4.0
66	Dr.P.K.Aravindan	Rehabilitation of cyclone damaged structures and maintenance Jetty at Kandia Port	Kandla Port Trust	3.25
67	Dr.P.K.Aravindan	Alternative tender designs of P.S.C. waffle slab, columns and raft for Information Technology Park	Nagarjuna Construction Ltd	0.6
68	Dr.P.K.Aravindan	Checking the tender designs prepared by M/s. BBR, Bangalore and M/s. Ascon, Dubai for Information Technology Park at Chennai	ETA Constructions Pvt. Ltd.,	0.6
69	Dr.P.K.Aravindan	Design of Blast/Fire wall for Cherlapalli LPG plant	Bharat Petroleum Corporation Ltd	0.6
70	Dr.P.K.Aravindan	Construction of POL, Terminal at Kakinada	Indian Oil Corporation	5.5
71	Dr.V.Kalyanaraman	Structural Soundness and Rehabilitation	Indian Navy, Kochi	1.8
72	Dr.V.Kalyanaraman	Design of 0.8T 7m Console Crane	Saudi Cranes	0.5
73	Dr.V.Kalyanaraman Dr.S.R.Satish Kumar	Designing and Drawing of Aluminium Truss		0.35
74	Dr.H.Achyutha	Tests on Elastomeric Bearings	HEVEA, Kottayam	0.20
75	Dr.H.Achyutha	Relaxation Tests on H.T.Wires	BIS	0.25
76	Dr.H.Achyutha	Proof Testing of Spring Hangers	Myricks	0.16
77	Dr.Devdas Menon Dr.K.N.Ramachandran	Design of P.G.Block Complx at Calicut	Guruvayurappan College	0.85
78	Dr.Devdas Menon Dr.K.N.Ramachandran	Design of Overhead Water Tank Complex at Edapal	Kerala Water Authority	0.80
79	Dr.Devdas Menon Dr.P.K.Aravindan Dr.A.Meher Prasad	Design of Perambur Flyover	Corporation Chennai	1.5
80	Dr.Devdas Menon	Review of Structural Design of Two Wharfs at Andamans	NIOT	1.0

S. No	Name of the Faculty	Title	Industry	Amount (in lakhs)
81	Dr.A.Meher Prasad	Design and Optimization of Shelter	ECIL, Hyderabad	0.80
82	Dr.A.Meher Prasad	Design of buried SS pipes	Salem Steel Plant, TN	0.20
83	Dr.A.Meher Prasad Dr.V.Ramjee	Strength assessment and retrofit at stone pillars at Rajiv Gandhi Ninaivakam, Sriperumbudur	CPWD, Madras	0.50
84	Dr.A.Meher Prasad	Crack study on stone pillars at Rajiv Gandhi Ninaivakam	CPWD, Madras	0.15
85	Dr.A.Meher Prasad Dr.P.K.Aravindan	Design of Fire wall for LNG storage tanks	Bharat Petroleum	0.60
86	Dr.A.Meher Prasad Dr.P.K.Aravindan	Design of blast resistant wall for LNG storage tanks	Indian Oil Corporation	0.60
87	Dr.A.Meher Prasad Dr.P.K.Aravindan	Proof Consultancy on Tital Park Building, Madras	ETA, Dubai	0.60
88	Dr.A.Meher Prasad Dr.P.K.Aravindan	Proof Consultancy on Tital Park Building, Madras	NCC Madras	0.60
89	Dr.A.Meher Prasad Dr.P.K.Aravindan	Proof Consultancy on Tital Park Build, Madras	L & T	0.60
90	Dr.V.Thamizh Arasan	Formation of New Highway along the Bank of River Adyar	Corporation of Chennai	7.00
91	Dr.V.Thamizh Arasan	Feasibility study for provision of grade separators at Sig. Intersedtions	Corporation of Chennai	2.8
92	Dr.V.Thamizh Arasan	Traffic Management Study and Investi-gation for provision of mini flyovers	Corporation of Chennai	2.6
93	Dr.V.Thamizh Arasan	Mix design and specifications checking for base and wearing courses of bituminous pavement	Highway and Rural Works Department, Chennai	0.25
94	Dr.V.Thamizh Arasan	Evaluation of suitability of bitumen to be used for pavement work	M/s. National Asphalt product and Construction Company, Chennai	.25
95	Dr.V.Thamizh Arasan	Mix design with alternative material for bituminous macadam work	IRCON International Ltd., Chennai	0.20

S. No	Name of the Faculty	Title	Industry	Amount (in lakhs)
96	Dr.V.Thamizh Arasan	Design of mix for wet-mix macadam and bituminous bearing and wearing courses	The Divisional Engineer (H) TNUDP Division II Madurai	0.45
97	Dr.V.Rengaraju Mr. M.Subbi Reddy	Job Mix Design and Advise on Bituminous Mixes like BM, DBM, SDC, AC, Sheet Asphalt and Sub base for Road (19 projects)	Govt. Departments and Private Contractors	0.21

5.3. RBIC:

S. No	Name of the Investigator	Title	Industry	Amount (in lakhs)
1.	Dr.S.Mohan	Long Duration Artificial Re-charge by Injection Wells	NLC Ltd.	6.5
2	Dr.S.Mohan	Water Quality Analysis and Modelling of Groundwater in Neyveli Basin	NLC Ltd.	17.0
3	Dr.S.Mohan	Studies of rainfall-runoff relationships for tank and chain of tank systems	PWD, Govt. of Tamilnadu	6.8
4	Dr.C.S.Krishnamoorthy	Centre for Finite Element Analysis and Design (CFEAD) – An Interdisciplinary Project		30
5	Dr.V.Kalyanaraman	Performance of Sleeved Columns System in earthquake	Tube Products (India) Ltd.	1.5

5.4 Retainer Consultancy:

S. No	Name of the faculty	Title	Industry	Amount (in Lakhs)
1	Dr. S.R. Gandhi	Foundation Design for L & T	Larson & Toubro, ECC Construction Group, Chennai	0.12
2	Dr. S.R. Gandhi	Foundation Design for Fitchner	Fitchner Consulting Engineers India Pvt. Ltd.	0.06

5.5 Journal Editorial Boards :

S. No	Name of the Faculty	Level	Journal
1	V.R.Rengaraju	Member	Journal Of Traffic and Transportation (Published at Chennai)

6. Research Publications :

(a) In Refereed National Journals :

1. Ramachandraiah A, "Some Aspects of Auditorium Acoustics", Journal of Acoustical Society of India, Vol. XXVI, pp. 418 to 420, 1998
2. Ravindranath and A.Ramachandraiah, "Evaluation of Enclosure Performance Through an Object Oriented Programming in C++", Journal of Acoustical Society of India, Vol.VIXXVI, pp 420 to 427, 1998.
3. Ramachandaiah A , A.K.Dey and S.R.Gandhi, "Vibration of Pond Ash Due to Confined Blasting", pp.301 to 307, Vol. XVI, 1998
4. Ramamurthy,K., "Planning and design of elevator systems in multi-storey buildings", Proc. Of the National Seminar on Building Services, Nov.26-28, 1998, Organised by the Institute for Research, Development and Training of construction trades and management, Bangalore
5. Prasad Varma Thampan,C.K., A. Meher Prasad and C.S.Krishnamoorthy, Genetic Algorithm based methodology for reliability-based structural optimization, Jl.of Structural Engineering, 25(1), April 1998, pp 49-55.
6. Madhavan Pillai,T.M. and A.Meher Prasad, "Fatigue reliability analysis and inspection strategy of jacket structures, Jl. Of Structural Engineering, 25(1), April 1998, pp 57-64.
7. Rajagopal, K. and V. Srihari, "Experimental Investigations on Pullout Capacity of Vertical Anchors", India Geotechnical Journal, Vol. 28, No.2, 1998, pp 147-166.
8. Rajagopal, K. and V. Srihari," Experimental Study on Retaining Walls Supported by Vertical Plate Anchors", Indian Geotechnical Journal, Vol. 28, No.3, 1998, pp 270-296.
9. Ramamurthy,K., V.Sathish, and R.Ambalavanan, "Factors influencing behaviour of masonry mortar", Bulletin of the Indian Concrete Institute, No.64, July -Sept, 1998
10. Narayanan,N, K.Ramamurthy and R.Ambalavanan, "Cost-effective construction with concrete hollow blocks, A field demonstration", Indian Buildings Congress News, Vol. 1, No.3, July 1998.

11. Ab.Adel.- Zaher, and R.Amablavanan, "Development & Behaviour of repair mortars for RC Components", Indian Concrete Journal, vol.72, Dec. 1998, pp 669-675.
12. Mohan S and V.Jolhi Prakash, "Crop Water Requirements in a Command Area - A comparative Analysis", Jl.of Institutions of Engineers (India), Civil Engg. Division, Vol.79, No.1, pp 73-77, 1998
13. Mohan S and M.Kesavan, "Waste Treatment System Modelling Using Neural Networks", Indian Journal of Engineering and Material Science, Vol.5, Aug. 1998.
14. Mohan S, H.Raman and K.Nagarajan, "Stochastic Linear Programming Model for Irrigation Planning", Jl. Of Indian Water Resources Society, Vol-18(4), No.2, April 1998, pp.28-34.
15. Reddy M.S., T.S.George and V.V.Anand, "Train operations and Platform Utility ", Institution of Engineers India Vol. 79, pp124-128, 1998.
16. Kindaich R, R.Usami and S.Kumar, "A hysteresis model based on damage index for steel bridge piers", Jl. Of Structural Engineering JSCE, Vol. 44A, 667-678, 1998. (in Japan)
17. Devdas Menon and P.Srinivasa Rao, "Reliability of Wind-Resistant Design of Tubular Reinforced Concrete Towers, Jl. Of Structural Engineering, SERC, Vol.25, pp 21-29, April 1998
18. Devdas Menon and P.Srinivasa.Rao., "Generation of Random Variable Models in Structural Reliability Using a Hermite Integration Based Formulation, Jl. Of the Institution of Engineers (India) Civil Engg. Div., Vol.79, pp 84-90, Aug. 1998
19. Nambudripad K.B.M. and Devdas Menon, "Application of Fuzzy Logic Student Evaluation, The Indian Journal of Technical Education, I.S.T.E., Vol.24, No.4, pp 1-7, Oct. 1998.
20. Rajagopalan N, N.Lakshmanan and C.Antony Jeyasekar , "Damage Assessment in R.C.Beams using Natural Frequencies, Jl. Of Structural Engg. 1998.

(b) In Refereed International Journals :

1. Thamizh Arasan V, V.R.Rengaraju, and K.V.Krishna Rao, "Mode choice for work journeys of urban travellers owing motorized vehicles in India", Journal of Transportation Planning and Technology, U.K. 22-27-45 1998.
2. Kalyanaraman V and K.Srinivasa Rao, "Torsional-flexural Buckling of Singly Symmetric Cold-formed Steel Beam Columns", Jl. Of Construct. Steel . Res. Vol.46, Nos. 1-3 paper number 328, 1998
3. Kalyanaraman V, B.N.Sridhara and Vikram Thairani, "Core Loaded Earthquake Resistant Bracing System", Construct, Steel. Res. Vol. 46, Nos. 1-3 number 328, 1998
4. Pattnaik,S.B, S.Mohan and V.M.Tom, "Urban Bus Transit Route Network Design using Genetic Algorithm", Jl. Of Transportation Engineering, ASCE, Vol.124, No.4, 1998

5. Usami T and S. Kumar, "Inelastic Seismic Design verification method for Steel Bridge Piers using a damage index based hysteretic model, Engineering Structures, Vol. 20, Nos. 4-6, 472-480, 1998
6. Devdas Menon, "Moment-Curvature Relationships to Estimate Deflection and Second Order Moments in Wind-loaded RC Chimneys and Towers, Wind and Structures (Techno-Press), Vol.1, No.3, pp.255-269, Sept 1998.

(c) In Proceedings of National Conferences :

1. Kurian,N.P., SHELL FOUNDATIONS – THE ASIAN CHOICE, KEYNOTE PAPER (invited) Geotechnical Engineering Developments in Asia", Proc. 4th Regional Conference in Geotechnical Engineering (GEOTROPIKA), Johor Bahru Malaysia, 1998, pp 21-36
2. Ramamurthy,K., "Planning and design of elevator systems in multistorey buildings", Proc. Of the National Seminar on Building Servies, Nov.26-28, 1998, Bangalore.
3. Sreenivasulu G and A.Ramachandraiah, "A study on Acoustical characteristics of reverbaration fields", MIRC-ASA Conference, Page 4, 1998 (As an abstract)
4. Rajagopal K, N.R. Krishnaswamy and N. Unnikrishnan, "Reinforced Soil Embankments under Montonic and Cyclic Loading", Indian Geotechnical Conference-1998, Dec. 7-10, New Delhi, Vol.2, pp. 191-196.
5. Rajagopal, K. and G.Sireesha. "Finite Element Analysis of Bearing Capacity of Soils", Proc.. of Indian Geotechnical Conference, Dec. 7-10, New Delhi, Vol. 1, 1998, pp 167-170.
6. Rajagopal, K. "Design of Reinforced Soil Retaining Walls and Bridge Abutments", Proc. Of the National Workshop on Reinforcement of Ground and Slopes, Aug. 21-22, IIT Kanpur, 1998, pp 66-73.
7. Dey. A.K, S.Sharma, S.Selvam and S.R.Gandhi, "Application of Cone Penetration Test to evaluate Densification of Pond Ash by Blasting", Proc. Of Indian Geotechnical Conference 1998, Vol.1, 1998, IIT Delhi, Dec. 7-10, 1998 pp. 217-220.
8. Dey, A.K., S.R.Gandhi, and S.Selvam, "Blast Densification of Pond Ash", Proc. of Indian Geotechnical Practice - Organised by Indian Geotechnical Society, Madras Chapter at Anna University on Nov. 28, 1998, 1998, pp. 10-24.
9. Boominathan, A. and T. Lakshmi, "Dynamic Experiments on Pile Groups under Vertical Vibrations", Proc. of Indian Geotechnical Conference-1998, New Delhi, Vol. 1, pp 95-98, 1998.
10. Pitchumani, N.K. and M.R.Madhav, "Analysis of multiple reinforcements in foundation beds", National Workshop on Reinforcement of Ground and Slopes, IIT Kanpur, pp. 58-65, 1998.
11. Pitchumani, N.K. and B. Dasgupta, "Analysis and Design of Pressure Shaft Liners", Indian Geotechnical Fonference-98, New Delhi, 1998, pp 331-334.

12. Thamizh Arasan V and D.Mallikharjuna Rao, "A probabilistic approach to cycle time setting for traffic signals", Proceedings of Symposium on Mathematical Methods and Applications, IIT Madras, 19 (abstract) 1998.
13. Sivanandan R, and S. Pradeep, "Application of a Simulation-cum-GOS Tool for Traffic Congestion Management", Proceedings of the National Seminar on Road Transportation, Issues & Strategies, Thapar Institute of Engineering and Technology, pp 121-126, Oct. 23-24 1998.
14. Kalyanaraman, V., "Opportunities for steel in construction", Proc. National Seminar on Steel & Construction Industry Partnership, Oct. 9, 1998, Bangalore, Ministry of Mines, Govt. of India.
15. Miraje R and V.Kalyanaraman, "Non-linear Behaviour of CFC struts in the Post-Local Buckling Range", Nonlinear Mechanics, Proc. 8th NASAS, Oct. 9-10, 1998, IIT Madras, Allied Publishers
16. Kalyanaraman V , B.N.Sridhara, V.Thairani and B.Ramachandran, "A sleeved Bracing System for Earthquake Resistant Design of Tall Buildings", Proc. Eleventh Symp. On Earthquake Engineering, University of Roorkee, Dec. 17-19, 1998, pp.713-720
17. Gopalakrishna,K "Treatment of Wastewater from Animal Glue Industry using R.B.C.", National Conference on Environmental Engineering, Jhansi, April 1998.
18. Gopalakrishna,K "Treatment of Wastewater from Sago Industries, 14th National Conference of Environmental Engineers – Hyderabad, Aug. 98.
19. Okamoto T, S.Kumar and S. Mizutani, "Inelastic Seismic Response Analysis of Thin-Walled Steel Bridge Piers", Proc. of Tenth Earthquake Engineering Symposium, Yokohama, Nov. 25-27, 1998, published by Steering Committee, ISCE 2359-2362, Japan.
20. Rajagopalan N, K.Natarajan and A.Rajaraman – Influence of Material Modelling Aspects in Non linear Finite Element Analysis, National Seminar on Aero Structures (NASAS '98) on Nonlinear Mechanics, IIT Madras pp 70-79, Oct. 9-10.
21. Ab.Adel.- Zaher, and R.Ambalavanan, "Bond Strength of SBR Latex modified repair mortars, Proc. of National Seminar on High Performance Concretes. May 1998, Chennai. Pp TSS – 23-30

(d) In Proceedings of International Conference:

1. Mathews M S, " Restoration of Lourdes Church at Trichinopoly", International Conference on "Monuments in the Course of Time", Oct. 1998, University of Karlsruhe, Germany
2. Sathish V, K Ramamurthy and R Ambalavanan, "A study towards redesignation of masonry mortar", Proc. of the 5th Australasian masonry conference, July 1-3. Gladstone, Australia, pp – 345 – 353.
3. Anand, K.B., and K Ramamurthy., "Development and evaluation of an interlocking concrete block masonry system", Proc. of the 5th Australasian Masonry Conference, July 1-3. Gladstone, Australia pp 13 – 23.

4. Kurian,N.P and G.Seetharamayya, "Comparative behaviour of displacement and replacement piles under axial load", Proceedings, 6th East-Asia-Pacific Conference on Structural Engineering and Construction, Taipei, Vol.3, pp.1835-1840.
5. Thamizh Arasan V, " Urban Transportation: Planning to meet the future demand", Proceedings of the International Conference on South Asia Transport Vision – 2020, New Delhi, 100-104, 1998.
6. Thamizh Arasan V and D.Mallikharjuna Rao, "Estimation of intergreen interval for maximum safety at traffic signals", Proceedings of International Conference on Transportation into the Next Millennium, Singapore, 131-140, 1998.
7. Sivanandan R,"Intelligent Transportation Systems (ITS) Applications for India", Proc. of the International Seminar on Highway Safety Management & Devices, New Delhi, pp. III-122 to III-133, 6-7 Nov. 1998
8. Krishnaswamy N R, K.Rajagopal, and G.Madhavi Latha , "Geocell Reinforcement for Construction of Embankments over Soft Clay Foundation", Proc. Of the Second International Conference on Ground Improvement Techniques, Singapore, 7-10, Oct. 1998, pp 251-258.
9. Jaya,K.P. and A. Meher Prasad, "Dynamic response of embedded foundation in a stratified soil using cone frustrums, Proc. of the fifth International Conference on Tall Buildinga, Hong Kong, 9-11, Dec. 1998, paper A115.
10. Achyutha,H, "Heavy Concrete in Nuclear Power Reactor Structures", National Seminar on High Performance Concretes, May, 98, Chennai, pp TSS 11-TS5-13.
11. Srinivasan K and M.C.Philipose, Effect of Hedging on over-year Reservoir Performance, Water Resources Management, 1998, Vol.12 pp.95-120.
12. Devdas Menon and V Roshni, "Globalization: The Notion of Progress versus the Reality of Entropy, International Conference on "Europe and South Asia 500 Years", Institute of Social Sciences (New Delhi) Calicut and Cochin, May 1998
13. Nambudripad K B M, D.Menon and N.V.P.Kumar, "A Fuzzy Failure Criterion in Student Evaluation", International Conference on Civil Engineering, CSCE, Halifax, Canada, Proc. Vol1. Pp 1-10, June 1998.
14. Nambudripad K B M, D.Menon and S.Sreechand, "Structural Evaluation of External Tibial Fixators in Orthopaedic Biomechanics, First International Conference on Engineering Computational Technology, Edinburghm Scotland, Aug. 1998
15. Rajagopalan N, N.Lakshmanan and C.Antony Jeyasekar – Damage Assessment in R.C.Structures, International Conference on Theoretical Applied, Computational and Mechanics, IIT Kharagpur Dec. 1998.

7. Distinguished Visitors to the Department :

S. No	Name of the Visitor and Designation	Date of visit	Purpose of visit
1.	Dr.Harihar Rajaram , Assistant Profesoor Dept of Civil Engg. Univ. of Colorado Boulder, USA	January 7, 1999	To deliver lectures
2.	Mr.Edmund Atkinson Hydraulic Research Wallingford,UK	January 10 to February 2, 1999	In connection with European Commission Sponsored Research Project
3.	Mr.Cinus Salvatore Hydro Control, Sardinia, Italy	January 10 to February 2, 1999	In connection with European Commission Sponsored Research Project
4.	Dr.F.G.Rhode Professor Institute for Hydraulic Engg. & Water Management RWTH, Aachen, Germany	January 15-22, 1999	To deliver lectures
5.	Prof.W.Wermuth Institut fur verkehr und Stadtbauswesen, Technische Universitat Braunschweig, Germany	Feb 20-24 1999	For discussion in connection with an ongoing Indo-German Collaborative Research Project and on other academic matters of mutual interest
6.	Dr.K.Shanmuganathan Head (Retd.) Overseas Dev. Unit of Hydraulic Research Station Wallingford, UK	March 12, 1999	In connection with European Commission Sponsored Research Project

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 New courses Introduced:

Sl.No.	Course No.	Title	Faculty
1.	CS 639	Memory Based and Qualitative Reasoning in Artificial Intelligence	Dr.Deepak Khemani
2.	CS 638	Computational Intelligence	Dr.Deepak Khemani
3.	CS 641	Real-Time Computing and Communications	Dr.C.Siva Ram Murthy
4.	CS 642	Dependable Computing and Communications	Dr.C.Siva Ram Murthy
5.	CS 648	E-Commerce	Dr.S.V.Raghavan
6.	CS 650	Cryptography and Network Security	Dr.S.V.Raghavan

2.2 Students on Roll:

Programme	I Year	II Year	III Year	IV Year	V Year	Other	Total
B.Tech	31	32	33	31	-	-	127
M.Tech	34	51	-	-	-	-	85
M.S.	14	1	2	8	-	-	25
Ph.D.	4	1	2	8	-	-	15
Total	83	85	37	47	-	-	252

2.3 Number of Degree Awarded :

Programme	Number Awarded
B.Tech	29
M.Tech	37
M.S.	14
Ph.D.	6
Total	86

3. Faculty Name and Qualification:

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, Operating Systems and Networks, Distributed and parallel systems, Object Oriented Systems and databases, Performance evaluation
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

Chandra Sekhar C., Ph.D (IIT Madras)	Speech recognition, Neural Networks, Digital Systems.
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.

Scientific Officer Gr.I

Sanjeeva Murthy J.T, M.Tech (IIT Delhi)	Pattern recognition, Computer Vision.
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3.1 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.	Ananda Rao	Ph.D	NCOOT98 Conference.	Oct 22-24 Pondicherry
2.	K.Chandra Sekharaiah	Ph.D	NCOOT98 Conference	Oct 22 - 24 Pondicherry
3.	Siva Rama Krishna Rao	M.S	NCC '99	Jan 27- Feb 02 Kharagpur
4.	Jyotsana Balleda	M.S.	NCC '99	Jan 27 – Feb 02 Kharagpur
5.	Rajith.R.I	M.S	Computing ' 99 Northern Regional Conference of CSI	Feb 27 - 28 Indore
6.	M.Shiva Kumar	M.S	6 th International Conference on Advanced Computing Pune	Dec 14 - 16
7.	M.Sreekanth	M.S	NCOOT'98	Oct 22-24 Pondicherry

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.Kamala Krithivasan	Molecular Computing	Dec 14 - Dec 15, 98

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	Employment in Computer Education	Chennai , Feb - 99.

3.4 Visits abroad by faculty:

S.No.	Name of faculty	Country visited	Date	Purpose of visit
1.	Dr C R Muthukrishnan	USA	June 1998	World Congress on Information Technology
		Singapore	May 1999	IBM Internet-II Seminar
2.	Dr.S.V.Raghavan	USA	Mar 1 - 5 1999	Meeting regarding design of the Backbone for Sankhya Vahini, a National High Speed Network
3.	Dr.C.Pandu Rangan	Korea	Dec 14 - 16	To chair a session at the Ninth Annual International Symposium on Algorithms & Computation
4.	Dr.B.Yegnanarayana	USA	May - June 1998	To Present papers

S.No.	Name of faculty	Country visited	Date	Purpose of visit
5.	Dr.T.A.Gonsalves	USA	May 1998	Conference/Meetings
6.	Dr.T.A.Gonsalves	USA	Nov 24 - 28	Technical Discussions
7.	Dr.S.Raman	USA	Aug 97 - Aug 98	Sabbatical leave.
8.	Dr.D.Janaki Ram	USA	Oct 26 - 28 1998	To present papers
9.	Dr.P.Sreenivasa Kumar	USA	Mar 21 - April 2, 1999	To present paper

3.5 Honours and Awards:

S.No.	Name of faculty Date	Honours/Awards	Awarded by
1.	Dr.B.Yegnanarayana June 6, 98	Achuta Menon Prize	Dravidian Linguistics Association of India
2.	Dr.S.V.Raghavan	Silver Core	IFIP

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

Prof.C.R.Muthukrishnan has been the Chairman, Chapter of the Computer Society for India 1998-99

Prof. C R Muthurkrishnan has been invited to serve as a member of Task Force on Information Technology of the Government of Tamil Nadu.

Prof.C.R.Muthukrishnan has been invited to serve as a member of IT Panel ,CII Southern Region of IT Panel 1998 - 1999 and 1999 - 2000.

5. Research & Consultancy:

5.1. Sponsored project on hand

S.No.	Title	Period	Funding Agency	Amount	Coordinator(s)
1.	Computational Geometry and applications	1994-98	DST	Rs.5.5 lakhs	Dr.C.Pandu Rangan
2.	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
3.	Information Recovery from Partial Data for Image Processing Application	1997 - 200	ONR,USA	Rs.18.9 lakhs	Dr.B.Yegnanarayana Dr.Sukhendu Das
4.	High Performance Architectures and Algorithms for Scientific and Engineering Applications	1998 - 2000	HRD	Rs.10 lakhs	Dr.C.Siva Ram Murthy
5.	Tools for course	1998 - 2000	DST	Rs.10.6 lakhs	Dr.D.Janaki Ram
6.	Distributed computing	1997-99	ISRO	Rs.10 lakhs	Dr.D.Janaki Ram Dr.M.Ramakrishna
7.	Trends in Data Processing	1999-2000	TCS	Rs.5 lakhs	Dr.C.Pandu Rangan
8.	High Performance Architecture and Algorithm for Scientific & Engg., Applications	1999-2000	MHRD	Rs.10 lakhs	Dr.Kamala Krithivasan
9.	Adaptive Error Correcting codes for Multimedia over ATM	1998-2000	DST	Rs.22 lakhs	Dr.Kamala Krithivasan
10.	Computer Aided Teaching of Engg Graphics	1998-2000	MHRD	Rs 11 lakhs	Dr. C R Muthu- Krishnan and Dr N Sivaprasad

5.2 RBIC :

S.No.	Name of investigator/ Co investigator	Title	Value
1.	Dr.B.Yegnanarayana	Speaker Recognition	US \$ 16000

5.3. Research Publications:

(a) In Refereed Journals (National & International)

1. B.Yegnanarayana and R.N.J Veldhuis, Extraction of vocal-tract system characteristics from speech signals, IEEE Trans. on Speech and Audio Processing, vol.6, no.4, pp.313-327, July 1998.
2. P.P.Raghu and B.Yegnanarayana, Supervised texture classification using a probabilistic network and constraint satisfaction model, IEEE Trans. on Neural Networks, vol.9, no.3, pp.516-522, May 1998.
3. C. d'Alessandrò, V.Darsinos and B.Yegnanarayana, Effectiveness of a periodic and aperiodic decomposition method for analysis of voice sources, IEEE Trans. Speech and Audio Processing, vol.6, no.1, pp. 12-23, Jan. 1998.
4. B.Yegnanarayana, C.d'Alessandro and V.Darsinos, An interactive algorithm for decomposition of speech signals into periodic and aperiodic components, IEEE Trans. on Speech and Audio Processing, vol.6, no.1, pp.1-11, Jan. 1998.
5. M.Sarkar, B.Yegnanarayana and D. Khemani, Back propagation learning algorithms for classification with fuzzy mean square error, pattern Recognition letters, vol.19, no.1, pp.43-51, 1998.
6. V.T.Chakravarthy and Kamala Krithivasan, some results on simple Extended H systems, Romanian Journal of Information Science and Technology, Vol No.3, pp. 201-286, 1998.
7. Kamala Krithivasan and Shri Raghav Kaushik, Some results on Array Splicing, Computing with Bio Molecules, Ed. G.Paun, Springer, pp. 295-313, 1998.
8. V.Radhakrishnan, V.T.Chakravarthy and Kamala Krithivasan, Pattern Matching in Matrix Grammars, Journal of Automata, Languages and Combinatorics, Vol 3, pp 59 - 72, 1998.
9. S.Jeyalakshmi and Kamala Krithivasan, Visibility of Rectangular Objects in L_1 Metric, International Journal of Computer Mathematics, Vol. 70, pp. 149-163, 1998.
10. D.Antony Louis Piriya Kumar and C.Siva Ram Murthy, "Distributed Computation for a Hypercube Network of Sensor Driven Processors with Communication Delays Including Setup Time", IEEE Trans. on Systems, Man, and Cybernetics, vol. 28, no.2, pp. 245-251, 1998.

11. G. Manimaran and C. Siva Ram Murthy, "An Efficient Dynamic Scheduling Algorithm for Multiprocessor Real-time Systems", *IEEE Trans. on Parallel and Distributed Systems*, vol. 9, no.3, pp. 312-319, 1998.
12. K. Bhuvaneshwari and C. Siva Ram Murthy, "A Fault Tolerant Systolic Mesh for Linear System Solution", *International Journal of Computer Mathematics*, vol. 67, no. 3-4, pp. 315-332, 1998.
13. Machiraju Vijay and C. Siva Ram Murthy, "Real-time Simulation of Dynamic Systems on Systolic Arrays", *IEEE Trans. on Industrial Electronics*, vol. 45 no. 2, pp. 326-332, 1998.
14. G. Manimaran, M. Shashidhar, Anand Manikutty and C. Siva Ram Murthy, "Integrated Scheduling of Tasks and Messages in Distributed Real-Time systems", *Journal of Parallel and Distributed Computing Practices*, vol.1, no.2, 1998.
15. B. Pradeep and C. Siva Ram Murthy, "A Constant Time String Shuffle Algorithm on Reconfigurable Meshes", *International Journal of Computer Mathematics*, vol. 68, no.3-4, pp. 251-259, 1998.
16. G. Manimaran and C. Siva Ram Murthy, "A New Study for Fault-Tolerant Real-time Dynamic Scheduling Algorithms", *Journal of Systems Architecture*, vol.45, no. 1/2, 1998.
17. G. Manimaran, C. Siva Ram Murthy, and Krithi Ramamritham, "A New Approach for Scheduling of Parallelizable Tasks in Real-time Multiprocessor Systems", *Journal of Real-time Systems*, vol. 15, pp. 39-60, 1998.
18. K. Mahesh, G. Manimaran, C. Siva Ram Murthy, and Arun Somani, "Scheduling Algorithms with Fault Detection and Location Capabilities for Real-time Multiprocessor Systems", *Journal of Parallel and Distributed Computing*, vol. 51, no.2, pp. 136-150, 1998.
19. K. N. Balasubramanya Murthy, K. Bhuvaneshwari, and C. Siva Ram Murthy, "A New Algorithm Based on Givens Rotations for Solving Linear Equations on Fault-tolerant Mesh-connected Processors", *IEEE Trans. on Parallel and Distributed Systems*, vol. 9, no.8, pp. 825-832, 1998.
20. R. Sriram, G. Manimaran, and C. Siva Ram Murthy, "Preferred Link Based Delay Constrained Least Cost Routing in Wide Area Networks", *Computer Communications*, vol. 21, no.8, pp. 1655-1669, 1998.
21. R. Sriram, G. Manimaran, and C. Siva Ram Murthy, "Algorithm for Delay-Constrained Low-Cost Multicast Tree Construction", *Computer Communications*, vol. 21, no.8, pp. 1693-1706, 1998.
22. G. Manimaran and C. Siva Ram Murthy, "A Fault-tolerant Dynamic Scheduling Algorithm for Real-time Multiprocessor Systems and its Analysis", *IEEE Trans. on Parallel and Distributed Systems*, vol. 9, no.11, pp. 1137-1152, 1998.
23. V. Sudhakar and C. Siva Ram Murthy, "Efficient Mapping of Back propagation Algorithm onto a Network of Workstations", *IEEE Trans. on Systems, man, and Cybernetics*, vol. 28, no.6, pp. 841-848, 1998.

24. G.Mohan, C.Siva Ram Murthy, and R.Vijay Shankar, "Permutation Routing in Wavelength-routed Wrapped-around Shuffle Networks using Fewer Wavelengths", *Computer Networks and ISDN Systems* vol. 30, pp. 2349-2358, 1998.
25. Ajith Tom P. and C.Siva Ram Murthy, "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.
26. 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.
27. 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.
28. G.Mohan and C.Siva Ram Murthy, "A Time Optimal Wavelength Rerouting Algorithm for WDM Networks", *IEEE/OSA Journal of Light wave Technology*, vol.17, no.3, pp. 406-417, 1999.
29. P.Sreenivasa Kumar and C.E.Veni Madhavan, Minimal Vertex Separators of Choral graphs, *Discrete Applied Mathematics*, vol. 89, 1998, pp. 155 - 168.

(b) In Proceedings of National & International Conferences

1. V.Radhakrishnan, V.T.Chakravarthy, Kamala Krithivasan, Some properties of Matrix Grammars - Parallel Image Analysis, Sixth International Workshop on Parallel Image Processing and Analysis Theory and Applications, Jan 15 - 16, pp. 213-225, 1999.
2. S.V.Ramasubramanian and Kamala Krithivasan, Finite Automata Principles for 2D image and 3D object representation, Sixth International Workshop on Parallel Image Processing and Analysis-Theory and Applications, Jan 15-16, 94-110, 1999.
3. A.Reman and Kamala Krithivasan, Path Planning in Three Dimension-An Approximate Algorithm, International Symposium on Intelligent Robotic Systems, Jan 9 -11, 1998, Bangalore, India.
4. S.Jeyalakshmi and Kamala Krithivasan, Some Optimal Isothetic Polygon Enclosing K points, International Symposium on Intelligent Robotic Systems, Jan 9 -11, 1998, Bangalore, India.
5. Rahul Santhanam and Kamala Krithivasan, Splicing on Graph Connections, Conference on Graph Connections, Cochin, Jan 28-31, 1998. pp. 95-98.
6. V.T.Chakravarthy and Kamala Krithivasan, Some results on Simple Extended H systems, Presented by Paun, Molecular Computing Workshop, Brno, Czech, August 22-24, 1998.
7. Kamala Krithivasan, Tutorial on Recent Trends in Formal Language Theory, National Seminar on TCS, Bhuvaneshwar, June 11-14, 1998.
8. A.Arvind and Kamala Krithivasan, A note on Simple Extended H - systems Molecular Computing Workshop, Chennai, Dec. 1998.

9. N.Jagadeesh Babu, M. Sanjay, B.Yegnanarayana and Sukhendu Das, Matching noisy bitmap images based on distance transform, ISIRS'98, Bangalore, Jan 9 -1 2, 1998.
10. B.Yegnanarayana, G.Pavan Kumar and Sukhendu Das, One-dimensional Gabor filtering for texture edge detection, Indian Conf. on Computer Vision, Graphics and Image Processing, New Delhi, Dec 21-23, 1998, pp. 82-88.
11. M.Sanjay, Sukhendu Das, B.Yegnanarayana, Robust template matching for noisy bitmap images invariant to translation and rotation, Indian Conf. on Computer Vision, Graphics and Image Processing, New Delhi, Dec. 21-23, 1998, pp. 82-88.
12. Manish Sarkar and B.Yegnanarayana, Fuzzy-rough membership functions, Proc. IEEE Int. Conf. on Systems, Man and Cybernetics, California, USA, Oct 11-14, 1998.
13. Manish Sarkar and B.Yegnanarayana, A Review on merging some recent techniques with artificial neural networks, Proc. IEEE Int. Conf. on Systems, Man and Cybernetics, California, USA, Oct 11 - 14, 1998.
14. Manish Sarkar and B.Yegnanarayana, Fuzzy-rough neural networks, Proc. IEEE Int. Conf. on Systems, Man and Cybernetics, California, USA, Oct 11-14, 1998.
15. Manish Sarkar and B.Yegnanarayana, Rough-Fuzzy membership functions, Proc. IEEE World Congress on Computational Intelligence Alaska, May 4-9, 1998, pp. 796-801.
16. Manish Sarkar and B.Yegnanarayana, Application of fuzzy-rough sets in modular neural networks, Proc. IEEE World Congress on Computational Intelligence, Alaska, May 4 - 9, 1998, pp. 741 - 746.
17. C.Chandra Sekhar and B.Yegnanarayana, Modular Networks and constraint satisfaction model for recognition of stop-consonant - Vowel (SCV) utterances, Proc. IEEE World Congress on Computational Intelligence, Alaska, May 4-9, 1998, pp. 1206-1211.
18. B.Yegnanarayana, Anitha Mary Jacob and Aruna Bayya, Spectrum estimation through group-delay functions, IEEE DSP Workshop, Aug 9 - 12, 1998.
19. Aruna Bayya and B.Yegnanarayana Robus features for speech recognition systems, Proc. ICSLP, Sydney, Australia, No. 30 - Dec 4, 1998.
20. K.Mahesh, G.Manimaran, C.Siva Ram Murthy , and Arun Somani, "Scheduling Algorithms Exploiting Spare Capacity and Tasks' Laxities for Fault Detection and Location in Real-time Multiprocessor Systems", in Proc. 12th IEEE International Parallel Processing Symposium, FL, USA, march 30-April 3, 1998.
21. Samphel Nordan, S.Balaji, G.Manimaran, and C.Siva Ram Murthy, "Deterministic Best Effort and Planning Based Protocols for Real-time Communication in Multiple Access Networks", in Proc. 6th IEEE International Workshop on Parallel and Distributed Real-time Systems, FL, USA, March 30-April 3, 1998.

22. I.Santosh Kumar, G.Manimaran, and C.Siva Ram Murthy, "Static Scheduling of Object-based Real-time Tasks with Probabilistic Conditional Branches in Distributed Systems", in Proc. 6th IEEE International Workshop on Parallel and Distributed Real-time Systems, FL, USA, March 30 - April 3, 1998.
23. R.Sriram, G.Manimaran, and C. Siva Ram Murthy, "Air Traffic Control System", accepted for presentation at the 6th IEEE International Workshop on Parallel and Distributed Real-time Systems, FL, USA, March 30- April 3, 1998.
24. D. Antony Louis Piriya Kumar , C.Siva Ram Murthy, and Paul Levi, " A New A* Based Optimal Task Scheduling in Heterogeneous Multiprocessor Systems", in Proc. High Performance Computing and Networking Conference, Amsterdam, April 21-23, pp. 315-323, 1998.
25. G.Mohan and C. Siva Ram Murthy, "Efficient Algorithms for Wavelength Rerouting in WDM Multi-fiber Unidirectional Ring Networks", Proc. IEEE Singapore International Conference on Networks, Singapore, June 30 - July 3, 1998.
26. Samphel Norden, G.Manimaran, and C. Siva Ram Murthy, " New Protocols for Hard Real-time Communication in the Switched LAN Environment", in Proc. 23rd IEEE Annual Conference on Local Computer Networks (LCN'98), Boston, USA, October 11 -14, 1998.
27. Anita Mittal, G.Manimaran, and C.Siva Ram Murthy, "Integrated Dynamic Scheduling of Hard and QoS Degradable Real-Time Tasks in Multiprocessor Systems", in Proc. 5th International Conference on Real-Time Computing Systems and Applications (RTCSA '98), Hiroshima, Japan, October 27-29, 1998.
28. U.V.Ramesh Chandra and C.Siva Ram Murthy, "A Faster Algorithm for Solving Linear Algebraic Equations on the Star Graph", in Proc. International Conference on Advanced Computing, Pune, December 14-16, 1998.
29. G.Mohan and C.Siva Ram Murthy, " A Time Optimal Wavelength Rerouting Algorithm for WDM Networks", accepted for presentation at the IEEE International Conference on Global Connectivity in Energy, Computer Communication, and Control, New Delhi, December 17-19, 1998.
30. S.Raman and T.S.Appan, "A Variation of Partition Algorithm for Mining Association Rules in Very Large Databases", presented in 'national Seminar on Business Processing Redesign using Information Technology (BPRIT-98), Sambalpur, Sep. 1998.
31. S.Shankara Raman and Deepak Khemani, Synthesizing solutions from memory Chunk, presented in Proceedings of AAI-98 Spring Symposium on Multimodel Reasoning 102-105, March 1998.
32. Ganesh K. Prabhakar and Deepak Khemani "Trace Based Diagnosis " Presented in Proceedings KBCS-98, 91-98, Dec. 1998.
33. D.Janaki Ram, "Dynamically Mutable Multiple Abstractions", Proceedings of the second National Conference on OOT, Pondicherry, 1998 pp. 46-55
34. D.Janaki Ram , " Seamless Integration of Mobility into Distributed Systems", 9th IFIP, IEEE Conference, DSOM 98, Delaware,1998, pp. 65-79.

35. D.Janaki Ram. " New Object Models", DEXA98, Vienna, Austria, IEEE, pp. 446-451.
36. "Matching Noisy Bitmap Images based on Distance Transform". N.Jagadeesh Babu, M.Sanjay and Sukhendu Das; Proceedings of the International Symposium on Intelligent Robotic Systems; Jan 10 -12 , 1998, Bangalore, India, pp. 386-391.
37. A.Drolshagen, C.Chandra Sekhar, and W.Anheier, "Design of a residue number arithmetic based circuit for pipelined comutation of auto correlation coefficients of speech signal", International Conference on VLSI Design, Chennai, pp. 122-127, Jan. 1998.
38. N.Kalyana Rama Prasad, P.Sreenivasa Kumar, "On generating strong elimination orderings of strongly chordel graphs, 18th FST & TCS Conference 1998, Lecture Notes in Computer Science (LNCS) Vol 1530 pp. 221-232.
39. K.R.Venugopal, M.Shiva Kumar & P.Sreenivasa Kumar, Placement of limited range wavelength converters in Wavelength routed optical networks, VI International Conference on Advanced Computing, 1998, pp. 113-120.
40. K.R.Venugopal, M.Achutaram and P.Sreenivasa Kumar, An Adaptive algorithm to reduce wavelength conversion and congestion in all optical networks VI ADCOMP-98, pp. 386-393.
41. K.R.Venugopal, E.Ezhil Rajan and P.Sreenivasa Kumar, Performance Analysis of Wavelength Converters in WDM Wavelength routed optical networks, HIPC - 98 , pp. 239 - 246.
42. Suresh T.B. and C.R. Muthukrishnan, `A Multi-Agent Approach to Distribu- ted Computing, Proceedings of the Third International Conference on Autonomous Agents (Agents'99) Washington, Mnay 15-1999.

Distinguished Visitors to the Department:

S.No.	Name of the Visitor and Designation	Date of Visit
1.	Prof.Dr.Reimer Lust, President Von Humbolt Foundation	16.11.98.

4.7 DEPARTMENT OF ELECTRICAL ENGINEERING

1. Introduction:

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

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

2. Academic Programmes:

B.Tech Degree in Electrical Engineering:

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

M. Tech Degree in Electrical Engineering

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

1. Communication Systems Engineering
2. Energy Systems Engineering
3. Microelectronics
4. Control, Guidance and Instrumentation Systems

Integrated M.Tech. Degree

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

1. Communication systems and
2. Microelectronics.

The department will introduce five year Integrated programme in two other streams.

1. Integrated M.Tech. (Power Systems and Power Electronics)
2. Integrated M.Tech. (Instrumentation and Control)

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 New Courses Introduced

Sl.No.	Course No.	Title	Faculty
1		Design and Mixed Signal Circuits	Dr. Vinita Vasudevan Dr. K.R.K. Rao

2.2. New Disciplines introduced :

1. M.Tech. Dual Degree Program - (1) Communication Stream
(2) Microelectronics stream

2.3.Students on Roll (To be obtained from Academic Section)

Programme	I year	II year	III year	IV year	V year	Total
Ph.D.	3	2	2	12		19
M.S.	18	25	14	21		78
M.Tech.	55	46	--	--	--	101
B.Tech.	103	94	81	62	--	340
Total	179	167	97	95	--	538

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

1. V. Chandrasekar, National symposium on antenna and propagation, APSYM-98, Dec 15-16, Cochin University, Kerala
2. S. Durgesh, National conference on communication, 1999, IIT, Kharagpur.
3. R. Ravikumar, National conference on communication, 1999, IIT, Kharagpur

2.5 Number of Degrees Awarded in the last convocation:

Programme	Total
B.Tech.	71
M.Tech.	31
M.Sc.	--
M.S.	14
Ph.D.	5
Total	121

3 Faculty and their Development

3.1. Faculty

Name and Qualification	Major area of Specialisation
Professors Ashok Jhunjhunwala,, Ph.D.(Maine) [Head]	Communication Networks, Fibre Optics, Surface Acoustic Wave Devices
M.V.Chalapathi Rao,, Ph.D.(IIT Madras)	Control Theory
C.Eswaran,, Ph.D.(IIT Madras) P.A. Janakiraman,, Ph.D.(IIT Madras)	Networks, Digital Filters, Microprocessors Robotics,, Control Systems, Instrumentation, Image Processing
M.S.Narasimhan,, Ph.D.(IIT Bombay)	Antenna Engineering,, Applied Electromagnetics
K.Narayana Bhat,, Ph.D. (IIT Madras)	Semiconductor Fabrication
K.M.M. Prabhu, Ph.D. (IIT Madras) K.Radhakrishna Rao,, Ph.D.(IIT Kanpur) K. Ramar,, Ph.D.(IIT Madras)	Signal Processing VLSI,, Analog and Digital IC's Power Systems, Computer Applications
P. Sankaran, Ph.D.(IIT Madras)	Networks, Magnetic Materials
V.V. Sastry,, Ph.D.(IIT Kharagpur)	Machines, Power Electronics, Simulation
G. Sridhara Rao,, Ph.D.(IIT Madras)	Machines, Power Electronics, Simulation

Name and Qualification	Major area of Specialisation
S. Srinivasan,, Ph.D.(IIT Madras)	Microprocessors, Microcomputers
V. Venkata Rao, Ph.D. (Iowa)	Digital Signal Processing,, Communications
C. Venkateshaiah,, Ph.D.(IIT Madras)	High Voltage, Power Systems
Associate Professors	
Bhaskar Ramamurthi, Ph.D. (California)	Digital Communication and Communication networks, Signal processing Microwaves Measurements, Instrumentation Electrical Machines
C. Dattatreyan, Ph.D. (Sheffield)	
V. Jagadeesh Kumar, Ph.D. (IIT Madras)	
P. Sasidhara Rao, Ph.D. (IIT Madras)	
Assistant Professors	
Amitava Dasgupta, Ph.D. (IIT, Kharagpur)	Si and GaAs Devices, Technology and Simulation
M. Antony Reddy, Ph.D. (IIT Kharagpur)	Electronic Circuits
Enakshi Bhattacharya, Ph.D. (TIFR Bombay)	Semiconductor material and Devices
S. Karmalkar, Ph.D. (IIT Madras)	VLSI, Semiconductor Devices
M. Krishnamurthi, M.Tech. (IIT Madras)	Power Systems
P.C. Majhee, M.Tech. (IIT Madras)	Measurements, Instrumentation
G.T. Manohar, M.Tech. (IIT Madras)	Microprocessors, computers, control systems
Nandita Dasgupta, Ph.D. (IIT Madras)	Si and III-V Semiconductor Devices, Tech., Simulation
T.J. Vitto, Ph.D. (IIT Madras)	Semiconductors
C. Mathiazhagan, Ph.D. (Univ. California)	RF SP, Analog Circuits for Telematics
Vinita Vasudeven, Ph.D. (IIT Bombay)	Devices, CAD for VLSI
Devendra Jalihal, Ph.D. (Duke)	Statistical Signal Processing
R. Aravind, Ph.D. (California)	Image Processing and Compression
K. Giridhar, Ph.D. (California)	Communication and Signal Processing
T.G. Venkatesh, Ph.D. (IISc.)	Computer Architecture and Networks
Krishna Vasudevan, Ph.D.(IIT Madras)	Power Electronics
R. Sarathi, Ph.D. (IISc.)	High Voltage Engineering
Principal Scientific Officer	
P.R. Vaya, Ph.D (IIT Madras)	Semiconductor Devices
Senior Design Engineers	
P. Ramaseshagiri Rao, M.S. (IIT Madras)	Semiconductor Fabrication
Scientific Officers	
T.V. Gopal, M.S. (IIT Madras)	Measurements, Computer System Management
K. Ponnuraju, Ph.D. (IIT Madras)	Solid State Electronic Devices, Semiconductor Technology
H. Renganathan, M.S. (IIT Madras)	DSP. Microprocessor Systems

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

S. No	Co-ordinators	Title	Period
1	Dr. V. Jagadeesh Kumar	National Symposium and exposition on Modern Instrumentation	February 27-28, 1999
2	R. Sarathi	Analysis of failure of insulation systems	April 1-7, 1998
3	K. Ramar M. Krishnamurthi	Workshop on Recent trends in power system protection	June 1 -2, 1998
4	S. Srinivasan K.M.M. Prabu	Digital signal processing	June 8 - 19, 1998
5	Dr. R. Aravind Dr. D. Jalihal	Multimedia Communications	Nov. 24 - Dec. 4, 1998

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

S.No	Name of Faculty	Title	Institution	Period/Duration
1	C. Venkateshaiah and M. Krishnamurthi	Recent trends in generation and utilisation in Electrical Engineering	IGCAR, Kalpakkam	Jan 6-8 th , 1999
2	R. Sarathi	Fourth Workshop and conference on EHV technology	Bangalore	17-18 July, 1998
3	N. Dasgupta	Satellite Symposium of MRSI	IIT-Madras	Feb 10, 1998
4	E.Bhattacharya.	Symposium on Semiconductor Materials and Devices	Hyderabad,	5-7 th march, 1999
5	Ashok Jhunjunwala, B. Ramamurthi, R. Aravind, K. Giridhar and D. Jhalihal.	National conference on Communications	IIT Kharagpur	1999
6	S. Srinivasan	VLSI Design 99, 12 th International conference on VLSI design,	Goa	Jan 7-10, 1999

3.4 Special Lectures Delivered by the faculty in other Institutions:

S.No.	Name of Faculty	Topic of Lecture	Place and Date
1	V. Jagadeesh Kumar	Indian Wave Energy Programme	ANERT, Government of Kerala, Trivandrum
2	S. Karmalkar	Unified modeling of FETs and junctions which are grossly asymmetric	IIT Bombay, Electrical Engineering Department on June 6 th 1998

S.No.	Name of Faculty	Topic of Lecture	Place and Date
3	E. Bhattacharya	Solar Cells	Alpha College, Department of Electronics, Porur, Chennai. Oct'98

3.5. Visits Abroad by Faculty:

Sl.No.	Name of Faculty	Country visited	Date	Purpose of visit
1	S. Srinivasan	San Jose State University, San Jose California, USA,	July 98- June '99,	Sabbatical
2	K.N. Bhat	University of Washington , Seattle	Jan 1999 onwards,	Sabbatical
3	K. Ramar	University of Telekom, Malaysia	Aug 99 onwards	Sabbatical
4	C. Eswaran	University of Telekom, Malaysia		Sabbatical
5	V. V. Sastry	Iowa State University	Aug'98 to May'99	
6	M.V.Chalapathi Rao	Botswana, Africa	1.6.98-31.5.2000	EOL
7	Ashok Jhunjhunwala	Changchun Sanghai, China International Centre for Science & Technology Vietnam Opto Sensors, Malaysia Commsphere Africa '98 Dakar, Senegal OFC '99, San Diego California	16.8.97 - 22.8.97 12.9.97 - 17.9.97 22.4.98 20.7.98 - 22.7.98 21.2.99 - 26.2.99	Presentation of corDECT WLL System Lecture on Fibre Optic Link Design Presentation of corDECT WLL System Presentation on Presentation on Fibre Optic Commn.
8	B. Ramamurthi	Hongkong & Shenzen China Beijing, China Beijing, China	13.5.98 -17.5.98 20.7.98 29.9.98	Discussions on WLL System Review Meeting with Chinese Licensee Presentation on WLL System

3.6 Honours and Awards obtained:

(a) Awards and Honours

Name of Award/Honour	Awarded by	Awarded for	Date of Award
Shanti Swarup Bhatnagar Prize in Engineering Sciences to Ashok Jhunjhunwala	CSIR, New Delhi	For outstanding contributions in the field of Engineering Sciences	1998
Shri Hari Om Ashram Presit. Dr. Vikram Sarabhai Research Award to Ashok Jhunjhunwala.	Physical Research Laboratory, Ahmedabad	Contributions and Acheivements in the field of Electronics, Informatics, Tele-matics & Automation	August 12, '98

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
K.N. Bhat	Indian National Academy of Engineers INEA	Fellow	1998.

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. Computerisation of Testing facility in High voltage Laboratory
4. Novel Noise cancellor developed

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

1. Class (100) clean room facility is added in Microelectronics laboratory .
2. Pentium Systems (266) MHz)- 5 Nos.
3. Altera PLD design tools
4. 6 ½ Digit Hewlett Packard DMM/DAS acquired

4.3 Patents Filed:

- (i) A Long Range DECT System, and (ii) A Long Range Relay Base DECT System : Patent no.873:AN by Ashok Jhunjunwala and B. Ramamurthi
- (ii) LAN Trainer Lab Apparatus – Applied by Ashok Jhunjunwala and B. Ramamurthi
- (iii) Electroless metalisation of palladium and other metal on silicon substrates, by S. Karmalkar and J. Bannerjee

5. Research and Consultancy:

5.1 Sponsored Research Projects:

Title of the Project	Sponsoring Agency	Value (Rs. Lakhs)	Coordinator/ Co-Investigators, if any
Design and developemnt of a variable Reluctance type pressure sensor	DRDO	15.48	V. Jagadeesh kumar
Instrumentation for wave energy power module.	NIOT	6.90	V. Jagadeesh kumar
	MHRD, NEW DELHI	10.00	Ashok Jhunjunwala Bhaskar Ramanurthi Timothy A Gonsalves
	DRDO, NEW DELHI	9.97	K.M.M. Prabhu
	DST, NEW DELHI	13.21	E.Bhattacharya A Dasgupta
	BEL Ltd., Bangalore	5.50	S.Karmalkar
	RCI, Hyderabad	19.55	K.N. Bhat A Dasgupta N Dasgupta PRS. Rao
	DRDO	17.25	-do-
	ISRO, BEL	12.00	-do-
	DRDL	4.95	-do-
	DRDO	49.50	-do-
	DST	35.85	S Srinivasan Vinita Vadudevan K R K Rao
	MHRD	9.00	C Mathiazagan K.N. Bhat H. Renganathan
	DOE		S Srinivasan

5.2 Industrial Consultancy:

Title	Industry	Amount (in Lakhs)	Name of the Faculty
Impulse voltage testing of power equipments	Indo-Tech Transformers	Rs. 8.5 Lakhs	C. Venkateshaiah
Impulse voltage testing of power transformers and other equipments	Easun Transformers Andrewyule & Co	Rs. 10 Lakhs	M. Krishnamurthi
Technical appraisal of fault level calculation and relay coordination study for M/s Siemens India Ltd.	Siemens India Ltd.	Rs. 0.2 Lakhs	M. Krishnamurthi
Macro model development of Analog Ics.	Advanced Micro Devices, Bangalore		K.R.K. Rao

5.3 RBIC :

Title	Industry	Value (Rs.in lakhs)	Co-ordinator/ Co-Consultants, if any
Busbar Protection System	Easun Reyrolle Ltd. Hosur	Rs.12 Lakhs	V. Jagadeesh Kumar A. Kuppurajulu
ISDN Interface for Paradigm Exchange	Tata Telecom, Gandhinagar	Rs.1.0*	Ashok Jhunjunwala Bhaskar Ramamurthi T.A.Gonsalves C.Mathiazhagan R.Aravind Devendra Jalihal K.Giridhar
Fibre in Local Loop	HFCL, New Delhi	Rs.13.0*	A.Jhunjunwala Bhaskar Ramamurthi T.A.Gonsalves C.Mathiazhagan R.Aravind Devendra Jalihal K.Giridhar
Wireless in Local Loop	ADI, USA	100.13*	Ashok Jhunjunwala Bhaskar Ramamurthi T.A.Gonsalves C.Mathiazhagan R.Aravind Devendra Jalihal K.Giridhar

Title	Industry	Value (Rs.in lakhs)	Co-ordinator/ Co-Consultants, if any
Digital Internet Access System	ARM, Hyderabad, HFCL, New Delhi, Shyam Telecom, New Delhi	Rs.6.5*	Ashok Jhunjunwala Bhaskar Ramamurthi T.A.Gonsalves R.Aravind Devendra Jalihal K.Giridhar
Study of Development of Simulation for Multi-carrier Satcom Modem	ISRO, Ahmedabad	Rs.2.0*	Ashok Jhunjunwala Bhaskar Ramamurthi T.A.Gonsalves R.Aravind Devendra Jalihal K.Giridhar C.Mathiazhagan
Cochannel Signal Recovery	Ericsson, USA	Rs.8.0*	Ashok Jhunjunwala Bhaskar Ramamurthi T.A. Gonsalves R.Aravind Devendra Jalihal K.Giridhar C.Mathiazhagan P. Sashidara Rao
Development of variable speed constant frequency brushless generator	CVRDE, Avadi,	4.6	P. Sashidara Rao
Development of brushless Induction generator for automotive applications	For Lucas TVS padi ,chennai,	2.5	S. Sashidara Rao

* Money received in year 1998

5.4 Exchange Programme with other universities:

Mr. Naveen Kumar. V, Regular M.S. Scholar visited technical university of Darmstadt, Germany, 1998, as a part of DAAD exchange program.

5.5 Research Publications:

(a) In Refereed National Journals:

1. Ashok Jhunjunwala, "Can Telecom And Information Technology Be For the Disadvantaged?" Journal of Rural Development Vol.17(2), pp.321-337 (1998), NIRD, Hyderabad
2. Bhat and PRS. Rao, Development of an automated high pressure oxidation system, IETE technical review, Vol-15, No 182, PP 27-35, Jan -April '98.

(b) In Refereed International Journals:

1. Paul, M.R.S. Reddy and V. Jagadeesh Kumar (1998) A recursive Algorithm for efficient representation of ECG signals. Elec. Letters, 34, 526-528.

2. Paul, M.R.S. Reddy and V.Jagadeesh Kumar (1999) QRS Estimator Using Linear Prediction Approach. *Signal Processing*, 72, 15-22.
3. Paul, M.R.S. Reddy and V.Jagadeesh Kumar (1999) A Cepstral Transformation Technique for Dissociation of Wide QRS Type Arrhythmia Signals Using DCT. *Signal Processing*, 75, 29-39.
4. Paul, M.R.S. Reddy and V.Jagadeesh Kumar (1999) Data Processing of Stress ECG Using DCT. *Computers in Biology and Medicine*, 28, 639-658.
5. Ashok Jhunjhunwala, Bhaskar Ramamurthi, and Timothy A.Gonsalves, "The Role of Technology in Telecom Expansion in India", *IEEE Communications Magazine*, 0163-6804/98, November 1998
6. K.Vasudevan, K.Giridhar and Bhaskar Ramamurthi, "Efficient VA for Signals with ISI", *Electronics Letters*, vol.34, no.7, pp. 629—631, April 1998
7. S.Karmalkar , , "A unified equilibrium treatment of modulation doped heterojunction and grossly asymmetric homojunction and its application for MODFET design" *IEEE Trans. on Electronic Devices* pp2187-2195,Oct '98
8. Giridhar and K.M.M. Prabhu, Implementation of MTD-WVD on TMS 320c30 DSP processor, *Microprocessors and Microsystems Journal*, U.K., Vol-22, No-1, PP 1-12, June 1998.
9. Satishkumar and K.M. M. Prabhu, Pipelined Cordic-based systolic arrays for DF and DHT of prime length, *European Journal of Signal Processing*, Vol-72, pp 177-181, Jan'99.
- 10.A.DasGupta, D.Arslan,A.Jigurdardottir &H.L.Hartnagel "A novel self-consistent simulator for current density-voltage characteristics of semiconductor field emitters", *Appl.Physics Letters*,vol.72.no.10,pp.1220-1222,March 1998.
- 11.N.DasGupta & A.DasGupta , "A new SPICE MOSFET level-3 like model of HEMT's for circuit simulation",*IEEE Trans. On Electron Devices*,vol.45,no.7,PP.1494-1500,July 1998.
- 12.K.Pavan Kumar & A.Dasgupta, "An analytical model for conduction and valence band profiles of bandgap graded and displaced heterojunctions", *Solid State Electronics*,vol.42,no.10,pp1779-1786,1998.
- 13.Venkatesh and S. Srinivasan, Modified butterfly structure for efficient implementation of pruned fast cosine transform, *Electronics Letters*, No.14, 1998.
- 14.K Vasudevan , P. Sashidar Rao ,*International Journal of Power and Energy systems*, "Mixed domain approach for modeling & simulations of converter –fed induction machine systems" P 34 - 44, No-18, Jan to April 1998.

(c) In Proceedings of National Conferences:

1. Schemes for generating the square root of the sum of squares of two input quantities. Authors: V.G.K. Murti & V. Jagadeesh Kumar (National Symposium on Modern Instrumentation November 28-29, 1998, Aligarh.)
2. An active-ac bridge for the measurement of in-circuit impedance. Authors: V.G.K. Murti, M.A. Atmanand, and V. Jagadeesh Kumar, (National Symposium on Modern Instrumentation November 28-29, 1998, Aligarh.)
3. Measurement of C and $\tan \delta$ of a capacitor employing PSDs and slope DVMs , V. Jagadeesh Kumar, K. Sudhakara Rao, & P. Sankaran, (National Symposium on Modern Instrumentation November 28-29, 1998, Aligarh.)
4. Ashok JhunjhunWala, Keynote Speaker on "The Role of Technology in Telecom Expansion in India" at Technology Summit and Technology Platform'98, Hotel Park Royal, Nehru Place, 28th-29th October, 1998, New Delhi
5. Ashok JhunjhunWala, Invited Talk on "Wireless Access Technology" at Networks'98, June 3-6, 1998, Bangalore
6. Ashok JhunjhunWala, Invited Talk on "Micro cell/Macro cell and TDMA/CDMA – A Comparison", at Conference on Spread Spectrum Theory and Applications, MIT Campus, 18-19 September 1998, Anna University
7. Ashok JhunjhunWala, Invited Talk on "corDECT WLL – A cost-effective Wireless in Local Loop Technology for developing countries", WLL Conference, 23-25th September 1998
8. Ashok JhunjhunWala, Invited Talk on "The Role of Technology in Telecom Expansion in India", at Bangalore IT.Com '98, International Tech. Park, 2nd-4th November 1998, Bangalore
9. Ashok JhunjhunWala, Panel Discussion on "Emerging Technologies towards cost-effective Telecom & Internet Services", CommsIndia'98 Conference, Pragati Maidan, 9-11 December 1998, New Delhi
10. Rajeev and R Aravind " Motion compensation algorithms for video coding", National conference on communications'99, IIT-KGP, Jan'99.
11. W.N Mahesh and R Aravind " Real time video coding with the ITU H 263 standard, National conference on communications'99, IIT-KGP, Jan'99.
12. Radhakrishna Rao, R .Ramaratnam, G.Sridhara Rao, M.Kumarvel and S.S.Yegnanarayana, "Energy Conservation Using High Frequency Tools" 30th National Seminar on Engineering Challenges on Energy and Environment, Chennai, December 11-12, 1998
13. Chandrasekar and C. Dattatreyan, Study of microstrip antenna using FDTD method, Proc. Of National symposium on antenna and propagation, APSYM-98, Dec 15-16, Coahin University, Kerala.
14. Aravindhan, C. Dattatreyan and R. Krishnamurthi , Microwave joining of alumina tubes, Proc. Of 18th all india manufacturing technological design and research conference, Dec 21-23, 1998 , IIT Kharagpur, P93-97.

15. C.K. Rajnarayanan and C. Venkateshaiah, Computer based multifunctional relay for transmission line protection, Seminar on Recent trends in generation and utilisation in Electrical Engineering, Held at IGCAR, Kalpakkam, Jan 6-8th, P 536-541, 1999.
16. Lakshmanan and M. Krishnamurthi, Computer based differential protection of a power transformer –Seminar on Recent trends in generation and utilisation in Electrical Engineering, Held at IGCAR, Kalpakkam, Jan 6-8th, P 525-529, 1999.
17. U. Muralikrishna and M. Krishnamurthi, Modified genetic algorithm approach for large scale unit commitment Seminar on Recent trends in generation and utilisation in Electrical Engineering, held at IGCAR, Kalpakkam, Jan 6-8th, P 530-535, 1999.
18. R. Sarathi and D.C. David, Influence of carbon particle on the breakdown characteristics of transformer oil, p 11-14, Fourth Workshop and conference on EHV technology, 17-18 July, 1998, Bangalore
19. R. Sarathi, D.C. David, C. Venkateshaiah, Fault Diagnosis in power transformer using fuzzy logic technique, Fourth Workshop and conference on EHV technology, 17-18 July, 1998, Bangalore
20. R. Sarathi and S. Srinivasa Rao, Effect of space charge on the dynamical aspects of electrical trees, Fourth Workshop and conference on EHV technology, 17-18 July, 1998, Bangalore
21. R. Sarathi and P. Murugan, Breakdown characteristics of transformer oil under composite voltages, symposium on transformer insulation systems (STIS'99), Bangalore.
22. R. Sarathi and P. Murugan Influence of barrier in short airgap under composite voltages, 10th NPSC conference. Oct 14-16, '1998, Baroda.
23. E. Bhattacharya and K. Ravikiran, Plasma parthilation of Porous Silicon, Symposium on Semiconductor Materials and Devices Hyderabad, March 5 to 7, 1999.

(d) In Proceedings of International Conferences:

1. Paul, M.R.S. Reddy and V. Jagadeesh Kumar. Computer detection of P-waves from Wide QRS type arrhythmia recordings. Proc. Of the 25th Annual Computers in Cardiology Conference, Cleveland, September, 1998, pp:621-624.
2. Paul, M.R.S. Reddy and V. Jagadeesh Kumar. On Eigen Filter based extraction of ST-segment parameters from Surface electrograms. Proc. Of the 20th Annual IEEE-EMBS Conference, Hongkong, November, 1998.
3. Ashok Jhunjunwala, Invited Talk on "Wireless Access Networks for developing countries" at Comm Sphere Africa 98, 20-22nd July 1998, Dakar – Senegal
4. Ashok Jhunjunwala, "Lead Talk : An Overview of Computer Telephony Integration Technologies", Telematics'98, International Seminar on Computer Telephony Integration – The Emerging Technology, 21-22 August, 1998, IISc., Bangalore

5. Ashok Jhunjhunwala, Invited Paper on "Affordable Fibre Access Network for India and other Developing Countries", Photonics'98, International Conference on Fibre Optics and Photonics, 14-18th December, 1998, IIT Delhi
6. K.Vasudevan, K.Giridhar, and Bhaskar Ramamurthi, "DSP-based Non-coherent Detectors for Multilevel Signals in Flat Fading Channels", Proc. Of the IEEE International Conference on Universal Personal Communications, Florence, Italy, Oct.1998
7. Rajesh and K.M.M. Prabhu, Detection of Weak targets in a sea clutter environment , Proc. Of IASTED Intl. Conf. SIP'98, Las Vegas, Nevada, USA, Oct-28-31, p300-305, 1998.
8. Venkatesh and S. Srinivasan, An efficient implementation of progressive image transmission system using successive processing algorithm on a parallel architecture, International Conf. On High Performance computing, 1998.
9. Venkatesh and S. Srinivasan, An efficient method of computing inverse DCT for pruned cosine transforms, ICASSP'99
10. Murthy, S. Ramachandran and S. Srinivasan, Parallel complementation of @D-Discrete cosine transform using EPLDs, 12th Int. Conf. On VLSI design, Jan 1999.
11. Sarathi and M. Krishnamurthi. Breakdown characteristics of short airgap with conducting particle under composite voltages, 1998 Gaseous Dielectrics, USA
12. Sarathi and K. Sridhar, Investigation into the growth of electrical trees in XLPE cables under transient voltages, 1998 IEEE 6th ICCBSD, 22-25, June '98, P329-332, Sweden

6. Distinguished Visitors to the Department:

SI.No.	Name of the Visitor and Designation	Date of visit
1	Mr. Alexander Vogt, Scientist, Institute for Hochfrequenztechnik, Technische Hochschule Darmstadt, Germany	Nov. 20, 1997 to Nov.24, 1997.
2	Dr. Vladimir Blazek of the Institute for High frequency Technology of the Technical University of Aachen/Germany	Feb. 10-24, 1998
3	Prof. Peter O, Lauritzen, University of Washington	1998
4	Mr. D. Schroeder, Volkswagen Foundation	Jan. 6-7, 1998
5	Prof. V. Rajagopalan, Univ of Quebec	Dec, 97 to Jan, 98
6	Mr. Helio Kinoshita, Zetax Technologies, Brazil	Nov. 9
7	Mr. Sergio Abramoff, Analog Devices, Brazil	
8	Ms. H. Bossman, Director, DAAD	Nov. 15

Sl.No.	Name of the Visitor and Designation	Date of visit
9	Mr. Zainal Arpin Zakariah, Telekom Malaysia, Malaysia	Nov. 16
10	Dr. Gopinath, AT &T, USA	Nov. 23
11	Dr. Adam Rosenberg, Provar Inc., USA	Nov. 25
12	Harvery Kalley, Mini Circuits, USA	Nov.26
13	Mr. Ramesh Uppal, Harris Corpn. Canada	Dec. 7
14	Mr. Mike Haidar, Analog Devices, USA	Dec. 16
15	Dr. T.H. Chowdry, IT Advisor - Govt. of Andha Pradesh	Jan. 4
16	Dr. M.G.K. Menon, Chairman, IT Task Force	Jan 5
17	Mr. Bijoy G. Chatterjee, National Semiconductors	Jan 13
18	Mr. A. Venkataraman, National Semiconductors	
19	Mr. N. Sharma, Chairman and Mr. Rajeev Agarwal, Jt. Secretary, Telecom Regulatory Authority of India, New Delhi	Jan 14
20	Mr. Ray Stata, CEO and Mr. Mike Haidar, Analog Devices, USA	Jan 18
21	Dr. R.A. Mashelkar, Director General, CSIR, New Delhi	Jan 27
22	Mr. Subodh Saxena, TCIL, New Delhi	Feb. 2
23	Mr. Sam Pitroda, WorldTel, UK	Feb. 8
24	Prof. U.R. Rao, Chairman, IIT	Feb. 15
25	Mr. Sameer Kallel, USA	Feb. 15
26	Prof. Rimoldi, Doctoral School in Commn. Systems, Swiss Federal Institute of Technology	Feb. 16

4.8 DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES

1 Introduction:

The Department of Humanities and Social Sciences was established in 1959. The Department started offering Post-graduate programme in Industrial Management (M.Tech in IM) in July 1969. This year the Department celebrated the "30th year of Commencement of Post Graduate Management Programme" on 25th and 26th March, 1999. The department also offers Ph.D., and M.S., programmes. The major areas of teaching and research of the Department are:

Undergraduate courses in Humanities and Social Sciences.

M.Tech. course 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:

New Courses Introduced:

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

Course No	Title	Faculty
HS753	English for Academic Purposes	S C Chaudhary/S Mohan
HS180	Economics for developing World	V R Muraleedharan
HS181	Introduction to Indian Economic Development	V B Athreya
HS182	Economics of Industrial Organisation	D Malathy
HS616	Indian Corporate Sector	M Thenmozhi/R Madhumalhi
HS617	Indian Capital Market & Money Market	L V L N Sarma/M Thenmozhi
HS618	Current Trends in Management	M Thenmozhi/T T Narendran

Course No	Title	Faculty
HS619	Strategic Management	M Thenmozhi/M D P Rao/R Madhumathi
HS620	Financial Services	M Thenmozhi/R Madhumathi
HS621	International Business	M Thenmozhi/S Jayachandran

2.2 Students on Roll:

Programme	I Year	II Year	III Year	IV Year	V Year	Total
Ph.D.	2	4	3	9	--	18
M.S.	1	3	5	--	--	9
M.Tech.	24	15	--	--	--	39
Total	27	22	8	9	--	66

2.3 Number of Scholarships/Fellowships Holders

Programme	Institute	CSIR	Others	Total
Ph.D	9		1(QIP)	10
M.S.	5			5
M.Tech	23		1 (QIP)	24
Total	37		2	39

2.4 Number of Degrees Awarded

Programme	Number
Ph.D.	6
M.S.	2
M.Tech.	18
Total	26

3 Faculty and their development :

3.1 Details of Faculty:

Name of Faculty

Major Area of Specialisation

Professors

R.N. Anantharaman, Ph.D. (Bangalore)

Organisation and Consumer Behaviour, Social Psychology, Psycholinguistics

V B Athreya, Ph.D. (Wisconsin)

Economics

S.C. Chaudhary, Ph.D. (CIEFL Hyderabad)

Theoretical Linguistics, ELT & Need Based Courses in English.

Name of Faculty

L.S. Ganesh, Ph.D. (IIT Madras)

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

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

L.V.L.N. Sarma, Ph.D. (IISc) **[Head]****Associate Professors**(Mrs) Elizabeth Nainan Kurian, Ph.D.
(IIT Madras)(Ms) Evangeline Manickam, Ph.D.
(Madras)

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

(Mrs) Malathy Duraisamy, Ph.D. (Madras)

V.R. Muraleedharan, Ph.D. (IIT Madras)

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

B. Subramanian, Ph.D. (Karnataka)

Assistant Professors

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

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

R Madhumathi, Ph.D (Madras)

S. Mohan, M.A. (Madras)

G. Srinivasan, Ph.D. (IIT Madras)

M Thenmozhi, Ph.d (Madras)

D. Veeraraghavan, Ph.D. (IIT Madras)

Major Area of SpecialisationTechnology Forecasting, Multi criteria Decisions,
Project Management and Applied System Analysis.Operations Management, Decision Support Systems,
Group TechnologyProduction Management, Group Technology. Science
and Technology Policy, GermanFinancial Management, Business Policy & Corporate
Strategies.

American Fiction

English, French

Marketing Management

Applied Economics/Econometrics, Labour Economics,
Economics of Science and Technology.Health Economics, Public Policy, History of Healthcare
in South IndiaProduction Management, Scheduling, Computer
Simulation.

German and Philosophy

Management Accounting, General Management.

Industrial Psychology, Organisational Behaviour.

Finance and Accounting

English, Science Fiction

Group Technology, Production Management,
Operations Research.

Finance, International Business

Social and Economic History

**Name of Faculty
DAAD Visiting Faculty**

Major Area of Specialisation

R.G. Koeckritz

German, Communication Strategies

Visiting Faculty

Dr (Mrs) Devaki Reddy

English, Linguistics

Dr B Krishnamurthy

English

(Mrs) Zoya Abraham

German Language Teaching

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

S.No	Co-ordinator (s)	Title of course/Workshop/Seminar/Sym./Conf.	Period
1.	S C Chaudhary/ S Mohan/R G Koeckritz	Educational Technology for Language Teachers	Dec'98
2.	B Subramaniam	UGC Refresher Course, CIEFL Hyderabad	Sep'98
3.	S Jayachandran/ G Srinivasan	Small Industries Management Programme	Sep'98
4.	L V L N Sarma	Workshop on "Management Education in the Twenty-First Century: A Profile"	Apr'98
		Energy Optimisation – Technology and Cost Management Interface	Oct'99
		Current Management Theories and Applications	Dec'98

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

S.No	Name of Faculty	Title	Period/Duration
1.	Evangeline Manickam	Chronicking India in the 20 th Century, USEFI, Madras, Fulbright Alumni Association	Feb. 99
2.	D Malathy	Gender bias in the Scientific and Technical Labour Market: A Comparative Study of Tamilnadu and Kerala, Conference on Economic Theory and Policy, organised by the JNU, New Delhi	Oct'98
3.	V R Muraleedharan	South and South East Asia Health Economics Assn. Annual meeting, Bangkok	March'98

S.No	Name of Faculty	Title	Period/Duration
		Annual Public Health Forum, London School of Hygiene and Tropical Medicine., London	May'98
4.	S Jayachandran	International Conference on Managing Economic Liberalization in South Asia- Director's for 21 st Century, Sathak Trust & IIMB	
5.	L V L N Sarma	Corporate Vision 2000 – Resource Person	Sept'98
6.	G Srinivasan	2 nd O.M.Workshop, IIMB	Dec'98
7.	R G Koeckritz	Brecht Theatre in Western Context and its influence on the Theatre in Kerala, Univ. of Kerala	Sep'98

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

S.No	Name of the Faculty	Topic of the Lecture	Delivered at	Date
1.	S C Chaudhary	Stages in Language Learning	Centre for Learning Delayed	Dec'98
2.	Evangeline Manickam	The Use and Misuse of Scientific Jargon, Workshop on Preparing Research Reports and Papers,	Structural Engineering Research Centre, CSIR Labs	Feb'99
		Workshop on Use of Educational Technology and Teaching Methods	Crescent Engg. Matr. School, Madras	April'99
3.	Subramaniam B	Zwillingsgesprach oder Zwiegesprach?	Humboldt-Colloquium, Hyderabad	May'98
4.	V R Muraleedharan	Role of Govt. in Tamil Nadu Health Sector, ,	School of Hygiene and Tropical Health, Univ. of Heidelberge	Dec'98
5.	S Jayachandran	Mega Marketing Relationship Marketing	Univ. of Madras.	Nov.'98
6.	M Thenmozhi	Changing role of Women	Ethiraj College for Women, Chennai	Oct'98
		Multivariate Analysis in Marketing	Academic Staff College, Univ. of Mds	Nov.98
		Euromarkets	Anna University	
	M Thenmozhi	Factoring and Securitisation	Academic Staff college	Feb.99
7.	R G Koeckritz	Joham Wolfgang von goethe an introduction to his Life and Work	Max Mueller Bhavan, Chennai	Mar'99
8.	RN Anantharaman	Group Dnamics	REPCO Bank, GOI, Madras	

3.5 Books/ Monographs authored or coauthored:

Name of Faculty	Title	Publisher
Dr S C Chaudhary	Shaanal	Sahitya Akademi, New Delhi
Dr B Surbamaniam	Year Book 1998 of the Goethe Society of India	German Book Centre, Madras
	Die Unkehr als der Maßbegriff, 1998	Rombach Verlag, Greiburg 1998
Dr S Jayachandran & Mr Sunil Sahadev	Research Paper in the International Conference Proceedings	Macmillan Publishing Co.,

3.6 Visits abroad by Faculty:

S. No	Name of Faculty	Country visited	Date	Purpose of visit
1.	Elizabeth N Kurien	Malaysia	Sep'96-98	Post Doctoral Studies on Bernard Malmud
2.	V R Muraleedharan	Thailand	April'98	To attend a Conference
		U.K.	May'98	To attend a Conference
		U.K.	Dec'98	To conduct Research
		Germany	Dec'98	To give a Guest Lecture
3.	C Rajendran	Germany	May-July'98	On Humboldt Fellowship

3.7 Memberships/Fellowships in Professional Bodies:

S.No.	Name of the Faculty	Organisation
1.	D Malathy	Journal of Qualitative Economics
2.	B Subramaniam	AVH, 1991
3.	S Jayachandran	Academy of Marketing Science, USA
4.	D Veeraraghavan	Editorial Board Member, South Asia Bulletin

3.8 Journal Editorial Boards:

(Editors, Secretary, Treasurer, Membership etc)

S.No	Name of the Faculty	Level	Journal
1.	B Subramaniam	Editor & Secretary	Goethe Society of India Yearbook

4. Design and Development activities:

4.1 New Facilities added and Major Equipment procured:

Computer - Pentium II 350MHz, 8.4MB procured, 6L Laser Jet Gold Printer
Capitaline ole - a Database software of over 7500 companies procured.

6. Research & Consultancy:

5.1 Sponsored Research Projects

Title	Period	Funding Agency	Amount (in lakhs)	Co-ordinator(s)
"Characteristics and structure of Private Hospital Sector in Urban India: a case study of Madras City"		USAID	Rs.8 lakhs	V R Muraleedharan
"Manpower planning for Health Sector (Phase I)"		MGR T.N. Medical Univ.	Rs.2.5 lakhs	V R Muraleedharan
"Intervention strategies to Reduce Anemia Among women in Urban Slum Areas"		UNICEF	Rs.1.05 lakhs	V R Muraleedharan
Early Phase of Space Research in India: an oral history		INSA	Rs.2.0 lakhs	D Veeraraghavan
Computer Aided Instructional Module on Project Appraisal	Nov'98- Oct.99	CCE/CDC	0.75	M Thenmozhi
Financial Control and Risk Management by MNC	Feb'99- July'99	New Faculty Scheme	1.00	M Thenmozhi

5.2 Industrial Consultancy :

S.No	Title	Organisation	Amount (in lakhs)	Co-ordinator(s)
1.	Strategy Formulation for a daily News paper	Deccan Chronicle, Secunderabad		L V LN Sarma
2.	Software for Operations Management	MIDA's Marketing, Kottayam	Rs.1.18	G Srinivasan
3.	Software for fault tree analysis	CASSA, Bangalore	Rs1.76	G Srinivasan

5.3 Research Publications

(a) In Refereed National Journals:

1. S C Chaudhary, 'What is the good word?', Deccan Herald – Sunday Herald, pp.4-5, Jan'98
2. S C Chaudhary, 'Politics of Language in India', Studies in Indian Social Linguistics, New Delhi, pp.97-102, Jan'98
3. D Malathy, 'Progress of School Education in Tamilnadu: Role of Private Sector, Gender Disparity and Educational Outcomes', Indian Educational Review, vol 33, no.1, pp.16-39, Jan'98.
4. D Malathy, 'Childrens Schooling in Rural Tamilnadu: Gender Disparity and Role of Access, Parental and Household Characteristics' Journal of Educational Planning and Administration, Vol.XII, no.2, pp.131-154, April'98.
5. D Malathy & P.Duraisamy, 'Accounting for the Wage Differential in an organised Labour Market in India', Indian Journal of Labour Economics, vol.41, no.4, 1998.
6. D Malathy & P Duraisamy, 'Sex Segregation and Discrimination Among Scientific Personnel', in M Krishnaraj, R Sudharshan and A Shariff (Eds.) Gender Population and Development, Delhi: Oxford University Press, 1998, pp.159-184.
7. D Malathy, "Literacy Campaigns in India by A.S.Seetharaman", Journal of Educational Planning and Administration, Vol.XII, no.1, pp.87-88, January'98 (Book Review)
8. D Malathy, Higher Education in India by M.G.Reddy", Vol.XII, No.4, pp.471-473, Oct'98 (Book Review)

(b) In Refereed International Journals

1. S C Chaudhary, 'English in India', IATEFL, News Letter, no.140, pp.14-15, Jan'98
2. S C Chaudhary, 'Knowledge of Language in the Multi-lingual Mind, Language Sciences, 20.2, pp.201-220, pp.201-220
3. Kurian E.N., and Kurian, S.V. "A Study of Racial Conflict in Bernard Malamud's The Tenants", Indian Journal of American Studies, Vol.26, No.1, pp.55-63
4. Bindu, C.B., Kurian, E.N. "Complicity, Critique and Change: A Feminist Reading of Maria Irene FornesFefu and her friends", Indian Journal of American Studies, Vol.26, no.2, pp.109-113.
5. Kurian, E.N. "The Catcher in the Rye: Religious Interpretation", American Fiction in Perspective – Contemporary Essays (Ed. Gupta, S.K.), pp.103-112.

6. B Subramaniam, Der Weg zur Innigkeit Zur Konstellation, Rilke – TagoreKassber, Jahrbuch für Internationale Germanistik 1998.
7. Parthasarathy,S., and Rajendran, C., "Scheduling to minimize mean tardiness and weighted mean tardiness in flowshop and flowline-based manufacturing Cell," Computers and Industrial Engineering, Vol.34, pp.531.546 (1998)

(C) In Proceedings of National Conferences

1. D Malathy, Gender bias in the Scientific and Technical Labour Market: A Comparative Study of Tamilnadu and Kerala, Conference on Economic Theory and Policy, organised by the JNU, New Delhi.
2. M Thenmozhi, `Technology Based Training Pedagogy', Proceeding of National Seminar on Better World Environment through Engineering, Education and Management, TTTI, Chennai, Nov, 1998.pp.26.,
3. M Thenmozhi, `Effective Corporate Response to Liberalisation' Proceedings of National Conference on Surviving success through Liberalisation, SNR College, Coimbatore, March, 1999, pp.31-38.

(d) In Proceedings of International Conferences

1. "Cinchona and the incurable Malaria: India 1900-30's" Proceedings of the 3rd Conference of the International Network for the History of Malaria, New York, May, 1998
2. Pugazhendi,S., Anantharaman,N., ThiagarajanS., and Rajendran,C., "Scheduling in flowline-based manufacturing cells considering permutation and non-permutation schedules, "Proceedings of the 14th International Conference on CAD/CAM, Robotics and Factories of the future, Narosa Publishing House, New Delhi, pp.215-221 (1998)
3. Jayamohan,M.S., and Rajendran,C., "Incorporating customer preferences relating to flow time and tardiness in dispatching roles." Proceedings of the 14th International Conference on CAD/CAM, pp.231-236 (1998)
4. Holthaus,D., and Rajendran,C., "Jobshop dispatching rules:New Developments," Proceedings of the 14-th International Conference on CAD/CAM oo.251-257 (1998)

6 Distinguished visitors to the Department:

S.No	Name of the Visitor and Occupation	Date of Visit	Purpose of Visit
1	Prof Dr Peter Raster Gesamthochschule Essen	Feb 1999	Lecture on "Indian Linguistic Philoshphy"
2	Prof Dr Dietmar Rothermund Director South Asia Institute Heidelberg	Feb 1998	Discussions with HSS Faculty

6.1 Any other Relevant Details:

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

4.9 DEPARTMENT OF MATHEMATICS

1. Introduction:

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

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

2. Academic Programmes:

2.1 (a) Restructuring of courses at B.Tech. level:

With the approval of the Board of Academic Courses and Senate, the Courses at B.Tech. level, to be offered by this Department from third semester onwards [effective from July 1999 semester], had been restructured as 2-credit electives.

2.1 (b) New Courses introduced:

The following new course was introduced during the period under report.

S.No.	Course No.	Title	Faculty
1.	MA 654	Queueing Models for Computer and Communication Systems	Dr.P.R. Parthasarathy Dr.A. Rangan

2.2 Students on Roll:

Programme	I Year	II Year	III Year	IV Year	V Year	Others	Total
M.Sc.	31	27	-	-	-	-	58
Ph.D	5	4	5	2	1	2	19
Total	36	31	5	2	1	2	77

2.3 Number of Scholarship/Fellowship holders:

Programme	Institute Scholarship	Others	Total
M.Sc.	I Year 6	--	--
	II Year 6	--	12
Ph.D.	13	4 (CSIR)	17
Total	25	4	29

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

S.No.	Name of the Scholar	Name of the Conference/ Seminar/ Symposia	Date and venue
1.	P. Vimala	25th National and 1st International Conference on Fluid Mechanics and Fluid Power	16.12.98-18.12.98 IIT Delhi
2.	R. Balasubramanian	1st International Conference on p-adic Analysis, Fuzzy Analysis and Applications.	21.12.98-24.12.98 Madras
3.	Sushama Agrawal, N.	(i) Short term course on Aspects of Nonlinear, Functional and Applicable Analysis	26.05.98-01.06.98 IIT Madras
		(ii) Short term course on 'Fuzzy set Theory and its Application'	07.12.98-18.12.98 IIT Madras
		(iii) UGC Sponsored National seminar on Fuzzy Mathematics and Applications	28.03.99-30.03.99 U.C.College, Aluvai, Kerala (attended on 28.03.99 & 29.03.99)

2.5 Number of Degrees Awarded in the last Convocation:

Programme	Number Awarded
Ph.D	2
M.Sc.	22
Total	24

3. Faculty and their Development:

3.1 Faculty:

Name and Qualifications	Major Area of Specialisation
Professors	
A. Avudainayagam, Ph.D.(IIT Madras)	Fluid Mechanics, Suspension Rheology, Polar Fluids, Low Reynolds numbers flows
P. Bhattacharyya, Ph.D.(London)	Complex analysis, Theory of Splines, Lacunary Interpolation, Approximation Theory
(Mrs.) S. Kalpakam, Ph.D, IIT Madras	Applied Probability and Stochastic Processes, Operations Research
S.H. Kulkarni, Ph.D.(IIT Bombay)	Functional Analysis, Numerical Analysis
S.N. Majhi, Ph.D.(IIT Madras)	Fluid Mechanics, Bio-Fluid Mechanics, Mathematical Modelling
P.R. Parthasarathy, Ph.D.(Annamalai) [Head]	Applied probability and Stochastic Models, Mathematic Ecology, Operations Research Statistical Inference
U.N. Srivastava, Ph.D.(IIT Madras)	Applied Mathematics, Differential Equations, Continuum Mechanics, Singular Perturbation Problems, Boundary Layer Theory, Differential Inequalities, Mathematical Ecology, Dynamical Systems
P.V. Subrahmanyam, Ph.D.(IIT Madras)	Fixed Point Theory/Analysis
Associate Professors	
S.A. Choudam, Ph.D (IIT Madras)	Graph Theory, Combinatorics
S.G. Kamath, Ph.D. (Delhi)	Theoretical Physics, Elementary Particle Physics
A. Rangan, Ph.D. (IIT Madras)	Probability Theory, Stochastic Processes, Operations Research, Applications to Biologic Sciences, Neural Method Inventory Controls, Econology Reliability
M.Thamban Nair, Ph.D (IIT Bombay)	Functional Analysis, Line 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, Functional Spaces, Special Functional and Conformal Geometry
(Mrs.)R. Rama, Ph.D.(IIT Madras)	Theoretical Computer Science, L-Systems, Formal Language Automata Theory
Y.V.S.S. Sanyasiraju, Ph.D.(IIT Madras)	Computational Fluid Dynamic 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, Fix Point Theory
Senior Scientific Officer (Gr.I)	
K. Swaminathan, Ph.D.(Agra)	Ship Hydro-Dynamics, Systems Simulations and Development of Software for Control Systems.
Research Associates	
Dr.R. Esther Grace Dr. Sushama N. Agrawal	

During the year under review, the following faculty member and Research Associate resigned on the dates indicated against each:

1. Dr.(Ms) J. Geetha Assistant Professor 15.03.99
2. Dr. P.V.S.N. Murthy Research Associate 12.03.99

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

S. No.	Title	Date	Co-ordinator(s)
1.	Mathematics Training and Talent Search Programme	May 18-June 13, 1998	Prof.S.H. Kulkarni
2.	Short Term Course on Aspects of Nonlinear Functional of Applied Analysis	26-05-98-01.06.98	Prof.P.V.Subrahmanyam
3.	Workshop on Differential Equations and Dynamical Systems	25.11.98-05.12.98	Prof.A.Avudainayagam Dr.(Mrs.) R. Usha
4.	Short Term Course on Fuzzy Set Theory and its applications	07.12.98-18.12.98	Prof.P.V.Subrahmanyam Prof. S.H. Kulkarni Dr. P. Veeramani
5.	International Workshop on Molecular Computing	14.12.98-16.12.98	Dr.(Mrs.)Kamala Krithivasan (CSE) Dr.(Mrs.)R. Rama (MA)
6.	One day Symposium on Mathematical Methods and applications to celebrate the 110 th birthday of Shri Srinivasa Ramanujam	22.12.98	Prof.P.R.Parthasarathy (Chairman) Prof.S.N. Majhi Dr.(Mrs.) R. Usha Dr.M. Thamban Nair
7.	Annual 18 th FST & TIS International Conference, Chennai	Dec. 1998	Dr.(Mrs.) R. Rama (one of the Organisers)
8.	6 th International Workshop on parallel Image Procession & Analysis, Chennai	Jan. 1999	Dr.(Mrs.) R. Rama (one of the Organisers)
9.	Technology appreciation Programme as Industrial Mathematics and Scientific Computing	05.03.99	Dr.YVSS Sanyasiraju

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

S.No.	Name of Faculty	Title	Period
1.	Arindama Singh	(a) Space Seminar Conference (IIT Kharagpur)	06.08.98- 09.08.98
		(b) Industrial Maths Training (Univ. of Kaiserslautern, Germany)	04.05.98- 10.07.98
2.	P. Bhattacharyya	International Congress of Mathematicians, Berlin	18.08.98- 27.08.98
3.	S.H. Kulkarni	(a) International Conference on Recent Developments in Mathematical Analysis with Applications to Industrial Problems, Banaras Hindu Univ., Varanasi	02.03.98- 05.03.98
		(b) International Conference on Fuzzy Analysis, p-adic Analysis and summability D.G. Vaishnav College, Chennai-106	21.12.98 – 25.12.98
4.	P.R. Parthasarathy	(a) Participated in a Seminar organised by Tamil Nadu State Council for Higher Education for revising the syllabi for the graduate students	March 1999
		(b) Attended 5 CSIR Meetings in New Delhi and Hyderabad	
5.	Satyajit Roy	Technology Appreciation Programme on Industrial Mathematics and Scientific Computing, Dept. Maths, IIT M	05.03.99
6.	P.V. Subrahmanyam	(a) National Symposium on Analysis, at Dharwar	June, 1998
		(b) Introduction to Dynamical Systems, Bhatnagar Memorial Lecture for Association of Mathematics Teachers, at Goa, India	08.01.99
		© Chaired a session at the Int. Congress on Fuzzy Analysis, p-adic Analysis and Summability, D.G. Vaishnav College, Chennai.	21.12.98 – 25.12.98
7.	R. Rama	(a) 8 th National Seminar on Theoretical Computer Science (Mat. Science, Chennai)	June, 1998
		(b) 6 th International Workshop on Parallel Image Processing & Analysis-Theory and Applications (Madras Christian College, Tambaram)	Jan. 1999
8.	P. Veeramani	(a) International Congress of Mathematicians, 1998 (ICM '98) at Berlin, Germany, and present a paper entitled 'Best Proximity pair Theorems for Multifunctions with open fibres' (jointly with S. Sadiq Basha).	18.08.98 – 27.08.98
		(b) EUFIT '98, the 6 th European Congress on Intelligent Techniques on soft computing, Aachen, Germany.	07.09.98 – 10.09.98
		© International Conference "On p-adic Analysis Summability Theory and Applications", at D.G. Vaishnav College, Chennai-106.	21.12.98 – 24.12.98

3.4 Special Lectures delivered by faculty in other institutions:

S. No	Name of Faculty	Topic of Lecture	Delivered at	Date
1.	Dr.Arindama Singh	First Order basic – 6 lectures	Govt. Collect, Kasargad	10.03.99- 12.03.99
		(b) Nuerics of SPTPBVP	Univ. of Kaiserslautern, Germany	
		(c) Space in Mathematics	IIT Kharagpur	06.08.98
		(d) Prime Implicants	IIT Bombay	14.09.98
		(e) Quantification Theory	ICPR, Lucknow	04.12.98- 15.12.98
2	Prof. P. Bhattacharyya	(a) Invited talk at XII Conf. On 'Analytic functions	Institute of Maths, Maria Curie,Skladoros- naya Univ. Lublin, Poland	30.08.98- 04.09.98
		(b) Invited talk	Univ. of Helsinki	07.09.99
		(c) Invited talks	Univ. of Iyvaskyla, Finland	10.09.98
		(d) Invited talk	IMS, Hardwar	19.12.98
		(e) Invited talk at International Symposium on Recent Advances in Mathamtics	Calcutta Mathematics Soc.	17.12.99- 19.12.99
3.	Dr. S.A.Choudum	(a) Edge-Colourings of graphs	Fakultat fur Mathematik Univ. Bielefeld, Germany	02.07.98
		(b) Graph Theory	Cochin Univ. of Science & Tech. Cochin	30.01.99
		(c)Graph Theory	Calicut Univ. & Mangalore Univ.	19.11.98- 25.11.98
4.	Prof. S.N. Majhi	(a) Invited to a series of Lectures on Mathematical Methods	Sambalpur Univ.	16.11.98- 21.11.98
		Invited to give a series of Lectures	Central Univ. Hyderabad	30.11.98- 03.12.98
5.	Prof.PR Parthasarathy	(a) Applications of Birth and Death Processes	Univ. of Kaiserslautern, Germany	22.05.98
		(b) On an Inverse Problem in Birth and Death Processes	Twente Univ. The Netherlands	09.06.98
		(c) Transient Analysis of an (S-I, S) Perishable Inventory Model	Dept. of Economics, Univ. of Bielefeld Germany	30.06.98

S. No	Name of Faculty	Topic of Lecture	Delivered at	Date
		(d) Perishable Inventory Models	Univ. of Osnabrueck, Germany	07.07.98
		(e) Birth and death processes, Chain sequences and Rogers-Ramanujan continued fractions	Presented as a Ramanujan Endowment Lecture in Anna Univ. during Int. Conf. On Stochastic Processes and their applications	Jan. 1999
		(f) Birth and Death Processes, Series of talks in QIP programme on Dynamical Systems and Differential Equations		Dec. 1998
6.	Dr. S.Ponnysamy	Special Lectures on Complex Analysis	Guwahati Univ. Assam (Refresher course)	Nov. 1998
7.	Dr. A.Rangan	Invited talk at Int. Conf. Of Radiation Damage, DNA repair and Carcinogenesis	North Eastern Univ. of Shillong	07.04.98-10.04.98
8.	Prof.PV Subrahmanyam	(a) Some aspects of analysis (Ananda Rau-Rajagopal Memorial Endow. lecture	Vivekananda Dollege	17.03.99-21.03.99
		(b) Some aspects of fixed point theory Prof. Rangaswamy Dr.Balachandran Endow. Lecture	Annamalai Univ.	22.01.99
9.	Dr.M.Thamban Nair	(a) Ill-posed Problems and their Regularization	MATSCIENCE (UNESCO Sponsored Prog.)	11.11.98
		(b) On Solving Operator Equations	Govt. College Kasaragod (Refresher Course)	11.03.99-13.03.99
10	Dr.(Mrs.)R. Usha	(a) On Newtonian Squeeze films	Univ. of Kaiserslautern, Germany, Dept. of Maths	22.05.98
		(b) Spin Coating of Liquid films	GLR Institute of Fluid Mechanics, Goettingen, Germany	26.06.98
11	Dr.P.Veeramani	(a) Applications of Fuzzy Dynamic Programming	TU Cottbus (arranged by Prof. Bernhard Thalheim Inst. Fur Informatik, TU, Cottbus, Germany	31.08.98
		(b) Application of Fuzzy Dynamic Programming	RWTH, Templergraben 64, Aachen, Germany, (arranged by Prof.HJ Zimmermann of O.R. Group)	15.02.99

S. No	Name of Faculty	Topic of Lecture	Delivered at	Date
		(c) Fuzzy set theory and its applications	PG Dept. of Maths, Sacred Heart College, Tirupattur, (on the occasion of UGC Spon. Seminar on Recent Advancements in pure and Applied Mathematics)	15.02.99
		(d) Fuzzy set theory	Kandasamy Kandar's College Vellore (Nammakkal)	29.02.99
		(e) Fuzzy Numbers	Union Christian College, Aluva, Kerala (On the occasion of UGC spon. National Sem. On Fuzzy Mathematics and Applications)	29.03.99
12	Dr. V. Vetrivel	Sub differential Calculus for a class of non-smooth functions	Manomaniam Sundaranar Univ., Tirunelveli	June 1998

3.5 Visits Abroad by Faculty:

S.No	Name of Faculty	Country visited	Date	Purpose of visit
1.	Dr.Arindama Singh	Germany, Univ. of Kaiserslautern	04.05.98-10.07.98	To get know how about Industrial Maths
2.	Dr. S.A. Choudum	Germany, Univ. of Kaiserslautern	03.05.98-10.07.98	To get know how about Industrial Maths & Res.
3.	Prof.PR Parthasarathy	Univ. of Osnabrueck		To work in an Indo-German project entitled "Queueing models of computer performance".
		Univ. of Kaiserslautern		To discuss with Prof. Helmut Neunzert about starting a postgraduate programme in Industrial Mathematics and Scientific Computing in dept.,
	Prof.PR Parthasarathy	University of Tübingen, University of Bielefeld, University of Göttingen Twente University (The Netherlands)		Visit
4.	Dr.(Mrs.) R. Usha	Germany, Univ. of Kaiserslautern	01.05.98-31.07.98	DAAD Fellows (Short-term study visit)

3.6 Honours and Awards obtained:

S.No.	Name of Faculty	Name of Award	Awarded for
1.	Prof.(Mrs.)S.Kalpakam	Biographical sketch appeared in the Edition 1998 of Marquis	Who's Who in the World, New Jersey, USA

3.7 Books / Monographs authored or co-authored:

S.No.	Name(s) of Author(s)	Title of Text Book/Monograph	Publisher
1.	Dr.Arindama Singh (with C. Goswamiu)	Fundamentals of Logic	ICPR, New Delhi

4. Design and Development Activities:

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

S.No.	Name of Faculty	Facilities details
1.	Dr.Arindama Singh	Network of the Department – Procured Auto Math Cad., Numerical Reciper and Axum 5.0
2.	Dr.(Mrs.) R. Usha	Mathematical Software 'MATLAB' programme through UNESCO funded project (~Rs.96,000)

5. Research and Consultancy:

5.1 Sponsored Research Projects :

S. No.	Title	Period	Funding Agency	Amount (Rs. in lakhs)	Co-ordinators
1.	On estimating error in regularization methods for ill-posed operator equations	3 years 1997-2000	NBHM (DAE)	1.79	Dr.M.Thamban Nair
2.	Knowledge compilation with Non-ropositional clanges	2 years	DST	4.33	Dr.Arindama Singh
3.	Numerical study at spincoating of a liquid film on a rotating disk	1 year July '98- July 99	UNESCO	US \$8000 ~3,50,000/-	Dr.(MRs.)R. Usha
4.	Theoretical and experimental Inves-tigation of heat transfer from a totally blocked fuel sub-assembly of a liquid metal test breeder reactor	2.1/2 year June 97- Nov.99	IGCAR	18.00	Dr.S.K.Das Dr.S.P.Venkateshan Dr.(Mrs.)R.Usha

S. No.	Title	Period	Funding Agency	Amount (Rs. in lakhs)	Co-ordinators
5.	Inverse Problems in B-L Flows	1998-2001	UGC	1.95	Dr.Satyajit Roy
6.	Multiple Slot injection (suction) in B-L Flows	Feb. 99 July 99	IC & SR	1.00	Dr.Satyajit Roy
7.	Optimization with Set functions	16.02.99-13.08.99	IC & SR	1.00	Dr. V. Vetrivel
8.	Stochastic Modeling of Radiation Damage Repair of cells and Cancer Chemootherapy	3 years 1998 - 2000	CSIR	1.80	Dr. A. Rangan
9.	Application of Formal Languages in Computing Environments	2 years 19.03.99 - 18.03.2001	DST	9,.17	Prof. Kamala Krithivacan Prof.S.V.Raghavan Dr. R. Rama
10.	Compact Higher Order implicit Scheme (CHOIS)	Feb.'99 to Aug.'99	ICSR	1.00	Dr.Y.V.S.S. Sanyasiraju

5.2 Journal Editorial Boards:

S. No.	Name of Faculty	Level	Journal
1.	Dr. Arindama Singh	Member	ISTE
			Orissa Mathematica Soc.
			Indian Mathematical Soc.
			Association of Mathematical Soc.
2.	Prof. S.N. Maji	Editorial Board	JMPS
3.	Prof.PR Parthasarathy	Regional Editor	Statistical Theory and Methods Abstracts
		Associate Editor	J.Math. Phy. Sci. J.Appl.Stat.Sci., Amer. J.Math. Mgt. Sci. And Pure Appl.Math.Sci.
		Advisory Editor	J.Infor. Opt. Sci.
4.	Dr. (Mrs.) R.Rama	Member	European Association of Theoretical Computer Science
5.	Dr. M. Thamban Nair	Life Member Member	(i) IMS (ii) AMS
6.	Dr. Y.V.S.S. Sanyasiraju	Member	Aeronautical Society of India
7.	Prof. P.V. Subrahmanyam	Editor	J. Analysis

5.3 Research Publications:

(a) In Refereed National Journals:

1. Kulkarni S.H. (with Sushama Agrawal), Some Applications of a Spectral theorem for a normal operator on a real Hilbert space, *Math. Today*, 16 (1998), 65-76.

(b) In Refereed International Journals:

1. Thamban Nair M., "On a generalized ercangeli's method for Tikhonov regularization with inexact data" *NUMER FUNCT ANAL AND OPIMIZ.* 19(7&8) 773-787 (1998).
2. Arindama Singh, "Computing Prime Implicants via Transversal Clanges", *International Journal of Computer Mathematics*, Vol.70, pp.417-427 (1999).
3. Usha R. (with Rukmani Sridharan), An Investigation of a Squeeze Film between two plane Annuli. *Transaction of ASME - Journal of Tribology*, Vol.120, pp.610, 1998.
4. Usha R. (with Prema K.), Interaction of Pulsatile and peristaltic Transport Induced Films of a particle - fluid suspension *ZAMM*. Vol.78, pp.207-212, 1998.
5. Usha R. (with Vimla P.), Magnetohydrodynamic Disk Braking, *ZAMM*, Vol. 78, pp. 283-288, 1998.
6. Subrahmanyam P.V., Some Aspects of Analysis, *Math Teacher*, 34(1998)p.29-51.
7. Kulkarni S.H. (with Bhat S.J., Karia D.J. & Shimpi I.M.E.), *Proc.Amer. Math. Soc.* 126 (10) (1998) 2991-3005.
8. Parthasarathy P.R. (with Dharmaraja S.), The transient solution of a local jump heterogeneous chain of diatomic systems, *J.Phys. A: Math. Gen.*, 31 (1998), 6579-6588.
9. Parthasarathy P.R. (with Lenin R.B.), Van Assche, W and Schoutens, W., A birth and death process related to the Rogers-Ramanujan continued fraction, *J.Math. Anal. Appl.*, 224 (1998), 297-315.
10. Parthasarathy P.R., On a ramanujan number, *The Math. Sci.*, 23 (1998),124-125.
11. Parthasarathy P.R. (with Lenin R.B.), On the exact transient availability in discrete time of pallel dedundant repairable systems with quadratic rates, *J.Appl. Stat. Sci.*, 7 (1998), 89-101.
12. Parthasarathy P.R., (with Kiffe T.R. and Matis J.H.), On the cumulants of population size for the stochastic power law logistic model, *Theor. Pop. Biol.*, 53 (1998), 16-29.
13. Parthasarathy P.R., "Birth and death processes, Chain sequences and Rogers-Ramanujan continued fractions", *Stochastic Processes and their Applications*, (Eds) A.Vijayakumar and M.Sreenivasan, Narosa Publishing House (1999), 18-30.

14. Parthasarathy P.R. (with Vijayalakshmi V.), On quadrature approximation for the busy period density function of an M/M/1 queueing system, *Amer. Jour. Math. and Mgmt. Systems*, 18 (1998), 277-289.
15. Parthasarathy P.R. (with Lenin R.B.), on the numerical solution of transient probabilities of a state-dependent multi-server queue, *Intrn. J. Comp. Math.*, 66 (1998), 241-255.
16. Parthasarathy P.R. (with Lenin R.B.), Exact busy period distribution of discrete queue with quadratic rates, *Intern.J.Comp. Math.*, 74 (1998), 1-10.
17. Kalpakam S. (with Shanthi S.), "A Continuum Review Perishable Inventory System with Positive Leadtimes", *Int. Jour.Mgt. Sys.*, Vol.14, 123-134, 1998.
18. Kalpakam S. (with Sapna K.P.), "Optimum Ordering Policies for Expensive Slow Moving Items, *Appl. Math.Lett.*, Vol.II., 95-99, 1998.
19. Avudainayagam A., On the image System of Certain Line singularities In the vicinity of A circular cylinder, *Mechanics Research Communications*, Vol.25, 1998, pp.25-32.
20. Avudainayagam A., A boundary integral equation for two-dimensional oscillatory stokes flow past an arbitrary body, *Journal of Engineering Mathematics*, Vol.33, 1998, pp.251-258.
21. Rangan A., A novel Approach for the Stochastic effects of Radiation on Cell Survival, *Stochastic Analysis and their Applications*, Vol.16, No.2, 1988 pp.131-152.

(c) In Proceedings of National Conferences:

1. Rama R. (with Smitha T.A.), Array contextual Grammars, 8th National Seminar on Theoretical Computer Science, Bhubaneswar, 1998.

(d) In Proceedings of International Conferences:

1. Usha R. (with Vimala P.), Magnetohydrodynamic squeeze Film characteristics between parallel circular plates containing a single central air bubble in the inertial regime. Proceedings of 25th National and 1st International Conference on Fluid Mechanics and Fluid Power. Dec. 15-17, I.I.T., New Delhi, Dec.15-17, 1998. Edited by S.V.Veeravali, S.Sangh, S.N.Singh, V.Seshadri, I.I.T. Delhi. pp.773-783, 1998.
2. Rama R. (with Sri Hari Nagore C.), A Note on Isotonic L.Array Systems, 6th International Workshop on Parallel Image Processing and Analysis, - Theory & Applications, Chennai, pp.247-256, January, 1999.
3. Rama R. (with Smitha T.A.), Some Results on Array contextual Grammars, 6th International Workshop on Parallel Image Processing & Analysis - Theory & Applications, Chennai, pp-226-246, January, 1999.

4. Rama R., 'Splicing - The Array Type', International Workshop on Molecular Computing, I.I.T. Chennai, pp.104-124, December, 1998.
5. Kulkarni S.H. (with Sushama Agrawal, Spectral Theorem for an unbounded normal operator on a real Hilbert space. International Conference on Recent Developments in Mathematical Analysis with Applications to Industrial Problems, Banaras Hindu University, Varanasi, 1998.
6. Kalpakam S. (with Shanthi S.), "Optimal Inventory Policies for a Perishable System with General leadtimes", Proc. of International Conference on "Stochastic Processes and their Applications" (Ed.) A.Vijayakumar and M. Srinivasan, Narosa Publishing House, pp.270-278, (1999).
7. Rangan A., on the Parity of Cells intumor growth Stochastic Process and their Applications, Narossa, pp.61-72 (1998).
8. Rangan A., Optimal inspection and maintenance policies for deteriorating system subject to random shocks, Stochastic Process and their Applications, Narossa, pp.156-168 (1998).

(e) Others:

1. Subrahmanyam P.V., Two classical Fixed Point Theorems and some applications, p. 53-74, Lecture Notes, QIP.
2. Subrahmanyam P.V., Also Edited Lecture Notes on Short-Term Course, Some Aspects of Non-linear, Functional and Applicable Analysis (May-June 1998).
3. Subrahmanyam P.V., Served in the organizing Committee of a International Conference on P-adic Analysis, Summability and Fuzzy Analysis December 1998 and Chaired a session.
4. Thamban Nair M., Presented a paper "Simplified regularization in Hilbert scales using finite dimensional approximations" at the OSMMA, on December 22, 1998; at IIT (M), Chennai.

6. Distinguished visitors to the Department:

S. No.	Name of the Visitor and Designation	Date of visit	Purpose of visit
1.	Prof.Krishna B. Athreya Dept. of Mathematics Iowa State Univ., U.S.A.	11.08.98	To Give Special Seminar

S. No.	Name of the Visitor and Designation	Date of visit	Purpose of visit
2.	Dr.K.Palaniappan Dept. of Comp.Sci. & Engg. Univ. of Missouri, Columbia U.S.A.	13-08-98	To Give Special Seminar
3.	Prof. Pl. Kannappan University of Waterloo	24-08-98	To Give Special Seminar
4.	Dr.E.R.Suryanarayan Univ. of Rhode Island	27-08-98	To Give Special Seminar
5.	Prof.Brenny Von Groesen Univ. of Twente, The Netherlands	9-09-98 to 13-09-98	For giving Special Seminar
6.	Prof.Ram Mahaatro Univ. of Central Florida, U.S.A.	13-10-98	To Give Special Seminar
7.	Prof.V. Kannan Central University, Hyderabad	5-11-98	To Give Special Seminar
8.	Dr. Nandini Kannan University of Texas, U.S.A.	7.01.99	To Give Special Seminar
9.	Prof.M.J. Beckmann Brown Univ., Providence, U.S.A.	11-01-99 to 21-02-99	For giving series of lectures and Special Seminar
10.	Prof.Joseph Oesterle Institute of Mathematical Sciences	27-01-99	To Give Special Seminar
11.	Dr.David Boukal Institute of Entomology Czech Academy of Sciences	27-01-99 to 30-01-99	To Give Special Seminar
12.	Prof.Bruce C. Berndt Univ. of Illinois, U.S.A.	12-02-99	Extramural Lecture
13.	Prof. Otto Moeschlin Fern Univ., Germany	14-03-99 to 17-03-99	For giving series of lectures and Special Seminar

S. No.	Name of the Visitor and Designation	Date of visit	Purpose of visit
14.	Prof. Winfred G. Eschmann Univ. of Kaiserslautern Germany	28-02-99 to 19-03-99	For giving series of lectures and Special Seminar
15.	Prof. T. Parthasarathy Indian Statistical Institute New Delhi	24-03-99	To give Special Seminar

7. Other Activities:

Faculty of the department have refereed several research papers for International Journals, reviewed papers and books for Mathematical Reviews and Zentralblatt fuer Mathematik and refereed projects for CSIR and DST.

Weekly Seminar:

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

The Co-ordinator of this programme for the period under report was Dr. (Mrs.) R. Rama.

MATHEMATICS TRAINING AND TALENT SEARCH (M.T. & T.S.) PROGRAMME 1998

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

The aims of the programme are :

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 experts in the field.

In 1998, the Programme was held during May 18 - June 13. There were about 120 student participants from various colleges and universities in India, divided into 3 levels, viz., level '0', 'I' and 'II', depending on their background. The programme consisted of lectures in the morning and problem sessions in the afternoon. The faculty was drawn from the leading institutions in the country. The programme was highly appreciated by the participants.

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 mainly to highlight the state-of-the-art of Technology on emerging areas. Under the auspices of the Department of Mathematics the Technology Appreciation Programme on "INDUSTRIAL MATHEMATICS AND SCIENTIFIC COMPUTING POWERFUL TOOLS FOR INDUSTRY" was organised on Friday the 5th March, 1999 between 9.30 a.m. and 5.00 p.m. in the ICSR Building, to highlight the scope that exists for industries to utilise this new field, with Prof. P.R.Parthasarathy, Head, Department of Mathematics as the Co-ordinator.

The aims of the Programme were:

- Use of Mathematical and Computational Techniques in Identifying economical, viable efficient and effective approaches solving problems faced by Indian industry in areas like * signal processing * pattern recognition * storage optimization * multiphase flows in porous media * non-linear structures and materials.
- Demonstration of simple mathematical models practiced currently in industrialized nations for research, development, production, distribution and management.
- Building confidence and faith in industrial management and technical personnel for using mathematical tools in solving some of their industrial problems in a better, faster, safer and cheaper way.

The Resource persons in this Programme were from the Institute, and Industry. Prof. Winfried G. Eschmann, Dept. of Mathematics, University of Kaiserslautern, Germany also participated and gave a lecture in this Programme.

MATHEMATICAL MODELLING WORKSHOP

A Mathematical Modelling Workshop in collaboration with the University of Kaiserslautern, Germany was conducted during 8th March - 12th March, 1999 between 2.30

p.m. - 4.30 p.m. in this department. Prof. Winfried G. Eschmann of University of Kaiserslautern co-ordinated the activities of the programme. Three Task Groups consisting of faculty, research scholars and students of the Institute along with participation from industry were involved in modelling Industrial problems.

REPORT ON

"ONE DAY SYMPOSIUM ON MATHEMATICAL METHODS AND APPLICATIONS" HELD ON 22ND DECEMBER, 1998

The following is a brief report in connection with the Ramanujan Day Celebrations which the Department of Mathematics Organized as, "One Day Symposium on Mathematical Methods and Applications" on 22.12.98. The day's events were inaugurated by Prof. V. Ganesan, Dean, Academic Research. This was followed by three invited key note addresses:

(i) Prof. V. Karinan, University of Hyderabad, explained the rotations on the circle from the point of view of dynamical systems

(ii) Prof. R. Simon, Institute of Mathematical Sciences, Madras talked on Ramanujan K.S. Krishnan and the Shamon Sampling Theorem and elaborated on how Krishnan exploited Ramanujan's results to derive several mathematical identities, and

(iii) Prof. N. Balakrishnan, McMaster University, Canada illustrated the important applications of distribution theory associated with runs, Patterns and scan statistics, to reliability theory, statistical quality Control and genetics.

The parallel paper presentation sessions were arranged in the afternoon. In the three sessions on Pure Mathematics, Applied Mathematics and Operation Research and Statistics, 26 papers were presented by participants from Engineering and Arts Colleges in and around Madras.

There were about 120 participants who attended the symposium. The participation from outside Madras was very encouraging. There are about 30 such participants. The day concluded with the presentation of certificates to the participants. The following agencies sponsored some of the events:

- (i) State Bank of India (I.I.T. Branch),
- (ii) Canara Bank (I.I.T. Branch),
- (iii) Wilson & Co., Madras,
- (iv) Modi Xerox, ABACUS Software solutions, Madras.

During the proceedings of the symposium, an important suggestion for installing a chair or an endowment with institute. The Department may like to work in this direction.

We take this opportunity to thank the Director and other Institute Authorities for the help received for conducting this yearly event.

4.10 DEPARTMENT OF MECHANICAL ENGINEERING

1. Introduction:

The Department of Mechanical Engineering was established in the year 1959. The department offers PhD., M.S., M.Tech and B.Tech. programmes. The department has excellent facilities to carry out state-of-the-art research under 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 678	Design Synthesis
2.	MES 601	Fundamentals of IC Engines
3.	MES 602	Thermodynamic Analysis of IC Engines
4.	MES 603	Engine Combustion
5.	MES 604	Fuels, Lubricants and Additives
6.	MES 605	Vibration and Noise of IC Engines
7.	MES 606	Engineering design and Analysis
8.	MES 607	Design of Engine Components
9.	MES 608	Electronic Engine Management
10.	MES 609	Automobile Emission Control Technology
11.	MES 610	Experimental Methods in I.C. Engines
12.	MES 611	Fluids Dynamics of I.C. Engines
13.	MES 612	Small Engine Technology
14.	MES 613	Alternative Fuels Technology
15.	MES 614	Materials and Manufacturing Technology
16.	MES 701	Industrial Visits
17.	MES 702	Engine Workshop Practice
18.	MES 703	Industrial Visits II (Outside Madras)
19.	MES 704	Engine Laboratory (Outside Madras)
20.	MES 705	Project - Phase I and Phase - II
21.	MES 705	Project Work

2.2 New discipline introduced:

An User Oriented M.Tech programme in Automotive Engine Technology was introduced with effect from August 1998 as a result of an MoU between Indian Institute of Technology, Madras and Indian Society for Automotive Technology (ISAT).

2.3 Students on Roll :

Programme	I Year	II Year	III Year	IV Year	V Year	Others	Total
B.Tech.	107	95	84	87	--	--	373
M.Tech.	90	93	--	--	--	--	183
M.S.	9	21	18	7	--	--	55
Ph.D.	14	7	10	33	--	--	64
Total	220	216	112	127	--	--	675

2.4 Number of Scholarship/Fellowship holders:

Programme	Institute Scholarship	Others	Total
M.Tech.	117	--	117
M.S.	29	--	29
Ph.D.	22	--	22
Total			

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

S.No.	Name of the Student/scholar	Programme	Name of the Conf/ Seminar/ Symposia	Date and Venue
	S. Anil Lal	Ph.D.	4 th NCABE.	Dec. 3-5, 1998. Bangalore.
	Y. Ravinder	M.S.	FLUENT Inc.	March 15-20, 1999., Pune.
	A.V.Sita Rama Raju	Ph.D.	National Conference in Automobile Engineering	Dec.16-18, 1998, MIT Chromepet, Madras
	T. Bhaskar	Ph.D.	National Conference in Automobile Engineering	Dec.16-18, 1998, MIT Chromepet, Madras
	K.A. Subramanian	Ph.D.	National Conference in Automobile Engineering	Dec.16-18, 1998, MIT Chromepet, Madras
	M. Senthilkumar	Ph.D.	National Conference in Automobile Engineering	Dec.16-18, 1998, MIT Chromepet, Madras

S.No.	Name of the Student/ scholar	Programme	Name of the Conf/ Seminar/ Symposia	Date and Venue
	G. Prakash	M.S.	National Conference in Automobile Engineering	Dec.16-18, 1998, MIT Chromepet, Madras
	K. Anji Reddy	M.S.	National Conference in Automobile Engineering	Dec.16-18, 1998, MIT Chromepet, Madras

2.6 Number of Degrees Awarded in the last convocation:

Programme	Total
B.Tech.	84
M.Tech.	85
M.S.	22
Ph.D.	14
Total	205

3 Faculty and their Development:

3.1 Faculty

Name and Qualifications

Major Area of Specialization

Professors:

Ajit Kumar Kolar, Ph.D (IIT Madras)

Fluidized bed combustion

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

Hydroturbomachines

Bhaskaran, K.A., PhD.(IIT Madras)

Combustion and Propulsion

Ganesan, V., PhD (IIT Madras)

I.C Engines

Gopinath, K., PhD(IIT Madras)

Machine Design, Tribology and powder

Metallurgy

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

Conventional and Unconventional machining, FMS, CIM, Scheduling, Petrinets

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

Metal cutting, Grinding, Unconventional Machining, Ceramics

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

Hydroturbomachines

Name and Qualifications**Major Area of Specialization**

Madhusudana Rao. M., PhD(IIT Madras)

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

Natarajan, R., PhD(Waterloo)

(Director)

Mechanical Handling, Materials Handling

Robotics, Pneumatics, Medical Instruments

Heterogeneous Combustion,

Energy Conservation, Rocket and

Ramjet

Combustion, Thermodynamics,

Analysis of Energy Systems

Material removal processes, CAD/CAM,

Fluid power, Tool Design

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

I.C.Engines

Pramod S Mehta, PhD(Loughborough,UK)

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

Combustion and Propulsion,

Computational Fluid

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

Metrology, Automation, Grinding, CIM

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

Precision Engineering, Mechanical

Measurement

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

Metrology, BTA, Gear Machining,

Grinding, EDM, Statistical Quality

Assurance, Automation, Computer Aided

Manufacturing Systems and Control

Singaperumal, M.,PhD(IIT Madras)

Fluid power, Electro-hydraulic servo-

systems, Low-cost automation,

Modelling and simulation, Mechatronics

Siva Prasad, N., PhD(IIT Madras)

CAD, FEM, Machine Design, Computer

Graphics

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

Combustion and Propulsion

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

Instrumentation & Control, Active noise

control, Active

Srinivasa Rao, P., PhD(IIT Madras)

I.C Engines

Name and Qualifications

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)

Krishna Kumar,R., Ph.D(IIT Madras)

Krishnamurthy, S.,PhD(IIT Madras)

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

Muthuveerappan,G. Ph.D, (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)

Major Area of Specialization

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

Name and Qualifications

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)

Ramesh, A., PhD(IIT Madras)

Sarit Kumar Das, PhD(Sambhalpur)

Sitaram. N., PhD(Pennsylvania)

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

Major Area of Specialization

Machine design, Materials Technology

Analysis, Simulation & Dynamics

Machine Design & Surface Engg.

Refrigeration & Air conditoning

Instrumentation & Control Engg.

Alternative fuels, Performance improvement of Two stroke & Four stroke engines

Heat Transfer, Heat exchanger, CFD

Turbo Machines

Refrigeration & Airconditioning

Senior Design Engineer:

Kalandar Saheb, S.D., M.Tech(IIT Madras)

Jigs and Fixtures, Powder metallurgy of Gears, Design for Manufacture, Design of Mechanical machines and Equipments

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 M Singaperumal Dr K N Bhat	Workshop on Mechatronics and MEMs Technology	July 16-18, 1998
2	Dr S Srinivasamurthy	Workshop on Recent Advances in Environment Friendly refrigerants	6-7 March 1998
3	Dr.B.Ramamoorthy Dr.L.Vijayaraghavan	User Oriented Program for the Engineers of Hindustan Motors Limited, Thiruvallur.	Nov. 27 & Dec.5 1998.
4	Dr.N.Ramesh Babu	A short course on "CNC Machining" organised under HRD, Training Programs to the technical staff. A seminar on "Water Jet Technology".org. for Industrial Participants Speaker: Prof.Dr.-Ing.H.Louis, Univ.of Hannover	June 6-13, June 1998. Feb.1998

S.No.	Co-ordinators	Title	Period
5	Dr M M Mayuram	Tribo Design and Analysis	Two weeks
6	Prof K Gopinath	Industrial Problem in Machines and Mechanisms 98 – Fluid Power Engg.	4, 5th Sept. '98
7	Dr.A.Ramesh	Awareness programme on IC Engines for M/s Greaves Ltd.	June 4 - July 3, 1998

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.A.Mani	Refrigeration system for fish preservation	Survey of Fishereis India	One week April 1998
		Airconditioning Systems	ISHRAE, Chennai chapter	One week Sept. 1998
2.	Dr. S. Kumaraswamy	Developing a Mission Statement for IIT, Madras	IIT, Madras	4 April, 1998
		3 rd National Conference on Fluid Machinery	NSFM&FP, Pune	12 &13 Sept., 1998
3.	Dr. BVSSS Prasad	25 th National & 1 st International FMFP Conference	IIT., Delhi.	Dec. 15-17, 1998.
		AIMTDR	IIT., Kharagpur.	Dec. 21-23, 1998.
4.	Dr. N. Sitaram	4 th NCABE	IISC., Bangalore.	Dec. 3-5, 1998.
5.	Dr. V. Ganesan	National Conference on Advances in Automobile Engineering	MIT Madras	Dec. 16-18, 1998
6.	Dr. A. Ramesh	National Conference on Advances in Automobile Engineering	MIT, Madras	Dec. 16-18, 1998
7.	Prof.K.A.Bhaskaran	Invited Special Lecture on Technical Application of Combustion at the Fourteenth National Convention of Mechanical Engineers	Organised by the Instituion of Engineers (India) at IIT Madras	20 - 21 Nov. 1998
		Presented a paper titled Ignition and Combustion of Aluminium Particles in an Oxidising Stream at the 2nd International High Energy Materials Conference	IIT Madras	Dec. 1998
8.	Prof.U.S.P.Shet	Presented a paper titled Stability Studies on a Nozzle-Mix Swirl Burner	Univ. of Nagoya, Nagoya, Japan,	Dec. 1-3, 1998

3.4 Special Lectures Delivered by the faculty in others Institutions:

S. No.	Name of Faculty	Topic of Lecture	Venue and Date
1.	Dr Ajit Kumar Kolar	Biomass gasification	Indian Institute of Engineers Seminar, Madras, India
2.	Dr.A.Mani	Solar Energy Technology	Energy and Fuel Technology User's Assn. Of India, Chennai Dec. 11, 1998
3.	Dr. S. Kumaraswamy	Maintenance of Pumps	In-house training program for water supply sub-divison, IIT, Madras 18 April, 1998
		Cavitation in Pumps	Short term course on "Application of Rotodynamic Pumps and Turbines", organized by Ebara Hatakeyama Memorial fund, Tokyo, Japan & IIT, Madras at IIT, Madras 23-24 April, 1998
		Pumps and Systems	SPV course for Techniciains at Central Electronics Centre, IIT, Madras 24 June, 1998
		High Speed Photography and its usage in the study of Cavitation in Pumps	3 rd National Conf. on Fluid Machinery organised by the National Soc. Of Fluid Mech. & Fluid Power at Pune. 12 Sept. 1998
4.	Dr. V. Balabaskaran	Fully Reversible Axial flow Pump Turbine - An Unique Device to tap Energy from Ocean Tides	Short term course on "Application of Rotodynamic Pumps and Turbines", organized by Ebara Hatakeyama Memorial fund, Tokyo, Japan & IIT, Madras at IIT, Madras 23-24 April, 1998
5.	Prof.U.S.P.Shet	Flame Stabilization in High Speed Flows and Combustion Noise from Flame	SHAR Centre, Sriharikota -524 124, India, March 12, 1999
6.	Dr. A. Ramesh	Combustion Characteristics of Dual Fuel Engines	Argonne National Lab., USA 27.10.98
7.	Prof.V.Ganesan	Triple-E Concept for improving Part Load efficiency and reducing pollutants in reciprocating IC Engines	MIT, Madras 16.12.98
8.	Dr.N.Ramesh Babu	Lecture on Water Jet Machining	PSG College of Tech, Coimbatore, May-June 1998

S. No.	Name of Faculty	Topic of Lecture	Venue and Date
		Lecture on Applications of hydrojets for demolition of structures.	Torsteel Research Foundation in India, Coimbatore, 19 th March 1998.
		Lecture on "Advanced Manufacturing Practices"	Greaves Ltd, Chennai 20, 21, 22 and 23 rd Aug.98
		Lecture on CNC Technology at AICTE short term programme on CAD in Engg.	Arulmigu Meenakshi Amman College of Engg. Vadamavandal (Near Kancheepuram), 30 th Nov. 1998.
		Lecture on "CNC Technology & application" to the participants	Hindustan Motors, Chennai. Dec. 5, 1998.
9.	Dr.O.V.Krishnaiah Chetty	Lecture on Jigs and Fixtures	Hindustan Motors, Chennai, Nov-27 to Dec. 5, 1998
		Lecture under AICTE-QIP	Kancheepuram & Warangal
		Expert Lecture on Flexible Manufacturing Systems and Petrinets	RVR & JC.College of Engg, Guntur – 24.1.98
10.	Dr.M.S.Shunmugam	Lecture on Issues in CAD-CAM application development	SRM Software, Chennai February 1999.
		Lecture on Metrology	
11.	Mr.S.D.Kalandar Saheb	Lecture on Gears	Hindustan Motors, Chennai, Nov-27 to Dec. 5, 1998
12.	Dr.R.Krishnamurthy	Lecture on Study and Selection of tool materials	
13.	Dr.B.Ramamoorthy	Lecture on Metrology	

S. No.	Name of Faculty	Topic of Lecture	Venue and Date
14.	Dr.P.K.Philip	Lecture on Property Improvement of metallic materials	
15.	Dr.L.Vijayaraghavan	Lecture on Studies on metal cutting.	

3.5 Visits Abroad by Faculty:

S.No.	Name of Faculty	Country visited	Date	Purpose of Visit
1.	Dr S K Das	Germany	1.5.98 to 9.7.98	In connection with IIT-BMBF Project
2.	Dr Ajit Kumar Kolar	Sweden	22.10.98 to 2.11.98	Indo-Swedish Project
3.	Dr Y G Srinivasa	Germany	May-July 1998	Indo-German Project
4.	Dr K Narayanasamy	Germany	May-July 1998	DAAD Re-invitation
5.	Prof.S.Srinivasamurthy	Germany	10 May to 30 June '98	Indo-German Joint Project with University of Karlsruhe
		Spain	1 July to 10 July '98	Professional visit to Universitat Rovira I Virgili, Tarragona
		England	11 July to 14 July '98	Professional visit to University of Swansea
		Kuwait	8-12 Nov. 1998	International Conference
6.	Prof. Pramod S Mehta	Japan	July 4-27, 1998	Attending International Conference - COMODIA - 98 in Kyoto Unive. and visits to Tokyo Institute of Tech. Hosei University, Keio University, Hiroshima University
		Sweden	Oct. 22- Nov. 1, 1998	For Indo-Swedish Project work
7.	Dr A Ramesh	U.S.A.	Oct 17-30 1998	Attending SAE Conference
8.	Prof.V.Radhakrishnan	Germany USA	12 Nov. & 5 th Dec.	To receive fellow award
9.	Dr.B.Ramamoorthy	Germany	21 st May - 21 st June'98	In connection with Indo-German Project

3.6 Honours and Awards obtained:

S. No	Name of Faculty	Name of Awarded by	Awarded for	Date
1	Prof. V. Ganesan	ISTE, Anna University	National Award for Outstanding Academic in the 28 th National Convention of ISTE at Patiala	Nov. 1998

S. No	Name of Faculty	Name of Awarded by	Awarded for	Date
2	Dr.M.Govardhan	The Sir Rajendranath Mookerjee Memorial Medal by The Institution of Engineers (India).	Study of the Flow Field of an Axial Flow Fan Rotor Subjected to Circumferential Inlet Flow Distortion and Swirl	1998
3	Prof.K.A.Bhas-karan	Eminent Engineer Award	Contribution during the last three decades to the field of Mechanical Engineering	20.11.98
4	B.Ramamoorthy P.Kesavan Nair	18 th AIMTDR Conference at IIT Kharagpur.	Best paper in the area of Precision Engg.	Dec. 1998
5	Dr.N.Ramesh Babu	18 th AIMTDR conference at IIT Kharagpur.	Best paper in the area of CAD/CAM	Dec. 1998.
6	Dr.O.V.Krish-naiah Chetty	Institution of Engineers	Certificate of Merit for the paper published in 1996-97	Jan.1999
7	Dr.M,S.Shun-Mugam	Institution of Engineers	The Corps of Electrical and Mechanical Engineers Medal, Paper titled "Helical Gear Shaping Cutters-Design and Analysis"	April 1999

3.7 Books/Monographs authored or co-authored:

S.No.	Name(s) of Author(s)	Title of Text Book / Monograph	Publisher
1	Dr S K Das	Engg. Heat and Mass Transfer	M/s Dhanpat Raj Pub. Co. Ltd. New Delhi
2	Dr Ajit Kumar Kolar	Editor, Renewable Energy Applications to Industries	Narosa, 1998
3	Dr.G.Gopalakrishnan Dr. D. Prithvi Raj Dr. M. Govardhan	Centrifugal Compressors (Theory and Practice)	Madhukaa Publishers
4	Dr.M.V.C.Sastry Dr.B.Viswanathan Dr.S.Srinivasamurthy	Metal Hydrides: Recent Developments	Narosa Publishing House, 1998

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 M M Mayuram	American Society for Mechanical Engineers	Member	1992
Dr M Madhusudana Rao	American Society for Mechanical Engineers	Member	1991

4. Design and Development Activities

Development of a Stratified Scavenging system with enlarged transfer ducts for two stroke engine.

Control Mechanism for Biogas diesel, dual fuel engines.

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

1. A Bubble Pump Operated Absorption Cooler has been developed under an MNES Project and the patent application has been filed.
2. A Heat Pump Assisted Bagasse Dryer under TDM Project
3. Compression Heat Pump - Chiller under TDM Project
4. Test Rig for Compression Heat Pumps with Mixture Refrigerants
5. Dr Ajit Kumar Kolar - 15 Atm. Bubbling Fluidized Bed combustor research unit for biomass combustion.

Development of a Stratified Scavenging System With Large Transfer Ducts for Two Stroke Engine:

The transfer ducts of a loop scavenged two stroke engine were enlarged and suitably shaped. This arrangement resulted in improved efficiency and reduced emissions. Reed valves were provided on these transfer ducts to allow air for stratified scavenging. Since the volume of the transfer ducts were enlarged a large quantity of air could be trapped in them. This led to significant improvement in performance as compared to conventional engines.

Control Mechanism for Biogas, Diesel Dual Fuel Engines:

A control mechanism, making use of the existing governor of a diesel engine was developed in order to vary biogas flow rate for good overall engine performance. This mechanism keeps the pilot diesel quantity constant and varies biogas flow rate. Easy change over from diesel to dual fuel mode and vice versa is possible.

4.2. Patents filed:

Prof.S.Srinivasa Murthy - Bubble Pump Absorption Cooler; with Dr.M.P.Maiya and S.Saravanan

5. Research and Consultancy:

5.1 Sponsored Research Projects :

S. No.	Title	Period	Funding Agency	Amount (Inlakhs)	Co-ordinators
1.	Development of a computer-aided instructional module for conduction and radiation	1998-99	CCF	0.96	Dr.C.Balaji/ Dr S P Venkateshan
2.	Theoretical and experimental investigation of heat transfer from a totally blocked fuel-sub assembly in a fast breeder reactor	1998	IGCAR	19.01	Dr S K Das Dr S P Venkateshan
3.	Development of Hyperbolic Disper-sion Technique for Heat Transfer Equipment	1998	Indo-German Project	- (Travel grant only)	Dr S K Das
4.	Thermal hydraulic investigations of thermal striping in the hot and cold pools of PFBR	1998	IGCAR	5.98	Dr S K Das
5.	Advanced Technology for combustion of Biomass	Jan 98 – Dec. 2000	SIDA Sweden	75.00	Dr A K Kolar Dr P S Mehta Dr VMK Sastri
6.	Design and development , Active and semiactive, Suspensions for vehicles	1996-1999	DST	9.40	Dr.YG.Srinivasa Dr.K. Narayana samy
7.	MMC for Automotive Applications	1995-1999	MHRD	8.50	Dr.R.Palaninathan. Dr.C.V.Gokularatnam Dr.M.Singaperumal
8.	Evaluation of Tribological Characteristics of Plasma sprayed Ceramic coatings	3 years	DST	8.00	Dr.K.Narayanasamy Dr.R.Krishnamurthy Dr.M.M.Mayura m
9.	Vapour Compression Heat Pump Chiller	1997-1999	MHRD, Govt. of India (TDM project)	100.00	A.R.Balakrishnan and M. P. Maiya
10.	Environment Friendly Alternatives to CFCs for Compression Heat Pump Applications	1997-1999	Indo-German BMFT - IIT Madras	Mutual Visits ~ 3.00	-- Nil --

S. No.	Title	Period	Funding Agency	Amount (in lakhs)	Co-ordinators
11.	Studies on Stratification of Cryogenic Liquid Propellents	1998-2000	ISRO- IITM Cell	7.27	G.Venkataramnam B.V.S.S.S.Prasad
12.	Study of Transient Thermal Response of a Cryogenic Rocket Turbo-pump Assembly	1998-2000	ISRO- IITM Cell	7.92	G.Venkataramnam B.V.S.S.S.Prasad
13.	Design, Development and evaluation of solar augmented evaporative ponds for treatment of aggregated tannery effluents (Soak liquor)	1998-1999	UNIDO Vienna Austria	6.3	Dr.A.Mani Dr.A.Venkatesh Dr.T.K.Ramanujam
14.	Design & Development of Computer controlled reciprocating Wear Test Rig	98-2001	MHRD	6	Dr K Gopinath/ Dr R Gnanamoorthy
15.	Modelling of Iso-Thermal and Reacting Flows in After Burners	1998-2001	ARDB	9,085	Dr.V. Ganesan Dr. T. Sundararajan
16.	Numerical Prediction of Flow and Combustion in Gas Turbine Combustion system	1997-1999	ARDB	4.83	Dr. V. Ganesan Dr. R. Natarajan
17.	Development of a Fuel Efficient Low Emission Two-Stroke Spark Ignition Engine Design	1996-1998	DST	3.59	Dr. A. Ramesh
18.	Design Modification to Improve Fuel Economy and Emissions of a Conventional two wheelers two-stroke engine	1996-1999	TDM	7.50	Dr. A. Ramesh Dr. B. Nagalingam Dr. K.V. Gopalakrishnan
19.	Development of Engine Systems for Rural Applications using Renewable Gaseous Fuels	1996-1999	TDM	9.50	Dr. A. Ramesh Dr. B. Nagalingam Dr. K.V. Gopalakrishnan
20.	Development of Lean Burn CNG SI Engine for Automotive Generator Applications	1995-1999	AICTE	6.00	Dr. B. Nagalingam
21.	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

S. No.	Title	Period	Funding Agency	Amount (in lakhs)	Co-ordinators
22.	Applications of Water Jet Technology in Mfg.	April 95-Feb.99	DST	46.57	Dr.N.Ramesh Babu (PI) Dr.O.V.Krishnaiah Chetty (Co.PI)
25.	A study on centreless grinding using variable stiffness control wheel		DST	14.12	Dr.V.Radhakrishnan (PI) Dr.N.Ramesh Babu (Co.PI)
26.	Development of Technology and equipment for rapid prototyping using CIM approach		DST	13.45	Dr.V.Radhakrishnan (PI) Dr.N.Ramesh Babu (Co.PI)
27.	Continuing Education Module on CNC Technology and Applications supported by AICTE	1998-99	AICTE	0.30	Dr.N.Ramesh Babu

5.2 Industrial Consultancy :

S. No	Name of Faculty	Title	Industry	Amount (in lakhs)
1.	Dr M Singaperumal Dr T Nagarajan	Design of Hyperbaric chamber and Testing of underwater connection	NIOT	0.3
2.	S.Srinivasa Murthy	Test-Rig for A/C Compressors for Railway Coaches	Integral Coach Factory	1.00
3.	S.Srinivasa Murthy	Test Rig for Air Terminals	Air Breeze HVAC Systems India (P) Ltd. (Concluded)	1.00
4.	S.Srinivasa Murthy	Design & Development of Railway Coach Airconditioning System	M/S Srinivas & Sons (Concluded)	0.50
5.	Dr.S.Srinivasamurthy Dr.A.R.Balakrishnan Dr.M.P.Maiya	Heat Pump Recovery Systems under TDM	Heat Planning Commission through MHRD	80

6.	Dr.S.Srinivasamurthy Dr.A.R.Balakrishnan Dr.M.P.Maiya Dr.Srinivas Jayanthi	Vapour Absorption Heat Pump Chiller	Heat Planning Commission through MHRD	120
7.	Dr.S.Srinivasamurthy Dr.A.R.Balakrishnan Dr.M.P.Maiya	Vapour Compression Heat Pump Chiller	Heat Planning Commission through MHRD	100
8.	Dr N Siva Prasad	FEA of End Cover Plates	Stork Engineering Contractor, Bombay	0.30
9.	Dr.N.Ramesh Babu	Development of Press tools Calibration of DRO with laser Interferometer	Fluidyne Pvt. Ltd. Chennai M/s.Aidees Electronics Pvt. Ltd. Chennai	0.35 5,000/-

Industrial Consultancy work for engine industry and Bureau of Indian Standards worth Rs.70,000/- were undertaken.

5.3 RBIC :

S. No.	Name of the Investigator/ Co-investigator	Title	Industry	Amount (in lakhs)
1.	Dr Ajit Kumar Kolar	Heat Flux Probe (with others)	BHEL	3
2.	Dr Ajit Kumar Kolar	Thermal Switch (with others)	IGCAR	12
3.	Dr.S.Srinivasamurthy	Development of Absorption Systems		1.25 (concluding during 1998)
4.	Dr.S.Srinivasamurthy	Thermal modelling of cryogenic rocket pumps		1.50 (Ongoing)
5.	Dr.A.Mani	LiBr Evaporative cooling system	RB/96-97/MEE 004/NSL/ AMAV	1.15
6.	Dr Y G Srinivasa Dr M Singaperumal Mr P V Manivannan	Fuzzy control of Hydraulic Actuators		1.95
7.	Dr M Singaperumal Dr T Nagarajan	Simulation Package for Hyd. Power Pack		5
8.	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

S. No.	Name of the Investigator/ Co-investigator	Title	Industry	Amount (in lakhs)
9.	Dr.BVSSS Prasad	Development and Supply of Combination Velocity cum Temperature Probes	RB/97-98/MEE/005/GTRE/B VSS dt.6.12.97	0.8
10.	Dr.BVSSS Prasad	Analysis of Secondary Air System for Kaveri Engine	RB/98-99/MEE/005/GTRE/B VSS dt 11.3.99	5.0

5.4 Retainer Consultancy :

S. No.	Name of Faculty	Title	Industry	Amount (Lakhs)
1.	Dr.A.Mani	Development of cryo tempering chamber	Fluid Therm Technology (p) Ltd. Madras	Rs.1800 p.m,
2.	Prof.K.A.Bhaskaran	Honorary Retainer Consultant - Heating / Air conditioning Projects	Tirumal Tirupati Devasthanam, Tirupati	Honorary
3.	Dr N Siva Prasad	Tool Path Generation	Technische Software and Systems	0.48
4.	Dr K Gopinath	Tractor Elements Design	Mahindra and Mahindra	0.50
5.	Dr M Madhusudana Rao		McCreade Software (Asia) Pvt. Ltd. Teynampet	0.12 per year

5.5 Exchange programme with other Universities:

The following students went to Germany under DAAD sandwich programme:

1. K.Sathyannarayanan
2. R Ramakrishnan

Dr A K Kolar :Indo-swedish SIDA project with Chalmers University of Technology, Goteborg, Sweden

5.6 Journal Editorial Boards:

S. No.	Name of the Faculty	Level	Journal
1.	Dr K Gopinath	Editor	Conference Proceedings, IPRoMM '98
2.	Dr R Gnanamoorthy	Editor	Conference Proceedings, IPRoMM '98
3.	Dr N Ramesh Babu	Treasurer	Fluid Power Society of India
4.	Dr S Srinivssamurthy	Editorial Board	Journal of Energy, Heat and Mass Transfer

5.	Dr S Srinivssamurthy	Editorial Board	Innovative Refrigeration & Airconditioning
6.	Dr S Srinivssamurthy	Area Editor	International Absorption Newsletter

6. Research Publications:

(A) In Refereed National Journals:

1. A. Venkataramayya, S.P.Venkateshan, Ajit Kumar Kolar, "Analysis of the effect of bubble traversing path on bubble rise velocity estimation in gas fluidized beds" Journals of Institute of Engineers (India) Vol.78, pp.50-56, 1998.
2. R.Raman, and T.S.Chennabasavan, "Theoretical and experimental studies on finite porous bearing with tapered journals". Journal of the Institution of Engineers (India) vol.79, PP158-162, Feb1999.
3. K.Sathyanarayana & M.Singaperumal microprocessor Based ultrasonic process tomography technique a practical approach. JI. Inst.Soc. of India 28(3),190-194,1998.
4. Active Vibration Isolation Using Magnetostrictive actuator, S.Saravanan, T.Nagarajan & D.V.R.L Rao, J.Int. Soc.India 28 (2) 118-122.
5. Sankarlal,T., Mani, A., and Venkatesh,A., "Solar vapour je refrigeration sysem", National Solar Energy Convention, Dec 1998, Roorkee University.
6. T. Ravisundar, E.G. Tulapurkara, V.Balabaskaran,"A Note on Further Investigations of Effects of Fins in a Curved Duct",Journal Aer. Soc. of India, Vol.50, pp.59-64,1998
7. K.A.Bhaskaran, V.Suresh, K.Nageswara Rao & P.B.Umashankar, "Analysis of Metallised Propellant Ignition Process under Conductive Heating", Defence Science Journal, Vol.48, No.3, July 1998, pp.287-296
8. K. Viswanath and M. Govardhan, "Study of the Flow Field of an Axial Flow Fan Rotor Subjected to Circumferential Inlet Flow Distortion and Swirl", Journal of the Institution of Engineers (India), Calcutta, Vol. 78, pp. 186-194, Feb. 1998.
9. Mallikarjuna, J.M. and Ganesan, V., The Performance Characteristics of Extended Expansion Four Stroke Spark-Ignition Engine - Numerical Prediction and Experimental Comparison. Journal of Institution of Engineers, Vol.79, 128-133, 1999.
10. Raghu, M. and Mehta, P.S., Influence of Intake Port Design on Diesel Engine Air Motion Characteristics. Journal of Engineering and Material Science, February 1999
11. V.Sajeev, L.Vijayaraghavan, URK Rao, Experimental Investigation into the Parametric Relationships in Internal Broaching, JI. Of the Inst. Of Engineers (India), V.79, Nov. 1998, pp 68-70.
12. 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.

13. L.Vijayaraghavan & K.J.L.Iyer, The structure of Boronised steels, J. of Tool and Alloy Steels, V.32, No.12, 1998.

(B) In Refereed International Journals:

1. S.K.Das, Roetzel, W., Spang, B., Luo,X., "Propagation of the third sound wave in fluid : hypothesis and theoretical foundation", Int.J.Heat and Mass Transfer, V 41pp. 2769-2780 (1998)
2. S.K.Das, W. Roetzel, Second law analysis of a plate heat exchanger with an axial dispersive wave, Cryogenics, Vol. 38, pp. 791-798, 1998.
3. Venkataramayya, S.P. Venkateshan, Ajit Kumar Kolar, "Bubble detection with horizontal pressure gradient measurements in gas fluidized beds - Powder Technology", Vol. 97, pp 77 - 84, 1998
4. Ramesh, N., Balaji, C. and Venkateshan, S.P., "Interaction of Surface Radiation with Natural Convection". *International Conference on Differential Equations, Numerical Analysis and Non-Linear Mechanics*, University of Central Florida, Orlando, Florida, USA. March 17 - 19, 1999
5. R.Raman and T.S.Chennabasavan, "Experimental Investigations of porous bearings under vertical sinusoidally fluctuating loads" Tribology International, Vol 31, PP 325-330, 1998.
6. Y.G.Srinivasa and S.Puroshothaman, A Procedure for training an artificial neural network with application to tool wear monitoring, Int.J.Prod.Res.1998, Vol.36No.3, PP.635-651.
7. S.Kumuda, Y.G.Srinivasa and R.Krishnamurthy Estimation of Tool Status Using Artificial Neural Network in Face Milling Operation, Int.J.Manuf.Sci.& Prod.1998,Vol.1,No.3, PP 189-198
8. Ganesh Udupa, M.Singaperumal,R.S.Sirohi, M.P.kothiyal "Assessment of 3D form Error using CSOM". Int.Jl. of Mechatronics , Vol.8,No3, PP 187-215,1998.
9. M.B.ARUN, M.P.MAIYA and S.SRINIVASA MURTHY; Optimal performance of double effect series flow vapour absorption refrigeration systems with new working fluids; Int. Jr. of Energy Research, Vol.22, 1998, pp. 1001 - 1007
10. A.K.SONGARA; M.FATOUH and S.SRINIVASA MURTHY; Comparative performance of HFC134a and HCFC22 based vapour absorption refrigeration systems; Int. Jr. of Energy Research, Vol.22, 1998, pp. 363-372
11. MARCUS PFAFF, R.SARAVANAN, M.PRAKASH MAIYA and S.SRINIVASA MURTHY; Studies on bubble pump for a water - lithium bromide vapour absorption refrigerator; Int. Jr. of Refrigeration, Vol.21, No.6, 1998, pp. 452 - 562.

12. A.K.SONGARA, M.FATOUH and S.SRINIVASA MURTHY; Thermodynamic studies on HFC134a - DMA double effect and cascaded absorption refrigeration systems; *Int. Jr. of Energy Research*, Vol.22, 1998, pp. 603-614
13. J.E.B.NELSON, A.R.BALAKRISHNAN and S.SRINIVASA MURTHY; Transient analysis of energy storage in a thermally stratified water tank; *Int. Jr. of Energy Research*, Vol.22, 1998, pp. 867 - 883
14. G.Venkatarathnam, A Straightforward Method for the Sizing of Perforated Plate Matrix Heat Exchangers, *Advances in Cryogenic Engineering* Vol.43, 1643-1650 (1998).
15. G.Venkatarathnam and S.Srinivasa Murthy, Performance of Some Zeotropic Mixtures as Alternate Refrigerants, *Int.J.Energy Research*, vol.22, 1065-1073 (1998).
16. S.Pradeep Narayanan and G.Venkatarathnam, Performance degradation due to Longitudinal Heat Conduction in Very High Ntu Heat Exchangers, *Cryogenics*, vol.38, 927-930 (1998).
17. P.Ramesh and G.Venkatarathnam, Transient Response of Perforated Plate Matrix Heat Exchangers, *Cryogenics*, vol.38, 1243-1249 (1998).
18. Saravanan,R., Maiya, M.P., "Thermodynamic Comparison of Water Based Working Fluid Combinations for Vapour Absorption Systems", *Applied Thermal Engineering*, Vol.18, No.7, pp 553-568 (1998).
19. Saravanan, R., M.P.Maiya, "Comparison of Methanol Based Working Fluid Combinations for Bubble Pump-Operated Vapour Absorption Refrigerator", *International Journal of Energy Research*, Vol.22, pp 715-731 (1998).
20. Marcus Pfaff, Saravanan, R., Maiya, M.P., Srinivasa Murthy,S., "Studies on Bubble pump for a water-lithium bromide vapour absorption cooler", *Int.J.Refrig.*Vol.21, No.6, pp 452-462 (1998).
21. M.B.Arun, M.P.Maiya, S.Srinivasa Murthy, "Optimal Performance of Double-Effect Series Flow Vapour Absorption Refrigeration Systems with New Working Fluids", *Int.J.Energy Research*, vol.22 pp 1001-1017 (1998).
22. V. Balabaskaran, B.H. Lakshmana Gowda, N. Venkatasubramanian, "Flow Visualization Studies over S- Blades", *Journal of Flow Visualization and Image Processing*, vol. 5, Number 3, pp 249-259, 1998
23. K. Annamalai, K. Visvanathan, V. Sriramulu and K.A. Bhaskaran, "Evaluation of the Performance of Supersonic Exhaust Diffuser using Scaled down Models", *Journal of Experimental Thermal and Fluid Science*, Vol.7, 1998, pp 217-229
24. P.Nithiarasu, K.N.Seetharamu & T.Sundararajan, "Effect of Porosity on Natural Convective Heat Transfer in a Fluid Saturated Porous Medium", *International Journal Heat and Fluid Flow*, Vol.19, 1998, pp.56-58.
25. P.Nithiarasu, K.N.Seetharamu & T.Sundararajan, "Finite Element Analysis of Transient Natural Convection Heat Transfer in an odd-shaped Enclosure", *International Journal Numerical Methods for Heat & Fluid Flow*, Vol.8, 1998, pp.199-216.

26. P.Nithiarasu, K.N.Seetharamu & T.Sundararajan, "Finite Element Analysis of Pollutant Transport in Water Saturated Soil", *Communication in Numerical Methods in Engineering*, Vol.14, 1998, pp.241-251.
27. A.R.Deshmukh, T.Sundararajan, R.K.Dube & S.Bhargava, "Analysis of Cold Densification Rolling of a sintered porous metal strip", *Journal of Materials Processing Technology*, Vol.84, 1998, pp.56-72.
28. K.Veluswamy, G.Vaidyanathan, T.Sundararajan, S.C.Chetal and S.B.Bhoje, "Natural Convection in Narrow Component Penetrations of PFBR Roof Slab", *Journal of Energy, Heat and Mass Transfer*, Vol.20, 1998, pp.1-11.
29. P.Nithiarasu, K.N.Seetharamu & T.Sundararajan, "Numerical Investigation of Buoyancy Driven Flow in a Fluid Saturated Non-Darcian Porous Medium", *International Journal Heat and Mass Transfer*, Vol.42, 1999, pp.1205-1216.
30. B.V.S.S.S. Prasad, and A.V.S.S.K.S. Gupta, "Note on the Performance of an Optimal Straight Rectangular Fin with a Semi Circular Cut at the Tip", *Heat Transfer Engineering*, Vol. 19, No. 1, 1998, pp. 53 – 58 (Taylor & Francis, U.S.A.).
31. M. Govardhan, S.S.S.R.K. Sastri and V.S. Vishnubhotla, "Experimental Investigations of the Three-Dimensional Flow in a Large Deflection Turbine Cascade with Tip Clearance", *Journal of Thermal Science (International Journal of Thermal and Fluid Sciences)*, Vol. 7, No.3, pp. 149 – 164, Sept. 1998, China.
32. M. Govardhan, B.H.L. Gowda and G. Kishore, "Visualisation of End Wall Flow with Tip Clearance in a Large Deflection Turbine Rotor Cascade: Effect of Space – Chord Ratio", *Journal of Flow Visualisation and Image Processing*, Vol. 5, pp. 1 – 16, 1998.
33. Venkateswara Babu, M. Govardhan and N. Sitaram, "A Method of Calibration of Seven Hole Probe for Measurement of Highly Three Dimensional Flows", *International Journal of Measurement Science and Technology, (Journal of Physics E: Scientific Instruments)*, Institute of Physics Publishing, Vol. 9, pp. 468 – 476, 1998.
34. Poonia, M.P., Ramesh, A. and Gaur, R.R., Effect of Intake Air Temperature and Pilot Fuel Quantity on the Combustion Characteristics of a LPG Diesel Dual Fuel Engines, SAE Paper No.982455 appeared in SP- 1391 Alternative Fuels, 1998
35. Poonia, M.P., Ramesh, A. and Gaur, R.R., Experimental Investigation of the Factors affecting the Performance of a LPG Diesel Dual Fuel Diesel Engines, SAE Paper No.1999-01-1123, appeared in SP 1412 - Alternative Fuels for CI Engines
36. Prakash, G., Ramesh, A. and Anwar Basha Shaik An Approach for Estimation of Ignition Delay in a Dual Fuel Engine, SAE Paper No.1999-01-0232 appeared in SP 1450 - Diesel Engine Modelling
37. Radhakrishnan.V, Weckenmann.A "A close look at the rough terrain of surface finish assessment", *J. of Eng.Manuf.; Proc.of I.Mech.E. V.212 Part B (1998)*, pp 411-420.

38. M.S.Shunmugam, S.V.R.Surya Narayana and V.Jayaprakash, "Establishing Gear Tooth Surface Geometry and Normal Deviation-Part I : Cylindrical Gears", Mech. Mach Theory, Vol.33, No.5, 1998, pp 517,524.
39. M.S.Shunmugam, B.Subba Rao and V.Jayaprakash, "Establishing Gear Tooth Surface Geometry and Normal Deviation – Part II – Bevel Gears", Mech.Mach.Theory, Vol.33, No.5, 1998, pp 525-534.
40. S.V.Bhaskara Reddy, M.S.Shunmugam, T.T.Narendran, "Optimal sub-division of the depth of cut to achieve minimum production cost in multi-pass turning using a genetic algorithm – Materials Processing Technology, Journal of Materials Processing Technology, 79 (1998), 101-108.
41. V.V.Narayanan Namboothiri, M.S.Shunmugam, "Computer methods in applied mechanics and engineering – Comput. Methods Appl. Mech.Engg. 162 (1998) 133-149.
42. P.G.mathews, M.S.Shunmugam, "Condition Monitoring in reaming through acoustic emission signals – Materials Processing Technology", Journal of Materials Processing Technology, 86 (1999) 81-86.
43. P.G.Mathews, M.S.Shunmugam, "Neural Network approach for predicting hole quality in reaming", International Journal of Machine Tools & Manufacture 39 (1999) 723-730.

(C) In Proceedings of National Conference:

1. S.SRINIVASA MURTHY; Thermal energy conservation technologies (Invited); National Seminar on Energy Optimization - Technology and Cost Management Interface, SIRC-ICWAI, Madras, 30-31 October 1998
2. S.SRINIVASA MURTHY; Energy conservation possibilities in thermal power generation (Invited); Workshop on Energy Conservation and Enhancement of Efficiency in Power Sector, PERT-CARR, Madras, 28 November 1998
3. S.SRINIVASA MURTHY; Industrial energy conservation with co-generation of heat, cold and power (Invited); 30th National Seminar on Emerging Challenges in Energy and Environment, ENFUSE, Madras, 12-13 December 1998
4. Sanjay Agarwal and M.P.Maiya, "Analysis of Desiccant Assisted Airconditioning System", Fourteenth National Convention of Mechanical Engineers", IIT, Chennai, India, November 20-21, 1998.
5. Saravanan, R., Maiya, M.P., "Comparison of Water and Methanol Based Working Fluid Combinations for Solar Operated Pumpless Absorption Refrigerator", Proceedings of the National Solar Energy Convention, Roorkee University, Roorkee, India, November 30 - December 02 1998, pp 486-493.

6. K.A. Bhaskaran, V. Kushal Kumar and P.B. Umashankar, "Low Temperature Propellant Ignition Studies under Conductive Heating Conditions", Proceedings of NCABE-98, I.I.Sc., Bangalore, Dec. 1998
7. Mallikarjuna, J.M. and Ganesan, V., Computer Simulation of Otto-Atkinson Cycle Engine with Experimental Validation Proceedings of National Conference on Advance in Automobile Engineering, Anna University, MIT Campus, Madras, Dec. 16-18, 1998.
8. Ganesan, V., Triple-E Concept for Improving Part Load Efficiency and Reducing Pollutants in Reciprocating IC Engines; Proceedings of the 30th National Seminar on Engineering Challenges in Energy & Environment, Energy and Fuel User's Association of India, Chennai, Dec. 11-12, 1998, Page 3-18.
9. Sitarama Raju, A.V., Ramesh, A., and Nagalingam, B., Effect of Compression Ratio on Part Throttle Performance of a Lean Burn S.I. Engine put into LPG; Proceedings of the National Conference on Advances in Automobile Engineering, Anna University, MIT Campus, Madras, Dec.16-18, 1998, Page 129-137.
10. Prakash, G., Ramesh, A., Nagalingam, B. and Gopalakrishnan, K.V., Experimental Investigation on the Full Load Performance and Combustion Characteristics of a Biogas - Diesel Dual Fuel Engine; Proceedings of the National Conference on Advances in Automobile Engineering, Anna University, MIT Campus, Madras, Dec. 16-18, 1998.
11. Bhaskar, T. and Mehta, P.S., Premixed Phase Combustion in Direct Injection Diesel Engine; Proceedings of the National Conference on Advances in Automobile Engineering, Anna University, MIT Campus, Madras, Dec. 16-18, 1998.
12. Anji Reddy, K. Ramesh, A., Nagalingam, B. and Gopalakrishnan, K.V.; The effect of Thermal Insulation of the Combustion Chamber on the Performance of a Two-Stroke S.I. Engine; Proceedings of the National Conference on Advances in Automobile Engineering, Anna University, MIT Campus, Madras, Dec. 16-18, 1998.
13. S. Anil Lal, B.V.S.S.S. Prasad and N. Sitaram, "Development of a CFD Code for Flow Through Turbomachine Passages", Paper IF - I, Proceed. NCABE - 98, Bangalore, PP. 1 - 8.
14. S. R. Kajale, B.M. Dabade, B.V.S.S.S. Prasad and P. K. Mishra, "Optimization of Pulsed Laser Drilling", Proceed. 18th AIMTDR Conference, IIT Kharagpur, PP. 363 - 368.
15. T. N. Shridhara and N. Sitaram, "Three Dimensional Flow at the Exit of a Centrifugal Compressor at Off-design Conditions", Proceed. 49th AGM of Aero Society of India, Mumbai, Jan. 16 - 17, 1998.
16. N. Sitaram, "Wake Characteristics of a Heavily Loaded Axial Flow Compressor Rotor at Design Condition", Proc. of 4th NCABE, Bangalore, Dec. 3 - 5, 1998.
17. A.Ramesh Babu & N.Ramesh Babu, A genetic and heuristic approach for nesting of two dimensional irregular parts in an irregular sheet, Proc. 18th AIMTDR conf, 21-23, Dec. 1998, pp 473-478.

18. K.N.Prasad, V.J.Patel, B.Ramamoorthy, Crater Wear Measurement of Turning Tool by Computer Vision, 18th AIMTDR Conference held at IIT Kharagpur, December 1998, pp 172-176.
19. V.V.N.Reddy, B.Ramamoorthy, P.Kesavan Nair, Studies on Ni-P/Diamond Composite Coatings, 18th AIMTDR Conference held at IIT Kharagpur, December 1998, pp 440-444. "Adjudged as Best Paper in Precision Engineering category".
20. K.Hariprasad Reddy, B.Ramamoorthy, P.Kesavan Nair, Investigations on the Surface Behaviour of Medium Carbon Steel Material after Grinding using Taguchi Techniques, 18th AIMTDR Conference held at IIT Kharagpur, December 1998, pp 194-198.
21. P.C.Sajith Kumar, B.Ramamoorthy, V.Radhakrishnan, Dr.A.Weckenmann, Improvement of Machining Accuracy of Machine Tools with the Application of ANN, 18th AIMTDR Conference held at IIT Kharagpur, December 1998, pp 4-8.
22. R.Deivanathan, L.Vijayaraghavan, R.Krishnamurthy, "Wheel Condition Monitoring in Tool Steel Grinding", National Conference on Maintenance and Condition Monitory, 14th February, 1998, Govt. Engineering College, Thrissur.
23. R.Deivanathan, L.Vijayaraghavan, R.Krishnamurthy, "Study of Thermal Transients and Tempering Effect during Steel Grinding", Fourteenth National Conference of Mechanical Engineers, Advances in Thermal Engineering, 20-21 November 1998, IIT Madras.
24. R.Deivanathan, L.Vijayaraghavan, R.Krishnamurthy, "Study of the Work surface damage due to burning during grinding of steel", 18th AIMTDR Conference, December 21-23, 1998, IIT Kharagpur.
25. "Effect of Specific cutting pressure and temperature during machining of carbon/phenolic ablative composites with PCD tools" Proc.18th All India MTDR Conference Dec.21-23,1998, Kharagpur, India.
26. "Surface topography characterizaton of machine ceramic coatings by an optical profiler", Proc.18th All India MTDR Conf.Dec.21-23, 1998, Kharagpur, India.
27. V. Sastha Prasad, S.K. Das, An Experimental and theoretical investigation into the hyperbolic nature of axial dispersion in packed beds, National symposium on Cryogenics, Kharagpur, Dec. 1997-Jan 1998.
28. S.K. Das, B. Spang, F. Balzereit and W. Roetzel, "Expderimental Determination of Axial Dispersion Parameters during enhanced Heat Transfer in Compact Heat Exchanger Surfaces", Intl, Conference on Heat Exchangers for Sustainable Development, 1998.
29. A.K. Kolar, "Biofuels for Power generation" 30th National Seminar on Emerging challenges in Energy and Environment Madras, India. (Dec. 1998) - pp 1-7.
30. Chakravarthy P.S, N.Ramesh Babu, Ramkumar M.S, Robert H, Krishnaiah Chetty, O.V, "Investigations on Abrasive Water Jet Cutting of Granites", Proc. of V PRIC WJT, 98, pp 433-440.

(D) In Proceedings of International Conferences:

1. Studies on Specific cutting pressure and Temperature during Machining of Silica/Phenolic Composites with DCD Tools, Proc. of Intl. On Advances in Production Engineering 1-3 June 1998, Warsaw, Poland.
2. "Studies on High Silica/Phenolic Ablative Composites" Proc.Vth Intl. Conf. On Composites Engineering, July 5-11, 1998, Las Vegas, Nevada, U.S.A.
3. "Machining Characteristics of Carbon/phenolic Ablative Composites" Proc. European Conf. on Composite Materials ECCM-8, June 3-6, 1998, Naples, Italy.
4. P.VIJAYAKUMAR, G.VENKATARATHNAM and S.SRINIVASA MURTHY; Comparative study of HFC based vapour jet refrigeration systems suitable for low potential energy sources; International Conference on Energy Research and Development (ICERD), Kuwait, 9-11 November, 1998.
5. M.B.ARUN, M.P.MAIYA and S.SRINIVASA MURTHY; Comparative study of HFC based vapour absorption refrigeration systems suitable for low potential energy sources; International Conference on Energy Research and Development (ICERD), Kuwait, 9-11 November, 1998.
6. J.E.B.NELSON, A.R.BALAKRISHNAN and S.SRINIVASA MURTHY; Mixing and wall conduction effects in a stratified hot water tank; International Conference on Energy Research and Development (ICERD), Kuwait, 9-11 November, 1998.
7. G.Venkatarathnam, G.V.Pasad, S.Srinivasa Murthy, Performance of a mixed cascade refrigerant cascade refrigeration cycle for very low temperature applications, Presented at International Institute of Refrigeration (IIR) Conference on Emerging Trends in Refrigeration and Airconditioning, March 18-20, 1998 New Delhi.
8. G.Venkatarathnam, N.Aggrawal, S.Srinivasa Murthy, Performance of heat pumps with hydrocarbon zeotropic mixtures, Presented at International Institute of Refrigeration (IIR) Conference on Emerging Trends in Refrigeration and Airconditioning, March 18-20, 1998 New Delhi.
9. M.P.Maiya, S.Balakrishnan, "Analysis of a Self Sustained Desiccant Cooling System", IIR Conference on Emerging Trends in Refrigeration and Airconditioning, March 18-20, 1998, New Delhi, India.
10. G.V.Rao, M.P.Maiya, "Studies on Thermal Stratification for Airconditioning", IIR Conference on Emerging Trends in Refrigeration and Airconditioning, March 18-20, 1998.
11. M.P.Maiya, "Water Cooling by an Expanding Air Stream", IIR-Gustav Lorenzen Conference on Natural Working Fluids'98, June 2-5, 1998, Oslo, Norway, pp 104-113.
12. V. Balabaskaran, B.H. Lakshmana Gowda, N. Venkatasubramanian, "Flow visualisation Studies over S- Blades", Paper No. 239, 8th International Conference on Flow Visualisation, Sep 1-4, Sorrento, Italy, 1998

13. V. Suresh, Job Kurian and K.A. Bhaskaran, "Ignition and Combustion of Aluminium Particles in an Oxidising Stream"; Proceedings of the Second International High Energy Materials Conference, Dec. 1998
14. B. Nageswara Rao, U.S.P. Shet, B. Lenze, "Studies on Nozzle-Mix Swirl Burner with Combustion Staging", 33rd Intersociety Energy Conversion Engineering Conference, IECEC-98, Colorado Spring, U.S.A., Paper No.IECEC-98-318, August 2-6, 1998.
15. G. Ramachandran, G. Venkatesh, U.S.P.Shet and T. Sundararajan, "Turbulent Burning Velocity Evaluation Employing Digital Image Processing Technique, 27th Symposium (International) on Combustion, The Combustion Institute, U.S.A., held at the University of Colorado, Boulder, U.S.A., August 2-6, 1998, Abstarct of W-I-P Poster, W4E08, p.358.
16. G. Ramachandran, U.S.P.Shet and T. Sundararajan, "Studies on Temperature Effects on Grid-Generated Turbulence in Nozzle-Jet Flows, International Conference on Theoretical, Applied, Computational and Experimental Mechanics, I.I.T., Kharagpur, December 1-5, 1998, Paper No: ICTTACEM/P/2.
17. U.S.P.Shet, B. Nageswara Rao, and B. Lenze, "Stability Studies on a Nozzle-Mix Swirl Burner, Paper No. 0-11, Session 2, 2nd International Symposium on Advanced Energy Conversion Systems and Related Technology, RAN 98, University of Nagoya, Japan, December 1-3, 1998.
18. K.Velusamy, T.Sundararajan and K.N.Seetharamu, "Laminar Natural Convection in an Enclosure formed by non-isothermal walls", Proceedings of the XI International Heat Transfer Conference, Kyongju, Korea, paper no. NC-20, 1998.
19. K.M.Chakravarthy, T.Sundararajan, V.Ganesan and R.Natarajan, "Numerical Investigation of Jet Mixing and Combustion in Two Dimensional Dump Combustors", 49th Annual meeting of the Aeronautical Society of India, IIT Mumbai, Jan. 1998, pp.14.1-14.8.
20. V.V.Soman, C.Shraavan Kumar, T.Sundararajan, R.Natarajan and K.Ramamurthi, "Modelling of Pulsatile Liquid Injection Systems", 25th National and 1st International Conference on Fluid Mechanics and Fluid Power held at IIT Delhi, Dec. 15-19, 1998, pp.158-165
21. V.Ramjee, T.Sundararajan, S.Vijayakumar and G.S.V.H.Sitapathi Rao, "Study of Jet Development After a Sudden Expansion", ASME Fluid Engineering Division Summer meeting held in Washington DC during June 21-25, 1998, paper no. FEDSM98-4997.
22. Vasu, R., Starlin, U., Ramesh, A., Nagalingam, B. and Gopalakrishnan, K.V., Experimental Investigations on the Effect of Extra Reed Valves fitted at the Transfer Ducts of a Two-Stroke S.I. Engine.; International Conference on "Advances in Vehicle Control and Safety", Amiens, FRANCE, July 1-3, 1998.
23. Bhaskar, T. and Mehta, P.S., A Multi-zone Diesel Combustion of Model using Eddy Dissipation Concept Fourth International Symposium on Diagnostics and Modeling of Combustion in Internal Combustion Engines (COMODIA '98), Kyoto, Japan, July 20-23, 1998.
24. Sitaram, S. K. Parida and B.V.S.S.S. Prasad, "Effect of Inlet Wake on the Total Pressure Loss in a Linear Turbine Rotor Cascade", AIAA Paper 98-3576, 34th AIAA/ASME/ASEE Joint Propulsion Conference and Cascade, 11 pages, July 13 - 15, 1998, Cleveland, U.S.A.

25. B.V.S.S.S. Prasad and S. Anil Lal, "Numerical Prediction of Inviscid Flow Through a Channel with a Semi-Circular Bump", 25th National and 1st International Fluid Mechanics and Fluid Power Conference, Dec.1998.
26. M. Govardhan, B.H.L. Gowda and G. Kishore, "An Experimental Study of End Wall and Tip Clearance Flows in a Two-Dimensional Turbine Rotor Cascade" – 25th National and 1st International Conference on FM & FP, Dec. 15 – 17, 1998, pp. 430 – 439, IIT Delhi.
27. Sitaram, M. Govardhan, V. T. Muralikrishna, "Loss Reduction by Means of Three – Dimensional Roughness Elements on the Suction Surface of a Linear Turbine Rotor Cascade", Third International Conference on Fluid Mechanics, Beijing, China, July 7 – 10, 1998.
28. Sitaram and G. Ch. V. Siva Kumar, "Mean Velocities at the Exit of the Rotor of a Low Aspect Ratio Axial Flow Compressor With and Without Partial Shrouds", Proceed. 25th National and 1st International Conference on Fluid Mechanics and Fluid Power, Delhi, pp. 369 – 378, Dec. 15 – 17, 1998.
29. P.Sitarama Chakravarthy, N.Ramesh Babu, O.V.Krishnaiah Chetty, M.S.Rama Kumar, H.Robert, Investigations on Abrasive Water Jet Cutting of Intl. Conf. On Water Jet Technology, 3-5, Feb. 1998.
30. Jaganathan, R., Radhakrishnan, V.Fluidised Abrasive Polishing [FAP] – A new approach for mould and part polishing, Proc.International Seminar on World Classing Tooling, Diemould India 98, March 11-14, 1998.
31. R.Deivanathan, L.Vijayaraghavan, R.Krishnamurthy, "Intelligent Prediction of Wheel life for Cylindrical Grinding Cycle Planning", CIRP International Seminar on Intelligent Computation in Manufacturing Engineering, ICME-98, University of Naples, Italy, 1-3 July, 1998.
32. P.Sitarama Chakravarthy, A.Ramesh Babu & N.Ramesh Babu, "A fuzzy based approach for selection of process parameters in Abrasive Water Jet Cutting of Black granite, Proc. of 5th Pacific Rim Intl. Conf. On Water Jet Technology, New Delhi, 3-5, Feb. 1998, pp 108-113.
33. A.Ramesh Babu and N.Ramesh Babu, "A genetic approach for nesting of two dimensional complex parts, (PSG college of Technology, Coimbatore), 14th Intl. Conf. On CAD/CAM, Robotics, and Factories of the future, 1-3, Dec. 1998, pp 387-394.
34. Vijayaraghavan, L., Janakiram D., Narasimha Reddy K., "Routing flexibility in designing FMS control software using 00 design patterns", , (PSG college of Technology, Coimbatore), Proc. of 14th Intl. Conf. On CAD/CAM, Robotics, and Factories of the future, 1-3, Dec. 1998, pp 372-379.
35. K.N.Prasad, B.Ramamoorthy, Crater Wear Measurement of Turning Tool by Computer Vision and Tool life estimation using ANN, International Conference on CAR & FOF'98 to be held at PSGCT, 1-3 Dec. 1998, pp 284-291.
36. A.S.Varadarajan, B.Ramamoorthy, P.K.Philip, Neural Network assisted performance prediction in Hard turning with minimal quantities of coolant lubricants. International Conference on CAR & FOF'98 to be held at PSGCT, 1-3 Dec. 1998, pp 654-658.

37. Hariprasad Reddy, B.Ramamoorthy, P.Kesavan Nair, Estimation of Optimum Condition to Improve the Quality of Ground Surfaces by applying Taghuchi Techniques. International Conference on CAR & FOF'98 to be held at PSGCT, 1-3 Dec. 1998, pp 473-479.

38. Raghunandan R, Shanmugam, M.S "Generation and Interpretation of CAD Database to Facilitate Inspection for turned Components", International Conference on CAR & FOF'98 to be held at PSGCT, 1-3 Dec. 1998, pp S 67-75.

7. Distinguished Visitors to the Department:

S. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1.	Prof.Winkler, Germany	1998	Exploratory
2.	Prof.R.K.Shah, USA Professor	Dec. 98 - Jan. 99	Arcot Ramachandran Heat Transfer Chair discussion
3.	Dr Bhagawan, SIDA, Sweden	March 1998	Discussion
4.	Prof.Yoshiharu Mutoh, Nagaoka University of Technology, Japan	22.1.98	For MoU and Research Discussions
5.	Mr. John Casker Head, Section Relations Division SAE Intrn.	06.04.98	Discussion of SAE Activities
6.	Dr. David Amati, Director, Meetings and Expositions, SAE International	06.04.98	Discussion of SAE Activities
7.	Mr. Arshad Hafeez Director and Registrar, SAE International	06.04.98	Discussion of SAE Activities
8.	Mr. Murali M. Iyer Global Development Manager, SAE International	06.04.98	Discussion of SAE Activities
9.	Mr. C. Kin Chief Research Engineer Hyundai Motor India Ltd Korea	18.12.98	Visit to the IC Engines Laboratory
10.	Mr. M. H. Lee Executive Director Hyundai Motor India Ltd	18.12.98	Visit to the IC Engines Laboratory
11.	Mr. T. M. Kumar General Counsel Hyundai Motor India Ltd	18.12.98	Visit to the IC Engines Laboratory
12.	Mr. Ronald K. Leonard President SAE International	20.01.99	Discussion of SAE Activities
13.	Mr. Max E. Rambaugh Executive Vice-President SAE International	20.01.99	Discussion of SAE Activities
14.	Mr. Murali M. Iyer Global Development Manager SAE International	20.01.99	Discussion of SAE Activities

7.1 Other Activities:

1. Prof. Pramod S Mehta	Secretary	Combustion Institute (Indian Section)
2. Prof. V. Ganesan	Chairman	Engineering Education Board, SAE International Board
3. Prof. B. Nagalingam	Secretary	SAE (Institute Chapter)
4. Dr. A. Ramesh	MemberSAE	International Board
5. Dr.M.Govardhan	Vice-chairman	JEE, 1998
6. Dr.M.Govardhan	Jt. Secretary	Faculty Association

Dr.O.V.Krishnaiah Chetty acted as the Moderator (Chairman) for the "Technology Symposium Baden-Wiisternberg" at Park Sheraton on 26-27, March 1998.

4.11 DEPARTMENT OF METALLURGICAL ENGINEERING

1. Introduction:

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

Metal Casting
Metal Forming
Metal Joining
Materials Technology

2. Academic Programmes:

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

2.1 New Courses Introduced :

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

2.2 Students on Roll (as on 31.8.1998) :

Programme	I Year	II Year	III Year	IV Year	V Year	Total
B.Tech.	30	29	28	26	-	113
M.Tech.	13	18	-	-	-	31
M.S.	-	2	1	2	-	5
Ph.D.	1	4	1	21	-	27
Total	44	53	30	29	-	176

2.3 No. of Degrees Awarded :

Programme	Number Awarded
B.Tech.	30
M.Tech.	10
M.S.	2
Ph.D.	3
Total	45

3. Faculty and their development:

3.1 Faculty details:

Name and Qualification

Major Area of Specialisation

Professors:

Achar, D.R.G., Ph.D.

Welding Technology

Gokularathnam, C.V., Ph.D

Physical Metallurgy, X-ray diffraction,
Powder diffraction, powder metallurgy
advanced ceramics, SEM & TEM

Padmanabhan, K.A., Ph..D
(Cantab) (on lien)

Metal forming, rolling, sheet metal
forming, forging, mechanical
metallurgy superplasticity

Pathak, S.D., Ph.D.

Mechanical Behaviour, Mechanical
Metallurgy, Fatigue Fract. Mech.

Prasad Rao, K., Ph.D.

Metal Joining, Corrosion

Raghavan, S., Ph.D.

Thermodynamics, Solid electrolyte sensors, Hot
corrosion

Seshadri, S.K. Ph.D.

Chemical Metallurgy
Surface Technology

Sundaresan, S., Ph.D.

Metal Joining

Venugopal, P., Ph.D.

Metal Forming Processes, Press Tool
Design, Hammers and Presses, Cold
extrusion of materials.

Associate Professors:

Kesavan Nair, P., Ph.D.

Physical Metallurgy

.Paramanand Singh, Ph.D.

Powder Metallurgy, Ceramics
Composites and Material Science

Assistant Professors:

Guha, B. Ph.D.

Fatigue & Fracture of Welded Joints,
Appln. FEM/CAD in the Area of
Welding Technology

Sampath, V. Ph.D. Materials Technology & Science, Composite Materials, Physical Metallurgy, Surface Modification

Bhattacharya S.S., Ph.D.. Superplasticity & High Temperature Behaviour, Metal Forming

Raghunathan Rao, B. Ph.D. Physical Metallurgy, Metallography and Heat Treatment Metallurgical Failure analysis.

Sohini PalDey (Mrs.), Ph.D. Chemical Metallurgy Advanced Materials

Uday Chakkingal, Ph.D. Materials processing and characterization, Aluminium alloys, Surface coatings.

Ram Devanathan, Ph.D. Electron Microscopy, Computer Simulation

AICTE Emeritus Fellow:

Prof.K.J.L. Iyer Physical Metallurgy

Emeritus Professor

Prof. V.M. Radhakrishnan Mechanical behaviour, Creep, High Temperature Materials, Life Assessment

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

Kumaran, S. M.S. Non Ferrous Extraction Metallurgy, Chemical Metallurgy

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

S.No	Co-ordinators	Title	Period
1.	Prof. S.K.Seshadri	Second National Symposium of Research Scholars on Metal and Mateeials	July 3 - 4, 1998
2.	Prof. D.R.G. Achar	One day Workshop on Computer aided weld quality control and automation.	Feb 22, 1999

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

S. No	Name of the Faculty	Title	Institution	Period/ Duration
1.	Prof. D.R.G. Achar	IIM, 52 nd ATM Int. Welding Conf.	IISc Bangalore Indian Inst. of Welding, Delhi	14-17 Nov. 98 15-17- Feb 99
2.	Prof. S. Sundaresan	International Welding Conf.	Indian Inst. of Welding, Delhi	15-17- Feb 99
3.	Prof.K.Prasad Rao	International Welding Conf.	Indian Inst. of Welding, Delhi	15-17- Feb 99
4.	Dr. V. Sampath	IIM 52 nd ATM	IISc. Bangalore	14-17 Nov. 98

3.4 . Special Lectures delivered by the faculty in other Institutions

S.No.	Name of the faculty	Topic of Lecture	Venue & Date
1.	Prof. D.R.G. Achar	Welding Technology for Construction at SPIC Jel Engg. Ltd., Chennai.	6 July 98
		Welding Processes & Defects at ISNT, Chennai.	7 July 98
		Welding Technology & Inspection at RESET Center, MRL, Adv. Refinery Technology, Chennai.	18 Sept.98
		Cryogenic treatment of Tool Steels - Cryogenic Processing of Welding Joints, at the DST International Meeting, Calcutta.	12 Nov.98

3.5. Visits Abroad by Faculty:

S.No.	Name of the faculty	Country visited	Date	Purpose of visit
1.	Dr.S.S.Bhattacharya	Germany	2.8.98	AVH Fellowship
2.	Prof. K. Prasad Rao	USA	Oct 97 - Oct.98	Sabbatical

3.6. Honours and Awards obtained:

S.No.	Name of the faculty	Name of Award/Honour	Award by	Award for	Date
1.	Dr. Sohini Paldey	Extrusion and Processing Science award.	TMS Society USA	Best Extrusion & Processing Science - publication in Metallurgy and Materials of Transactions.	April 98
2.	Prof. S.Raghavan	Active Member of New York Academy	By Invitation from board of Sciences	--	1998

3.7 Fellowships of Academies and Professional Societies

Name of Faculty	Name of the Academy/ Level Professional Society	Year of Admission
Prof. S. Raghavan	New York Academy of Sciences	Active Member 1998

4. Research and Consultancy:

4.1 Sponsored Research Projects :

S.No.	Name of the Faculty	Title	Industry	Amount (in lakhs)
1.	Dr.D.R.G.Achar Dr.B.Guha	Cascade in Welding Technology	DST	12.46
2.	Dr.,S.Sundaresan	Effect of fusion zone grain refinement on weldability of Al & Ti alloys	AR&DB	5.85
3.	Dr.S.Sundaresan	Welding of duplex stainless steels	AICTE	3.00
4.	Dr.S.Sundaresan Dr.K.,J.L.Iyer	Welding procedure development and performance evaluation of steam generator transition joints	BRNS	11.13

S.No.	Name of the Faculty	Title	Industry	Amount (in lakhs)
5.	Dr.S.Sundaresan Dr.S.K.Seshadri Dr.V.M.Radhakrishnan Dr.K.J.L.Iyer	Welding and stress corrosion cracking of maraging steel	DRDL	4.00
6.	Dr.S.Sundaresan Dr.V.M.Radhakrishnan Dr.K.J.L.Iyer	Fundamental investigations of advanced ferrous alloys	Indo-US	3.93
7.	Dr.B.Guha Dr.K.Prasad Rao	Application of Electron Beam Welding Technique on Ti-6Al-4V	ISRO-IITM	5.49
8.	Dr.B.Guha Dr.K.Prasad Rao	Improvement of Toughness of Ti-6Al-4V Welds	DST	7.18
9.	Dr.K.A.Padmanabhan Dr.S.S.Bhattacharyya	Fatigue Behaviours of New Microalloyed Ferritic Pearlitic steels	VW Foundation, Germany	DM90000
10.	Dr.P.Venugopal Dr.S.S.Bhattacharyya	Open Die Extrusion of sintered powder metallurgical preforms	DST	18.69
11.	Dr.K.A.Padmanabhan Dr.S.S.Bhattacharyya	Fundamental Studies....	NRL Washington	13.80
12.	Dr.K.A.Padmanabhan Dr.S.S.Bhattacharyya	Phenomenology & Rheology	ILTP,DST	4.75

5.2 Industrial Consultancy

S.No.	Name of the Faculty	Title	Industry	Amount (in lakhs)
1.	Dr. D.R.G. Achar	Advice in the welding of ships of Al/AlSn alloys.	Bimetal Bearubgs Ltd. Chennai	0.10
2.	Dr. S.K. Seshadri	Anodised layer study	S.Railways	0.08
		Metallurgical examination of damaged mould	Hindustan Lever	0.12
		Failure analysis of corroded Sample of prestressing wire	Port Trust	0.25
		Corrosion	Orchid Chem. Ltd.	0.12

S.No.	Name of the Faculty	Title	Industry	Amount (in lakhs)
3.	Dr.S.Sundaresan	Failure analysis of pipe-line	IOL	0.25
		Surface finish study	DCM, Hyundai	0.04
		Replica Photomicrography	IQC	0.10
		Failure Analysis	Nagarjuna Fertilizers	0.50
		Hot Cracking studies	VSSC	0.60
		Microstructural analysis	Mahindra – Ford	0.07
4.	Dr.S.D.Pathak	Stress Rupture & Hot tensile behaviour Of Power Plant Tubes	U-Tech.Consultants & Engineers (p) Ltd.	1.10
		K _{IC} of Maraging steel	Fomas India Ltd.	0.25
		Failure Analysis of	IOL Ltd.	0.04
		Fatigue Behaviour of of tubes	Tube Investments of India	0.60
		High temperature Behaviour of T-11, T.22 & C-steels	IQC	0.045
		TI – 6 AL – 4V welded material behaviour in tension at RT.	TEAM, Chennai	0.525
		CVN at -50°C of HSLA 100 base and weldments	TISCO	0.10
		Spring constant & preload CAP of 1.5 m long spring in tension	Synergy Tech.	0.025
		16 hour rupture tension test on ASTM A 447 type II material two specimens 870°	Karthik Steels Ltd.	0.20
5.	Dr. C.V. Gokularathnam	Sem Investigations	Various Industries	1.25
6.	Dr.P. Kesavan Nair	X-ray phase analysis of Estimation of degree of Crystallinents	Shasun Drugs & HCI Orchid Chemicals	2.50 0.50
		Residual Stress Analysis	Ashok Leyland	0.99

S.No.	Name of the Faculty	Title	Industry	Amount (in lakhs)
7.	Dr.B.Raghunatha Rao	Failure Analysis of pipe line	IQC, Madras	0.25
		Replica micrography	IQC, Madras	0.10
		Failure of 26" pipe	NFCL, Kakinada	0.50
		Failure Analysis	TPL, Madras	0.20
		Microscopic Study	IQC, Madras	0.28
		Surface Finish	DCM	0.04

5.3 RBIC :

S.No.	Name of the Investigator/ Co-investigator	Title	Number	Amount (in lakhs)
1.	Dr.S.D.Pathak	Fracture Toughness by CTOD of Microalloyed steel		3.00

5.4 Retainer Consultancy :

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

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

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

7. Research Publications:

a) In Referred International Journals:

1. V. Balasubramanian and B. Guha "A new model to predict the fatigue life of flux cored arc welded cruciform joints containing LOP defects" - *Metals & Materials* Vol.4. No.4. pp.662-666, 1998
2. V. Balasubramanian and B. Guha "Influence of flux cored arc welded cruciform joint dimensionals on fatigue life of ASTM 517 'F' grade steels. *International Journal of Pressure Vessels and Piping* Vol.75, No. 10, pp. 765-772, 1998
3. V. Balasubramanian and B. Guha "Effect of L/tp ratio on fatigue life prediction of SMAW cruciform joints of ASTM 517 'F' Grade steels' *Intnl.J. Pres. Vess. & Piping*, Vol 75, No.13, pp.907-918, 1998.
4. V. Shankar, T.p.S.Gill, S.L.Mannan and S.Sundaresan, "Evaluation of hot cracking in nitrogen-bearing and fully austenitic stainless steel weldments", *Welding Journal*, Vol. 77, No.5. pp 193s -199s. 1998.
5. K.Keshavamurthy and S. Sundaresan, "Phase transformations in a welded near-alpha titanium alloy as a function of weld cooling rate and post-weld heat treatment conditions", *Journal of Materials Science*, Vol.33, pp.817-826, 1998.
6. V.Shankar, T.P.S.Gill, S.L.Mannan and S. Sundaresan, "Fusion zone and heat affected zone cracking susceptibility of stabilised austenitic stainless steels,, *Science and Technology of Welding and Joining*, Vol 3, No.1, pp. 17-24, 1998.
7. N. Krishnaraj,P. Bala Srinivasan, K.J.L. Iyer and S. Sundaresan, "Optimization of compound layer thickness for wear resistance of nitrocarburised H11 steels", *Wear*, Vol. 215, pp.123-130, 1998.
8. N.Krishnaraj, P. Bala Srinviasean, K.I.Iyer and S. Sundaresan, "Modified Falex testing -a tool for understanding the compound layer capabilities", *Journal of Materials Engineering and performance*, Vol.7(6), pp. 796-800, 1998.
9. JN Balaraju and SK Seshadri, "Synthesis and Corrosion behaviour of electroless Ni-P-Si₃N₄ composite coatings., *J. of Materials Sci. Let.*, 17, 1297-1299, 1998.
- 10.R.Ramaseshan, SK Seshadri, NG. Nair, H. Tsuda, A. Mabuchi and K.Morii, "Microstructure and properties of γ -TiAl/Ti₂AlC composites produced by reactive processing of elemental powders.,", *J. Japan Soc. Of Powder and Powder Metallurgy*, 45(4), 331-335, 1998.
- 11.Uday Chakkingal, A.B. Suriadi and P.F. Thomson, "Microstructure Development during equal channel Angular drawing of aluminium at room temperature", *Scripta Materialia*, Vol 39, No.6, pp. 677-987, 1998.

- 12.R. Devanathan, K.E. Sickafus, M. Nastasi and W.I. Weber, "Effect of Ionizing Radiation in ceramics", J. Nucl. Mater. 253, 113 (1998).
- 13.R. Devenathan, T. Diaz de La Rubia, and W.J. Weber, "Displacement Threshold Energies in β - SiC ", J. Nucl. Mater. 253, 47 (1998).
- 14.R. Devanathan, W.J. Weber, and T. Diaz de la Rubia, "Computer Simulation of a 10 keV Si displacement cascade in SiC ", Nucl. Instrum. And Meth. B 141, 366 (1998).
- 15.R. Devanathan, W.J. Weber, K.E. Sickafus, M. Nastasi, L.m. Wang and S.X. Wang, "Cryogenic Radiation Response of Sapphire", Nucl. Instrum. And Meth. B. 141, 366 (1998)
- 16.R. Devanathan, J.N. Nitchell, K.E. Sickafus, W.J. Weber, and M. Nastasi, "Radiation Response of Rhombohedral Oxides", Master. Sci. and Engg. A. (1998)
- 17.R.E. Williford, R. Devanathan and W.J. Weber, "Computer Simulation of Displacement and Defect Migration Energies in Several Ceramic Materials", Nucl. Instrum. And Meth. B. 141, 94 (1998).
- 18.J.N. Mitchell, R. Devanathan, N. Yu, K.E. Sickafus, C.J. Wetteland, V. Gopalan, M. Nastasi and K.J. McClellan, "Radiation Effects in Corundum Structure Derivatives", Nucl. Instrum. And Meth. B. 141, 461 (1998).
- 19.H.Y. Sohn and S. PalDey, "Synthesis of Ultrafine Particles of Intermetallic Compounds by the Vapor-Phase Magnesium Reduction of Chloride Mixtures, Part I - Titanium Aluminides", Metallurgical and Materials Transactions B, Vol 29B, pp 457-464, April 1998.
- 20.H.Y. Sohn and S. PalDey, "Synthesis of Ultrafine Particles of Intermetallic Compounds by the Vapor-Phase Magnesium Reduction of Chloride mixtures, Part II -Nickel Aluminides", Metallurgical and Materials Transactions B, Vol 29B, 465-469, April 1998.
- 21.H.Y. Sohn and S. PalDey, "Synthesis of Ultrafine Particles and Thin Films of Ni_4Mo by the Vapor-phase Hydrogen Coreduction of the Constituent Metal Chloride", Materials Science and Engineering A, Vol 247, pp 165-172 (1998).
- 22.H.Y. Sohn and S. PalDey, "Synthesis of Ultrafine Nickel Aluminide Particles by the Hydrogen Reduction of Vapor-Phase Mixtures of NiCl_2 and AlCl_3 ", Journal of Materials Research, Vol. 13, No. 11, Nov. 1998.
- 23.G.M. Reddy, A.A. Gokhale, K.S. Prasad and K. Prasad Rao, "Chill zone formation in Al=Li welds", Science and Technology of Welding and Joining, 3, 208 - 212, 1998
- 24.G.M. Reddy, A.A. Gokale, K. Prasad Rao, "Effect of filler metal composition on weldability of Al-Li alloy 1441", Science and Technology of Welding and Joining, 3, 151 - 158, 1998.
- 25.G.M. Reddy, A.A. Gokhale, K. Prasad Rao, "Optimisation of pulse frequency in pulsed current gas tungsten Arc welding of Al-Li alloy." P.14, 41 -66, 1998.

26. G. M. Reddy, A.A. Gokhale, K. Prasad Rao, "Effect of filler metal composition on the microstructures of Al-Li alloys welds", *Int. J. of Joining of materials*, 10, 98 - 107, 1998
27. N. Sivaramakrishnan, K.S. Raja, B. Raghunatha Rao, K. Prasad Rao, "Effect of post weld heat-treatment on the notch toughness of EB welded PH SS", *Welding and Cutting*, 50, E163 - E168, 1998.

b) In Proceedings of International Conferences:

1. K. Angamuthu, B. Guha and D.R.G. Achar, "Investigation of dynamic fracture toughness (JID) behaviour of strength mismatched I & T steel weldments using instrumented Charpy impact testing", 5th Annual Report of Sub-Commission X-F-I.I.W. Doc. SC X-F-082-98, presented at 51st Annual Assembly Hamburg, Germany, Sept. 1998.
2. Uday Chakkingal and W.Z. Misiolak, "Welding phenomena in extruded aluminium hollow profiles, *Automotive Alloys II*, (Ed. S.K. Das), TMS, pp. 195 - 205, 1998.
3. H.Y. Sohn and S. PalDey, "Synthesis of Ultrafine Particles of Titanium Aluminides and Nickel Aluminides by the Vapor-Phase Reduction of Chloride Mixtures". Presented and printed in the proceedings of the International Symposium on "Value - Addition Metallurgy", held in San Antonio, TMS Annual Meeting in Feb. 1998.
4. S. PalDey and H.Y. Sohn, "Synthesis of Ultrafine Intermetallic Particles by the Vapor-Phase Coreduction of Metal Chlorides by Hydrogen." Presented and printed in the proceedings of the International Symposium on "Value - Addition Metallurgy", in San Antonio, TMS Annual Meeting in Feb. 1998.

c) In Proceedings of National Conferences:

1. S. Laxminarayana & B. Guha, "Bending fatigue of mis-matched butt welded joints" *Proc. Nat. Conf. On Second National Symposium of Research Scholars on Metals & Materials Org. by I.I.M., I.I.T., Madras Chapter & Met. Engg. Dept., I.I.T., Chennai on 3-4 July 1998.*
2. A.A. Reddy, B. Guha & D.R.G. Achar, "FEM analysis of three dimensional transient heat transfer in GTA weldments:." *Proc. Nat. Conf. On Second National Symposium of Research Scholars on Metals & Materials Org. by IIM, I.I.T., Madras & Met. Engg. Dept., IIT Chennai on 3.4-, July 1998.*
3. A.A. Reddy, B. Guha and D.R.G. Achar, "Effect of thermo-physical properties of weld pool development in Laser beam welding of Aluminium (2219) Alloys", Presented at ATM, NMD-98, 14-17, Nov. 1998 at Bangalore.
4. JN Balaraju and SK Seshadri, "Wear resistance of electroless Ni-P and Ni-P-CeO₂ coatings", 52nd ATM of IIM, Bangalore, 14-17 Nov. 1998.
5. HK Bhat, Mohan Das and SK Seshadri, "Studies on removal of iron from beneficiated ilmenite by sulphuric acid leaching", 52nd ATM of IIM, Bangalore, 14-17, 1998.

6. JN Balaraju and SK Seshadri, "Oxidation behaviour of electroless Ni-P and Ni-P-Si₃N₄ coatings", Second National Symposium of Research Scholars on Metals and Materials IIT Madras, July 3-4, 1998.
7. R. Rameshan, SK Seshadri and NG Nair, "Oxidation resistance of γ -TiAl/Ti₂AlC intermetallic composites prepared by exothermic synthesis", Second National Symposium of Research Scholars on Metals and Materials, IIT Madras, July 3-4, 1998.

8. Distinguished Visitors to the Department:

S.no.	Name of the Visitor & Designation	Date of Visit	Purpose of Visit
1.	Dr. Ravi Vancheeswaran Dept. of Sci. & Engg. School of Engg. & Applied Science Univ. of Virginia, USA.	04.02.1999	Lecture
	IIM IECTURE		
2.	Dr. William L. Mankins Indo Alloy International Inc., USA	21.09.98	Lecture
3.	Prof. Richard Wagner Research Centre, Juelich, Germany.	17.11.98	Lecture
4.	Shri K. Radhakrishna Reddy Research Scientist Analytical Services & Materials Inc., Hampton, USA	19.02.99	Lecture
5.	Prof. Dr.Ing. Ulrich Dilthey Director of the ISF-Welding Institute RWTH, Aachen and Dean of the Faculty of Mech. Engineering, Aachen University, Germany	22.02.99	Lecture

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 Number of applications received and number of candidates admitted:

Programme	No.received	No.selected
M.Tech.	19	11
M.S.	44	9
Ph.D.	6	1
Total:	69	21

2.2 Students on Roll :

Programme	I Year	II Year	III Year	IV Year	V Year	Total
B.Tech.	23	19	19	20	--	81
M.Tech.	13	13	-	-	-	26
M.S.	4	9	5	--	--	18
Ph.D.	1	3	--	8	--	12
Total	41	44	24	28	--	137

2.3 Number of Scholarships/Fellowship holders:

Programme	Institute Scholarship	Others	Total
B.Tech.	--	--	--
M.Tech.	11	15	26
M.S.	13	5	18
Ph.D.	3	8	11

2.4 Number of Degrees Awarded :

Programme	Number
B.Tech.	18
M.Tech.	10
M.S	4
Ph.D.	6
Total	38

3. Faculty and their Development:

3.1 Faculty:

Name and Qualifications

Specialization

Professors

C.P. Vendhan, Ph.D.(IIT, Kanpur)	Computer aided analysis of ocean, Civil and Aerospace structures, Dynamics of floating bodies systems, Finite element modelling
S. Narasimha Rao, Ph.D.(IISc.,)	Marine Geotechnical engineering, Seabed soil characteristics under static and dynamic loads
M.R.Pranesh, Ph.D.(IISc.,)	Structure, soil-wave interaction studies, Coastline studies, Behaviour of materials in ocean environment
K.Muthukrishnaiah, Ph.D.(IIT, Madras)	Marine geotechnical engineering, Design of foundation for offshore and onshore structures
Prof..K. Ganesh Babu, Ph.D. (IIT, Madras)	Analysis and design of ocean structures, Behaviour of Material, Fatigue 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.(Madras)	Geological oceanography, Engineering geology

Name and Qualifications**Specialization****Associate Professors**

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

Assistant Professors

P. Sambandan, M.S.(IIT, Madras) (on lien to NSDR, Visakhapatnam as Director)	Ship design, ship structures, Computer Applications in ship design
S. Neelamani, Ph.D. (IIT, Madras)	Wave hydrodynamics, Wave structure interaction, Wave energy, and Coastal Engineering problems
V. Anantha Subramanian, Ph.D. (IIT, Madras)	Naval Architecture, Ship model testing
Dr.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/ Symposium/ Conferences organised:

SI No	Coordinator(s)	Title of Workshop/ Seminar/Symposium / Conference	Period
1	Prof.V. Sundar	Course on Coastal Structures for Metallurgical and Engineering Consultants (India) Ltd.,	13-24 April, 1998
2	Dr.K.Rajagopalan	Computer simulation of ports	18.5.98 to 22.5.98
	Dr.K.Rajagopalan	Oil storage structures	27.5.98 to 30.5.98
3.	Dr.R. Sundravadelu Dr.S. Surendran	Prestressed concrete onshore water-front and offshore structures	30.11.98 to 4.12.98
		Port & Harbour structures	7.12.98 to 11.12.98
		Ship Maneuvering	14.12.98 to 18.12.98

SI No	Coordinator(s)	Title of Workshop/ Seminar/Symposium / Conference	Period
4.	Dr.V. Anantha Subramanian	Experimental ship Hydro-dynamics and I.C.Engines	2.2.99 to 7.2.99
	Under OIP		
5.	Dr.R. Sundaravadivelu Dr.S. Surendran	Ports & Shipping	7.12.98 to 18.12.99

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

SI.No.	Name of Faculty	Title	Period/ Duration
1	Prof.V. Sundar	Palm Beach, Florida, USA to present papers in International Coastal Symposium	20-23 May, 1998
		Lisbon, Portugal to present a paper in the 17 th Int.Conf.on OMAE'98	5-9 July, 1998
		Hong Kong, China to present paper in the 2 nd Int.Symp.on Environmental Hydraulics	15-19 December, 1998

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

S.No	Name of Faculty	Topic of Lecture	Venue and Date
1	Prof.S.Narasimha Rao	Constitutive Relationships in Marine Geotechnical Engineering. Relevancy of soil strength tests in offshore environment. Studies on anchors in soft marine clay Underwater ground improvement methods.	University of Essen, Germany. University of Essen, Germany. University of Essen, Germany. University of Essen, Germany.
2	Prof.V.G. Idichandy	Measurement of fluid particle velocity in wave field Integrity Monitoring of structures	TKM College of Engineering, Kollam, Kerala October, 1998 Structural Engineering Research Centre, Taramani, Chennai February, 1999

S.No	Name of Faculty	Topic of Lecture	Venue and Date
	Prof.V G Idichandy	Instrumentation for Vibration Measurements	Anna University, Chennai March, 1999
3	Prof.V.Sundar	Coastal Erosion and Protection	Institution of Engineers (India), March'98
		Coastal Erosion and Protection along the Indian Coast	Dharwad, Karnataka, 10 th and 11 th Dec. 98

3.5 Visits abroad by faculty:

Sl No	Name of Faculty	Country visited	Date	Purpose of visit
1	Prof.S. Narasimha Rao	Sri Lanka	Second week of Sept. '98	for undertaking the consultancy for a Bank Building in Colombo.
2	Prof.V.Sundar	Germany	15 th May to 9 th July, 98.	Joint research project funded by GTZ, Germany.
		Singapore	21-31 Dec.1998	Discuss about joint project under a MoU signed between National Univ. of Singapore and IIT Madras.
		University of Essen, Germany.	June & July'98	Worked as visiting Professor
3	Dr. R. Sundaravadivelu	Lisbon, Portugal	July, 1998	Attended OMAE '98 Conference
		University of Wuppertal, Germany	July, 1998	In connection with Indo-German Project on Fender Beams
		University of Leipzig, Germany	July,1998	In connection with Indo-German Project titled "Dynamic Pressures Exerted on Semicircular Breakwaters Visited Long Wave channel
		University of Hannover, Germany	July, 1998	
3	Dr.S. Neelamani	TU Bravnschweig, Germany	Upto October, 1998	AVH Research Fellowship
4	Dr.V. Anantha Subramanian	Germany	May-July, 1998	Visiting Faculty on invitation at the Fachbereich Schiff und Meerestechnik, Hochschule Bremen, Germany

Sl No	Name of Faculty	Country visited	Date	Purpose of visit
5	Dr.S.K. Bhattacharya	IOI Operational Centre at Tianjin, China	35 days	To attend a Course on Deep seabed Mining.

3.6 Honours and Awards:

Sl.No.	Name of Faculty	Honors/Awards	Purpose
1	Prof.V.G. Idichandy	Certificate of Merit of the Institution of Engineers (India) to the paper titled "Neural Net works in Detection of Structural Damage" by Lalu Mangal, V.G. Idichandy, C. Ganapathy	
2	Dr.S.Neelamani	Awarded the Alexander Von Humboldt Fellowship to carry out Research work in Germany	

3.7 Fellowships of Academies and Professional Societies:

Prof.C.P. Vendhan	Acoustical Society of America, USA	Member	1997
	American Society of Mechanical Engineers, USA	Member	1997
Prof.V.G. Idichandy	American Society of Mechanical Engineers, USA	Member	1997
Prof. V. Sundar	The Institution of Engineers (India)	Member	1997
	International Association of Hydraulic Research, The Netherlands	Member	1997
	Maritime Hydraulic Section of I.A.H.R., The Netherlands	Member	1997
Dr.S.K. Bhattacharyya	American Society of Mechanical Engineers, USA	Member	1997

4. Design and Development Activities:

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

Twelve Under water pressure transducers were obtained through Indo-German project titled "Dynamic Pressures exerted on Semi Circular Breakwaters" funded by Germany Agency for Technical Cooperation (GTZ), Germany. The value of these instruments is about Rs 5.0 lakhs.

4.2 Details of patents held in the Department with the date of filing:

Dr.J.S. Mani - Title: Design and Development of Suspended Porous Breakwater -
Patents filed during 1997
Application No.463.MAS/98

5. Research and Consultancy:

5.1 Sponsored Research Projects:

S.No	Title	Period	Funding Agency	Amount (Rupees in lakhs)	Co-coordinators
1.	Stability of Frustum Concrete Blocks for Breakwaters and Coastal Protection Works	8 months 11.02.1998 to 10.10.1998	National Institute of Ocean Technology	1.65	Prof.M.R.Pranesh Prof.V. Sundar
2.	Hydrodynamic behaviour of floating breakwaters	Three Years (upto Dec. 2001)	Ministry of Surface Transport	11.75	Dr.R.Sundaravadivelu
3.	Dynamic Pressures exerted on Semicircular Breakwaters	Three years (upto Dec. 2000)	German Agency for Technical Cooperation (GTZ), Germany	Approx. 19	Dr.R.Sundaravadivelu
4	Different types of berthing structures and development of standard design		Ministry of Surface Transport	6.77	Dr.R.Sundaravadivelu
5	Hydrodynamic testing and optimization of new generation crafts		DST	18.76	Dr.V. Anantha Subramanian Prof.C.P.Vendhan Dr.Jagadeesh kumar
6	Numerical and experimental studies on OTEC sea water systems		NIOT	10.70	Prof.C.P.Vendhan Dr.V. Anantha Subramanian Dr.S.K. Bhattacharya
7	Augmentation of lab.facilities		NIOT	50.00	Prof.M.R. Pranesh
8	Analysis and Design of Ship Mooring System	1997-200	Ministry of Surface Transport , New Delhi	21.17	Dr.R. Natarajan

S.No	Title	Period	Funding Agency	Amount (Rupees in lakhs)	Co-coordinators
9.	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.Gopinath Dr.R. Gnanamoorthy Dr.S.K. Malhotra

5.2 Industrial Consultancy:

Sl. NO	Name of the Faculty	Title of the work	Name of the client	Amount (Rs.in lakhs)
1	Prof.S. Narasimha Rao	Testing and Design	ONGC	0.05
		Testing and Design	ONGC	0.10
		Testing and Design	M/s.Prasad Armstrong Yen GEC Chennai-600 016	0.25
	Prof.S. Narasimha Rao	Testing and Design	Managing Director Visakha Polymer Constructions VISAKHAPATNAM	0.10
		Development of single point mooring system at Tuticorin	M/s.Sujana Industries Ltd., Chennai-4	0.60
2	Prof.M.R. Pranesh	Soil Investigation for quarters at St.Thomas Mount	M/s.Garrison Engineer, Chennai-43	0.15
		Feasibility of New Wharf at Uppanar river	The India Cements Ltd., Chennai-2	0.12
		Construction of slipway at Kandla Port Trust	Kandla Port Trust	12.00
		Crisis Management of coastline	ICI India Ltd., Ennore	0.25
3	Prof.K. Muthukrishnaiah	Recommendation for suitable type of foundation	G.R. Engg.works, Bangalore	0.25

Sl. NO	Name of the Faculty	Title of the work	Name of the client	Amount (Rs.in lakhs)
		Recommendation for suitable type of foundation	SPIC	0.25
		Recommendation for suitable type of foundation	Asst.Garrison Engineer	0.75
		Recommendation for suitable type of foundation	SI Property Development Ltd., Chennai-8	0.16
		Recommendation for suitable type of foundation	Indian Oil Corporation	4.26
		Recommendation for suitable type of foundation	RPP constructions	0.08
	Prof.K. Muthukrishnaiah	Soil investigation and recommendations for suitable type of foundation for primary school building for ICF, Avadi	Garrison Engineer, Chennai-54	0.37
		Remedial measures for erosion	Fisherman's .Cove, Kancheepuram	0.15
		Recommendation for suitable type of foundation	Rajarathnam constructors	0.05
		Soil Investigation	Metallurgical & Engg.Consultants (P) Ltd., Chennai	0.18
4	Prof.K. Ganesh Babu	Studies on heat Resistance concrete	South India Corporation Ltd., Chennai-600 006	1.00
5	Dr.V.G. Idichandy	Proof pressure test and Analysis of Daisy II-03 motor case for ISRO, Trivandrum	M/s.Ramakrishna Engg.Company, Chennai-600-106	0.25

Sl. NO	Name of the Faculty	Title of the work	Name of the client	Amount (Rs.in lakhs)
		Proof testing of air bottles and combustion chambers for DRDL	Titamin Equipment and Anode Manufacturing Co., Ltd., Chennai-48	3.60
6	Prof.V.Sundar	Construction of 25 MLD capacity sewage treatment plant at Visakhapatnam	Commissioner, Municipal Corporation, Visakhapatnam	6.50
		Feasibility report for proposed fishing harbour at Veerapandiapattinam in Tuticorin	Director of Fisheries, Chennai-6	5.00
		Tanir Bavi Barge Mounted Power Plant at Mangalore	Encon Services (P) Ltd., Chennai	0.75
7	Prof. V. Sundar Dr.R.Sundaravadivelu	Construction of Mini Fishing Harbour at Muthalapozhi - Numerical Model Studies	Harbour Engineering Department, Thiruvananthapuram	8.00
		Amba Creek Crossing - Request for Calculations for Floatation and Buoyancy.	ABAN Constructions, Chennai.	0.30
		Design of Diffuser Support System for Jam Nagar	ABAN Constructions, Chennai	0.50
8	Prof. V. Sundar Prof. M.R. Pranesh	Numerical Modeling for Tranquillity Studies for Rameswaram Fisheries Harbour	Fisheries Department, Chennai	3.50
9	Dr.R. Sundaravadivelu	Deepening of berth at Mormugao port	The Chief Engineer, Mormugao Port Trust	9.00
		Design of coast guard jetty at Port Blair	Chief Engineer (Navy), Port Blair	2.50
		Transfer of GTS Benchmark	Chief Executive Chilka Development Authority, Bhuvaneswar	1.30

Sl. NO	Name of the Faculty	Title of the work	Name of the client,	Amount (Rs.in lakhs)
		Extension of Berthing jetty at Vadinar	Kandla Port Trust, Kandla	10.0
		Design of extension jetty at Kanyakumari	Tamilnadu State Construction Corporation Ltd., Chennai-106	0.15
		Construction of shallow berth for handling general container cargo in JNPT	Jawaharlal Nehru Port Trust, Navi Mumbai	9.00
	Dr.R. Sundaravadivelu	Technical specification, tender evaluation supervision of building of Dredger and commissioning of dredger	Chilka Development Authority, Bhubaneswar	7.70
		Dharma fishing harbour	Chief Construction Engineer, Gopalpur Port Project	6.40
		Construction of fish landing centre at Gopalpur - on sea	Chief Construction Engineer, Gopalpur Port Project	1.00
		Recommendation for increasing buoyancy of floating head feed bin penton, Orissa	Indian Rare Earths Ltd., Orissa	1.50
		Estimating quantity of dredging of Chilika channel	Chilika Development Authority, Bhubaneshwar	11.00
		Protection wall for filling of Kappaldai at minor rock, Kanyakumari	Tamil Nadu State Construction Corporation Ltd., Chennai-106	0.60
		Construction of shallow water berth and extension of port craft berth for handling general container cargo in JNPT	Jawaharlal Nehru Port Trust, Mumbai	5.00

Sl. NO	Name of the Faculty	Title of the work	Name of the client	Amount (Rs.in lakhs)
		Consultancy services for safety/stability for sea water intake system for desalination plant at Naripaiyur	BHEL	3.00
10	Dr.R. Natarajan	Technical Advice on safety components for DWC Plant	Indian Rare Earths Ltd., Matikal	0.10
		Recommendations for increasing buoyancy of floating Head Feed Bin Pontoon	Indian Rare Earths Ltd., orissa Sands Complex, Orissa	1.50
		Technical advice on safety components for DWC plant	Indian Rare Earths Ltd., orissa Sands Complex, Orissa	0.10
		Technical Specification, Tender Evaluation, Supervision of building of dredger and commissioning of dredger	Chilka Development Authority, Orissa	7.70
		Construction of slipway at Kandla port	Kandla Port Trust, Kandla	12.00
11	Dr.V. Anantha Subramanian	Testing of ALH civil version	Hindustan Aeronautics Ltd., Bangalore	8.00
	Dr.V. Anantha Subramanian	Design of optimization tests on backward bent ducted buoy	National Institute of Ocean Technology	2.40

5.3 RBIC :

Sl. No.	Name of the Investigator/Co-investigator	Organisation	Values (in lakhs)	Co-consultants, if any
	Prof.K.Ganesh Babu	Shri S.A. Padmanabhan INDSIL Electrosmelts	5.00	--

		Kuthugal Hydro Coimbatore Dalmia Cement (Bharat) Ltd., New Delhi	3.00	--
2	Prof.V.G. Idichandy	DRDL, Hyderabad	8.00	Prof.C.P.Vendhan
3	Prof.C.P.Vendhan	NPOL, Cochin	21.50	Prof.V.G. Idichandy Dr.S.K. Bhattacharya

5.4 Exchange programme with other Universities

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

6. Research Publications

(a) In Refereed International Journals:

1. Sannasiraj, S.A., Sundar, V. and Sundaravadivelu, R. Mooring Forces and Motion Responses of Pontoon type Floating Breakwaters , Ocean Engineering, Vol. 25(1), pp.27 - 48, 1998.
2. Sundar, V., Vengatesan, V., Anandkumar, G. and Schlenkhoff, A. "Hydrodynamic Coefficients for Inclined Cylinders" Ocean Engineering, Vol.25, Nos.4-5, pp.277-294, 1998.
3. Sundar, V. and Ragu, D. "Dynamic Pressures and Runup on Semicircular Breakwaters due to Random Waves".Ocean Engineering, Vol.25, Nos.2-3, pp.221-241, 1998
4. Sundar, V., Sannasiraj, S.A. and Kaldenhoff, H. "Directional Spreading of Waves in the Nearshore Zone", Ocean Engineering, 26(2), pp.161-188, 1999.
5. Sannasiraj, S.A., Sundar, V. and Sundaravadivelu, R. "Dynamics of Interconnected Twin Floating Structure in Oblique Wave Field", Oceanic Engineering International, Vol. 2, No. 1, pp. 30-40, 1998.
6. Sundaravadivelu, R., Sundar, V. and Surya Rao "Wave forces and moments on an intake well" Ocean Engineering, Vol. 25(1), pp.363-380, 1998.
7. Sundar, V. and Mallayachari, V. "Interaction of Waves with Permeable Walls" Journal of Coastal Research, SI (26) pp.19-25.
8. Jeena, J., Rajesh, P.R. and Sundar, V. "Combined Refraction and Diffraction model for predicting the wave disturbances adjacent to Coastal Structures", JI of Coastal research, SI(26), pp.297-303
9. S. Narasimha Rao, VGST Ramakrishna and M. Babu Rao, "Influence of Rigidity on laterally loaded pile groups in Marine clay" Journal of Geo-technical and Geoenvironmental Engineering, American Society of civil Engineers, Vol.124, pp. 542 - 549, June 1998

10. G.Rajasekharan and S. Narasimha Rao "X - ray Diffraction and Micro-structural studies of Lime treated Marine clay Reaction products, Geo-technical Engineering Journal, South East Asian Geo-Technical Society, Vol. 29, No.1, pp 1- 27, June 1998.
11. G. Rajasekharan and S. Narasimha Rao " Particle size Analysis of Lime treated Marine clays", Geo-technical Testing Journal, American Society for testing of materials, Vol. 21, No.2, pp.109-119, June 1998.
12. S. Narasimha Rao and A.P. Panda "Undrained strength characteristics of an Artificially cemented Marine clay," Journal of Marine Geosources and Geotechnology, USA Vol. 16, No.4, pp.253 - 268, Dec. 1998
13. S. Narasimha Rao and A.P. Panda " Non-linear analysis of undrained cyclic strength of soft marine clay" Journal of Ocean Engineering, Pergamon press USA Vol. 26 pp. 241 - 253, Jan. 1999
14. Subramanian V.A., Suchithran, P.R "Interactive curve fairing and bi-quintic surface generation for ship design", International Ship building Progress, September, '99
15. Sundaravadivelu, R. and Ranga Rao, A.V. "A knowledge Based Expert System for Design of Berthing Structures", Ocean Engineering Vol.25 pp 653-673, 1999.

(b) National Conferences:

1. M.R. Pranesh, Documentation and Reporting of Case studies - Proc.Seminar on Case Studies in Geotechnical Engineering, Visakhapatnam, 27.6.1998, pp.1-8
2. M.R. Pranesh, Post Graduate programme in Geotechnology - A vision Vol.2, Proc.Indian Geotechnical Conference- December .7-10, New Delhi, pp.225-229
3. C.P.Vendhan (1998), 'Finite element modeling of acoustic scattering and propagation' (invited paper), pp.44-47, Proc.National Conference on 'Current Trends in Ocean Prediction with special reference to Indian seas', NPOL, Kochi
4. Narasimha Rao and A.P. Panda "Remoulded Behaviour of a Marine clay Treated with Lime", Indian Geotechnical Conf.'98, New Delhi, Dec'98.
5. Roop Sekhar, K.A., Sundar, V. and Pranesh, M.R. : "Performance of twin frustum concrete blocks as armour units for breakwaters", Conference on Coastal Zone Management, 10th & 11th December, 1998, Dharward.
6. Sundar, V. and Laxmi Narayana, G. "Tidal influence in Ennore Creek, South East Coast of India", Conference on Coastal Zone Management , 10th & 11th December, 1998, Dharward.
7. Ram Babu, M., Narasimha Rao, S. and Sundar, V. "Model studies of wave-current -seabed interaction", Golden Jubilee Conference, Indian Geotechnical Conference-1998, New Delhi, 7-10 December, 1998, pp.175 - 178.
8. V. Sundar, M.R. Pranesh Performance of Twin Frustum of concrete blocks as units for Breakwater, Seminar on Coastal Zone Management, December 10th 11, 1998

9. K.G. Manoj and S.K. Bhattacharyya, "Development of finite element procedures for transient exterior acoustics with fluid structure interaction". The 85th Indian Science Congress, Osmania University - January 3-7th, 1998
10. K.G. Manoj and S.K. Bhattacharyya, "Finite Element procedures for transient Exterior Acoustics" Fourth technical session of the Madras India Regional Chapter of Acoustical Society of America, IIT Madras - August 17-18th 1998.

(c) In Proceedings of International Conferences:

1. Sundar, V. and Mahalingam, P. "Action of regular waves on submerged open moored twin cylinders", Proc Second International Conference on Marine Industry, MARIND'98, September 28 - October 2, 1998, Varna, Bulgaria.
2. Sundar, V., Pranesh, M.R. and Laxmi Narayana, G. "Effect of Pumping from a Creek along with Tidal Influence", Presented in Seventh International Symposium on River Sedimentation and Second International Symposium on Environmental Hydraulics, 16 - 18 December, 1998, Hong Kong.
3. Sannasiraj, S. A., Sundar, V. and Sundaravadivelu, R. "Response Amplitude Operator of Motions in Regular and Random oblique waves" 17th International Conference on Offshore Mechanics and Arctic Engineering, OMAE'98, Lisbon, Portugal, July 5-9, 1998, pp.593 -599.
4. Sundar, V. and Anand Kumar, G. "Wave Loads on an Inclined Cylinder in 2-D & 3-D Waves", 17th International Conference on Offshore Mechanics and Arctic Engineering, OMAE'98, Lisbon, Portugal, July 5-9, 1998, pp.363 - 370.
5. Sundar, V. and Mallayachari, V. "Interaction of Waves with Permeable Walls" International Coastal Symposium, (ICS'98), May 19-23, 1998, Florida, USA, pp.19-25.
6. Jeena, J., Rajesh, P.R. and Sundar, V. "Combined Refraction and Diffraction model for predicting the wave disturbances adjacent to Coastal Structures" International Coastal Symposium, (ICS'98) May 19-23, 1998, Florida, USA, pp.297-303.
7. Sundar, V. and Raju, P.M. "Sediment Dynamics Off Visakhapatnam Port, India", Eleventh Congress of the Asia and Pacific Division of the International Association for Hydraulic Research, 8 - 10 September, 1998, Yogyakarta, Indonesia.
8. Sundar, V., Anandkumar, G. and Schlenkhoff, A.U. "Random Wave Loading on Inclined Cylindrical Members", Eleventh Congress of the Asia and Pacific Division of the International Association for Hydraulic Research, 8 - 10 September, 1998, Yogyakarta, Indonesia.
9. Anil Prabhakar, K.K. and Rajagopalan, K. "In-service Stochastic Finite Element Analysis for offshore Jackets", 17th International Conference on Offshore Mechanics, Portugal, July 6-9, 1998.
10. Mani and M.R. Pranesh Coastal Monitoring Programme for North Chennai Coast - A Numerical Study International Conference on Environmental Science, Trivandrum, December 2-4, 1998

11. Sundar V, Pranesh, M.R. Lakshminarayana E - Effect of pumping from a creek along with Tidal influence - 2nd international Symposium, Hong Kong, December 16-18, 1998
12. Mani, Wave Forces on Partially Submerged Pipe Breakwater, Wave Symposium 1998, 1998, Ocean Wave Kinematics, Dynamic and Loads on Structures, Houston, U.S.A. P.505-512, April,- May, 1998
13. Amlan Das Gupta, M. Raghavendran & J.S. Mani, Integrated Wave Energy System for Island States, 2nd Minihydro Conference, Itlay, September, 1998
14. Mani, Amlan Das Gupta and M. Raghavendran, Extraction of Wave Energy from Seawall, Third International Conference and Bi-Annual Meeting, IATAFT '98, New Delhi, November, 1998
15. Mani & M.R. Pranesh, Coastal Monitoring Program for North Madras Coasts - A Numerical Study, Second International Conference on Environmental Science, Trivandrum, December, 1998
16. S. Narasimha Rao and A.P. Panda " Stress-strain Behaviour of a cemented Marine clay", 8th International offshore and Polar Engg. Conf., Montreal, Vol.1, pp. 451-455, May'98.
17. S. Narasimha Rao, V. Sundar and M. Rambabu " Sea bed Scour around a vertical pile", 8th International offshore and Polar Engg. Conf., Montreal, Vol.1, May'98
18. S. Narasimha Rao, V. Sundar and M. Rambabu Measurement of Scour around a pile - A simplified Instrumentation", International symp. on Under Water Technology, Osaka, Japan, April'98.
19. M. Rambabu, V. Sundar and S. Narasimha Rao " Studies of Seabed Scour around a pile", Ocean Community Conf., Maryland, USA Sept'98.
20. S. Narasimha Rao and A.P. Panda " Lime stabilization of Soft Marine Sediments", 2nd International Conf. on Ground Improvement Techniques, Singapore, Paper No.G1, October'98
21. S. Narasimha Rao and A.V.G. Venu Madhav " Behaviour of Group of Stone Columns in a Coastal Marine Clay" 2nd International Conference on Ground Improvement Techniques, Singapore, Paper No. G 12, October'98.
22. C.P.Vendhan, B. Srinivasan and S. Seetharaman, (1998) "Dynamic analysis of buoyant elastic framed structures Proc.17th International Conference on Offshore Mechanics and Arctic Engineering, paper No.OMAE 98-0342, ASME, New York
23. Ganesh Babu, K., Kiran Kumar, A. and Pandu Ranga Prasad, R., "Effect of Aggregate grading on strength and Performance of Concrete", accepted for the fifth International Conference on Concrete Technology for Developing countries, New Delhi, November, 1999.
24. Sundaravadivelu, R. Natarajan and A. Vijaya Bhaskar Rao, "Mooring analysis of an offshore berthed ship", 17th International Conference on Offshore Mechanics and Arctic Engineering, , OMAE '98, 5-9, July, 1998, Lisboa, Portugal.

- 25 Natarajan and Malle Madhu, "Experimental investigation on the drag characteristics of a high speed catamaran", The 7th International Symposium on Practical Design of Ships and Mobile Units, PRADS'98, 20-25, September 1998. The Hague, The Netherlands.
- 26 Natarajan and M. Surya Prakasa Raju, "Effect of bullbous bow on the resistance characteristics of a shuttle tanker", Second International Conference on Marine Industry, MARIND '98, 28 September-02 .October, 1998, Varna, Bulgaria
- 27 Subramanian. V.A, pathak A.G., Masuda, Y, Performance studies on a scaled model of Backward Bent Ducted Buoy (BBDB) Type Wave Energy Converter in Regular and Random Waves" ISOPE, Brest, France, 29th-3rd May-June, 1999
- 28.Sundaravadivelu, R. and Thomas C. Mathew "Nonlinear Analysis of Mooring Lines with Subsurface Spring Buoys, 17th International Conference on Offshore Mechanics and Arctic Engineering, OMAE, '98, Lisbon, Portugal, July 5-9, 1998, Vol.OMAE98-0551
- 29.Ganesh Babu, K. , Kiran Kumar, A. and Dinakar, P., "Critical Assessment of the Existing Durability Criteria", Sixth NCB International Seminar on Cement and Building Materials, New Delhi, India, November, 1998, Vo.4, pp.XIII-69-75
- 30.Ganesh Babu, K. and Sree Rama Kumar, V., "Performance of GGBS in Cementitious Composites", Sixth NCB International Seminar on Cement and Building Materials, New Delhi, India, November 1998, Vol.4, pp. XIII-76-86
- 31.Ganesh Babu, K., and Surya Prakash P.V., "Deterioration Characteristics of Silica Fume Concretes in Acid Environments", Sixth NCB International Seminar on Cement and Building Materials, New Delhi, India, November, 1998, Vol.4, pp.XII-43-49.
- 32.Ganesh Babu, K., "Durability of concrete structures in India - A status Report" invited papers, Proceedings of the International Symposium on Concrete Technology for Sustainable Development in the 25th Century, Hyderabad, India, February 9-11, 1999, pp.590-613

7. Distinguished Visitors to the Centre:

Sl. No	Name of the Visitor and Occupation	Date of visit	Purpose of visit (Lecture/ Discussion)
1.	Dr.Brenny Van Groesen Faculty of Mathematics Sciences University of Twente The Netherlands	11.9.1998	To deliver a lecture
2.	Prof.Ajit Shenoi University of Southampton	23.2.1999	To deliver a lecture

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. Number of applications received and number of candidates admitted:

Programme	No. Received	No. Selected
M.Tech		05
M.Sc	277	42
Ph.D	16	3
Total	293	50

2.2. Students on Roll :

Programme	I Year	II Year	III Year	IV Year	V Year	Total
M.Tech	6	6	-	-	-	12
M.Sc.	42	33	-	-	-	75
Ph.D	3	5	3	17	-	28
Total	51	44	3	17	-	115

2.3. Number of Scholarship/Fellowship holders:

Programme	Institute Scholarship	Others	Total
M.Tech.	5 HTTA)		5
M.Sc.	6+6 (Merit I & II yr)		12
	3+4 (Free)	-	7
Ph.D.	16	2	18
Total	40	2	42

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

S.No.	Name of the Student/Scholar	Programme	Name of the Conf./Seminar/Symposia	Date & venue
1.	S.Ramesh Kumar	Ph.D.	5 th IUMRS International Conference in Asia	IISc, Bangalore 13-16 Oct.1998
2.	M Pattabiraman	Ph.D.	5 th IUMRS International Conference in Asia	IISc, Bangalore 13-16 Oct.1998
3.	R Nirmala	Ph.D.	5 th IUMRS International Conference in Asia	IISc, Bangalore 13-16 Oct.1998
4.	S.Ramesh Kumar	Ph.D.	6 th Asian Conference & Workshop on Solid State Ionics	BHU, Varanasi 22-23Nov.1998
5.	R.Justin Rajesh	Ph.D.	One day symposium on Mathematical Methods & Application OSMMA-98	IIT, Madras 22.12.98
6.	Aloka Sinha	Ph.D.	Photonics'98 - International Conference on Fibre Optics & Photonics	IIT, Delhi 14-18Dec.1998
7.	J Venkatesh	Ph.D.	Research work at RSIC, Shillong	Shillong 27.2.99,13.3.99
8.	R.Justin Rajesh	Ph.D.	Ultrafast process in Biology, Chemistry & Physics	Madras Univ. 11-13, March 99

2.5 Number of Degrees Awarded in the last convocation:

Programme	Number Awarded
M.Tech.	2
M.Sc.	19
Ph.D.	14
Total	35

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

Name and Qualification

V.Damodara Das, Ph.D
(SPU,Vidyanagar)

P.C.Deshmukh, Ph.D
(Nagpur Univ., Nagpur)

M.P.Kothiyal, Ph.D
(IIT, Madras)
(Mrs) Maha Seshasayee, Ph.D
(RPI, New York, USA)

J.Majhi, Ph.D
(IIT, Madras)
V.R.K.Murthy, Ph.D
(IIT, Madras)
T.A.Prasada Rao, Ph.D
(Andhra Univ., Waltair)

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

K.V.S.Rama Rao, Ph.D
(Andhra Univ., Waltair)

G.Rangarajan, Ph.D
(IISc, Bangalore)

R.S.Sirohi, Ph.D
(IIT, Delhi)

B.M.Sivaram, Ph.D
(Andhra Univ., Waltair)
D.Phil (Sussex, UK) **[Head]**

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

Associate Professors

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

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

T.S.Natarajan, Ph.D
(IIT, Madras)

Areas of specialization

Thin film science and technology

Atomic and Molecular Physics

Applied optics

Condensed matter physics, structural studies in disordered systems

Semiconductor physics

Microwaves and Dielectrics

Electronic spectra of diatomic molecules, lasers, nonlinear optics, electro-optic Kerr effect.

Solid State Theory & Experiment

Magnetism and magnetic materials, Hydrogen in metals, Acoustic Transducers

Low temperature physics, Superconductivity & Magnetism

Optics

Laser physics, quantum electronics, fiber optics and photonics.

Lattice Dynamics, Electro optics, Dielectrics

Solid state ionics

Magnetic resonance, Electronic & Instrumentation

Conducting polymers, Electronics Microcomputers, Microprocessors Instrumentation, Physics education.

Name and Qualification**Areas of specialization**

G.Sreenivasa Murthy, Ph.D
(IIT, Madras)

X-ray crystallography

A.Subrahmanyam, Ph.D
(IIT, Kharagpur)

Semiconductor devices, photovoltaics
Transparent conducting thin films

B.Subramanyam, Ph.D
(Andhra Univ., Waltair)

Condensed Matter Physics & Ferroelectrics

Assistant Professors

Bisht, P.B., Ph.D
(Kumaun Univ., Nainital)

Ultrafast laser spectroscopy and photonics

Govindarajan Suresh, Ph.D
(Pennsylvania Univ., USA)

Classical and Quantum Field Theory
String Theory and Quantum gravity

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

Thin Films

(Mrs) S.Lakshmi Bala, Ph.D (Madras Univ.)

Field theory and elementary particle
phenomenology, integrability and chaos in
systems with a large number of degrees of
freedom, anholonomies in quantum system

G.Markandeyulu, Ph.D (IIT, Madras)

Magnetism and magnetic materials

P.Murugaraj, Ph.D (IISc, Bangalore)

Material science

(Mrs) Neelima M. Gupte, Ph.D
(SUNY, Stony Brook, USA)

Statistical Physics & Nonlinear Dynamics

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

Metal hydrides, Nuclear Quadrupole
Resonance

M.S.Ramachandra Rao Ph.D
(IIT, Kharagpur)

Ceramics and intermetallics

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

Superconductivity, Low Temperature Solid
State Physics, Cryogenics
Photonics, Quantum optics

M.V.Satyanarayana, Ph.D (Madras Univ.)

K.Sethupathi, Ph.D
(Moscow State Univ., Russia)

Low temperature physics,
Superconductivity

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

Microwaves & Semiconductors

Name and Qualification	Areas of specialization
P.B. Sunil Kumar, Ph.D. (IISc, Bangalore)	Condensed Matter Physics
V.Venkateswara Rao, Ph.D (IIT, Madras)	Applied optics, holography and optical instrumentation
C.Vijayan, Ph.D (IIT, Madras)	Photonics, Solid State Physics
(Ms) T.M.Vimala, Ph.D (IIT, Madras)	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 organised:

S.No.	Co-ordinators	Title	Period
1.	Dr.V.Balakrishnan	Programme for Gifted Youth (for Standard X and XI students)	May 4-23, 1998
2.	Dr.K.V.S. Rama Rao	IUMRS International Conference, Bangalore	Oct. 13-16, 1998
3.	Dr.B.M. Sivaram Dr.V.R.K.Murthy	X-National Seminar on Ferroelectrics and Dielectrics	Dec. 16-18, 1998
4.	Dr.S.Sinha Dr.Neelima M.Gupte	Discussion meeting on Spatio-temporal Physics, RAC, Ooty	Feb. 25- 27, 1999
5.	Dr.B.M.Sivaram	Recent trends in Raman Studies in Chemistry and Physics	March 13, 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/Duration
1.	Dr.M.P Kothiyal	International Conference on Optics & Optoelectronics	IRDE, Dehradun Dec 9-12,1998
2.	Dr.K.V.S. Rama Rao	QNDE Conference	Snowbird USA July 17-29,1998
3.	Dr.G.Rangarajan	43 rd Annual Conference on Magnetism & Magnetic Materials	Miami, Florida, USA. Nov 9-12, 1998
4.	Dr.R.S. Sirohi	International Conference on Optics & Optoelectronics Photonics	IRDE, Dehradun IIT, Delhi Dec 9-12, 1998 Dec 14-18, 1998
5.	Dr.K.Hariharan	Sixth Asian Conference on Solid State Ionics	Surajkund Nov.29 - Dec.04,1998
6.	Dr.T.S.Natarajan	Microcomputer Interfacing	M. K. Univ., Madurai Dec. 2-3, 1998 Kerala Univ., Trivandrum Feb. 1-3, 1999
7.	Dr.S. Lakshmibala	XIII DAE Symposium on High Energy Physics	Dept.ofPhysics Punjab Univ. Chandigarh Dec26-30, 1998
8.	Dr.Neelima M.Gupte	Discussion meeting on Spatio-temporal Physics STATPHYS	RAC, Ooty Feb 25-27, 1999 Paris,France July 20-24, 1998
9.	Dr.Suresh Govindarajan	III Puri Workshop on Quantum Field Theory, Quantum Gravity & Strings	Puri Dec 9-19, 1998
10.	Dr.Prem B.Bisht	COSMMA Mathematical Methods & Applications Ultrafast Processes	I.I.T., Madras Dec 22, 1998 Madras Univ. Mar 11-13 1999

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

S.No.	Name of Faculty	Topic of Lecture	Venue & Date
1.	Dr.P.C. Deshmukh	Recent developments in Atomic Photoabsorption spectroscopy	Physical Research Laboratory/ Ahmedabad 31.3.99
2.	Dr.J. Majhi	Semiconductor Device Physics	Univ. of Madras Jan 29-30, 1999
		Preparation and characterization of semiconductor materials	Berhampur Univ. Feb 26-27, 1999
3.	Dr.V.S.Murthy	Electronics & Instrumentation	Berhampur Univ. UGC Refresher course Feb 9-12, 1999
4.	Dr.V.Ramachandran	Phonons in Solids	QIP School Anna University Feb 3, 1999
5.	Dr.K.V.S. Rama Rao	Hydrogen in Intermetallic phases	Darmstadt, Germany June 18, 1998
6.	Dr.G.Rangarajan	Magnetic ordering in $\text{PrBa}_2\text{Cu}_3\text{O}_7$	Miami University Nov 13, 1998
		Physics & Applications of GMR	Stanford Research Institute, San Francisco Nov 16, 1998
		Transport & Magnetic Properties of (Nd, Sr) Manganites	Univ.of Virginia Charlottesville Nov.18, 1998
		Charge Transport and Magnetic properties of Polyaniline - PMMA blends	Ohio State Univ., Columbus Nov.19, 1998
		Metal-Insulator and Magnetic Transition in $\text{Nd}_{1-x}\text{Sr}_x\text{MnO}_3$ solid solutions	Wisconsin Univ., Milwaukee Nov. 20, 1998
		Charge Transport and Magnetic properties of some rare earth manganites	Institute for Exptl. Physics, RWTH Aachen, Nov. 25, 1998

S.No.	Name of Faculty	Topic of Lecture	Venue & Date
7.	Dr.R.S. Sirohi	Speckle Phenomenon	ISU/IISc, Bangalore Jan 1, 1999
		Optics in 21 st Century Century	ISU/IISc, Bangalore Feb 19, 1999
8.	Dr.K. Hariharan	Fast ion conducting glass ceramics Materials Chennai-44	National Symposium on Solid State Ionic M.I.T., Anna Univ. May 28-29, 1998
9.	Dr.T.S. Natarajan	Problem solving in Physics for Science Educ.	Homi Bhaba Centre June 25-July1, 1998
10.	Dr.Neelima M.Gupte	Intermittency in Sp.extended system	IOP Bhubaneshwar Mar 15, 1999
11.	Dr.C.Vijayan	Nonlinear Optical Processes	Pondicherry Univ. Dec 22, 1998
		Quantum Dot Structures	Pondicherry Univ. Dec 23, 1998
		Optical Properties of Quantum Dots	DOIS, Cochin Univ. Mar 29, 1999

3.5. Visits Abroad by Faculty:

Sl. No.	Name of Faculty	Country visited	Date	Purpose of visit
1.	Dr. M.P. Kothiyal	Germany	July 1998 - Sept 1998	DAAD Reinvitation Programme
2.	Dr.K.V.S.Rama Rao	Germany & USA	June 15-July 2 1998 July 3-31, 1998	Indo-German BMBF Project 1. Participated in the Formation meeting of the World Federation of NDE Centres 2.QNDE Conference visited Carnegic Mellon Univ. & Naval Research Lab.

Sl. No.	Name of Faculty	Country visited	Date	Purpose of visit
3.	Dr.G.Rangarajan	USA & Germany	Nov'98	To attend 43 rd annual conference on Magnetism and to visit universities
4.	Dr.R.S. Sirohi	Singapore	August 5,1997- August 4,1998	Research & Teaching at Univ. of Singapore
5.	Dr.T.S.Natarajan	Iceland	July 1-10, 1998	Group Leader,International Physics Olympiad
6.	Dr.Neelima M.Gupte	France	July 19-27, 1998	To attend conference on Statistical Physics
7.	Dr.P. Murugaraj	MPI Stuttgart Germany	May 15- July 9,1998	To work on colaborative research on protonic conductors
8.	Dr.V.Balakrishnan	Belgium	May-July,1998	Professional Visit

3.6 Honours and Awards obtained:

Sl. No.	Name of Faculty	Name of Award	Awarded for	Date
1.	Dr. V.Damadora Das	Award of the American Biographical Instt.	Man of the year	1998
		Award of the International Biographical Centre, U.K.	Outstanding people of 20 th Century	1998
2.	Dr. R.S. Sirohi	Amita De Memorial award by the Optical Society of India	Optics Research	1998

3.7 Books/Monographs authored or co-authored:

Sl. No.	Name(s) of Authors(s)	Title of Text Book / Monograph	Publisher
1.	Dr. R.S. Sirohi & K.D. Hinsch	Milestones on Holographic Interferometry	SPIE Optical Engineering Press, USA.

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

S.No.	Name of Faculty	Name of Academy/ Professional Society	Level	Year of Admission
1.	Dr.V.Balakrishnan	Indian Academy of Sciences	Fellow	1985
2.	Dr.V.Ramachandran	Indian Cryogenic Council	Full Fellow	1997
3.	Dr.R.S. Sirohi	Indian National Acad. of Engg.	Fellow	Jan., 1999
4.	Dr.C.Vijayan	SPIE - Society of Photo-optic Engineers	Regular	1997

4. Design and Development Activities:

1. Development of Microwave coaxial holder for high dielectric constant measurement.
2. Development of a cryostat for Electro Optic studies at low temperature.
3. A set up to investigate fastionic diffusion of Ag^+ ion in glasses by self absorption technique has been fabricated and tested.
4. Designed and developed the set-up for Z-scan to measure the non-linear refractive indices.
5. Development of Distributed feed back dye laser techniques.
6. Designed and developed "Optical lens Coater"

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

A cryostat for studying thermal expansion at liquid helium temperatures.

A versatile compact attachment to the closed-circuit refrigerator to measure thermoelectric power as a function of temperature from 15K up to 300K.

Software for simulating chaotic pendulum is developed.

Developed the DC Magnetron sputtering technique to coat optical coatings on plastic lenses.

Interface of closed cycle refrigerator to a vibrating sample magnetometer for magnetization measurement at low temperature.

Development of facilities for the measurement of magnetostriction and magnetomechanical characteristics of magnetostrictive rods, under pressure.

Development of a facility to measure electrical resistivity at low temperatures, using a closed cycle refrigerator.

Development of facilities to measure magnetic properties of soft magnetic materials up to 600°C.

4.2 New facilities added and Major equipment procured through project funds

Multi-Media computer, grating spectrograph.

Reference Sphere for Zygo Interferometer.

B-H loop tracer with temperature variation facilities.

Two Silicon Graphics O₂ workstations and one origin 200.

Pentium MMX system.

5. Research and Consultancy:

5.1 Sponsored Research Projects :

S.No.	Title	Period	Funding Agency	Amount in lakhs	Coordinators
1.	Ionization of Atoms	1998-2000	NSF (USA)	8.18	Dr.P.C.Deshmukh Dr.S.T.Manson
2.	An advanced multiuse laboratory to study transport properties of materials	1998-1999	MHRD	5.00	Dr.G.Rangarajan Mr.K.Sarangapani Dr.G.Sreenivasamurthy Dr.V.Sankaranarayanan Dr.M.S.Ramachandra Rao Dr.M.V.Sathyanarayana Dr.P.B.Bisht Mr.M.Veerabhadra Rao Dr.M.Dhanabalan

S.No.	Title	Period	Funding Agency	Amount in lakhs	Coordinators
3.	Development of Computer based educational package	1999	AICTE	1.09	Dr.T.S.Natarajan Dr.P.C.Deshmukh Dr.C.Vijayan
4.	Development of magnetostrictive materials	1995-2000	MHRD	160	Dr.K.V.S.Rama Rao Dr.U.V.Varadaraju Dr.G.Markandeyulu
5.	Development of high energy density permanent magnets	1995-2000	MHRD	54.7	Dr.K.V.S.Rama Rao Dr.U.V.Varadaraju Dr.G.Markandeyulu Dr.S.Ramaprabhu Dr.M.S.Ramachandrarao
6.	Study of hydrogen absorption in novel Zr-based alloys	1997-2000	BMFT, Germany	11.00	Dr.S.Ramaprabhu Dr.K.V.S.Rama Rao Dr.P.C.Schmidt (Darmstadt, Germany)
7.	Development of a temperature sensitive magnetic switch	1996-1999	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 (MET) Dr.S.Sundaresan (MET)
8.	Large area thin film PEC solar cells based on Cd-Se-Te	1997-2000	AICTE	7.0	Dr.V.Damodara Das
9.	Optical Instrumentation	1993-2000	DAE	60	Dr.R.S.Sirohi Dr.M.P.Kothiyal Dr.D.K.Sharma Dr.V.V.Rao
10.	Spatiotemporal order and chaos in systems with many degrees of freedom	1997-2000	DST	24.99	Dr.Neelima M Gupte Dr.S.Lakshmbala Dr.Suresh Govindarajan
11.	Investigation of Hydrogen Solubility properties in Zr based alloys for hydrogen storage	1998-2000	MNES	5.4	Dr.S.Ramaprabhu
12.	Specific heat studies of magnetically ordered materials at Low Temperature	1997-2000	DST	11.5	Dr.G.Rangarajan Dr.V.Sankaranarayanan
13.	Evaluation of process induced defect in Silicon Germanium alloys prepared by PECVD & DC magnetron sputtering techniques	1996-2000	Indo-US	19.5	Dr.A.Subrahmanyam
14.	Molecular Dynamics	1997-2000	DST	6.5	Dr.A.Subrahmanyam Dr.Mahasheshasayee

5.2. Industrial Consultancy :

S. No.	Name of the Faculty	Title	Industry	Amount (in Thousands)
1	R.S.Sirohi, M.P.Kothiyal, D.K.Sharma, V.V.Rao, N.Krishna Mohan	Development of Fizeau Interferometer	Prism India Ltd. (Pondicherry)	60
2	Dr.G.Rangarajan	Liquid Nitrogen Utilization	Anna University	5.4
		Supply of Liquid Nitrogen & Cryofreezing	Mediclone BioTech Pvt.Ltd.	3.6
		Technical Evaluation of LN ₂ Plants	Tamilnadu Veterinary & Animal Sciences University	2.0
		Cryogenic system for FTI requirement	JTS Technology Pvt Ltd.,	4.5
		LN ₂ for glassy electrolytes preparation	Anna University	0.75
		Flux measurement on pole piece samples	Sundaram Clayton Ltd.,	3.0
		Low Temperature properties of some polymers	CLRI	2.0
		Helium Leak Detection & Testing	Fluidyne Engg. Pvt Ltd.,	4.0
		Cryogenic System for Energy dispersive X-ray diffraction	Anna University	6.0
		Preservation of Biological Samples	Cancer Institute	10.0
3	Dr.V.Sankaranarayanan	Calibration of RTD Thermometers	BS & B Safety systems India Ltd., Chennai-96.	5.0

5.3 RBIC :

S. No	Name of the Investigator/ Co-investigator	Title	Number	Amount (in Lakhs)
1	Dr.V.Sankaranarayanan	Measurement of Thermal conductivity and coeff of linear expansion	RB/97-98/Phy/003/ LPSC/VSAN	4.5

5.4 Retainer Consultancy :

S.No.	Name of the Faculty	Title	Industry	Amount (in Lakhs)
1.	Dr.V.S. Murthy	Consultant	Geethanjali group of educational institutions, Vijayawada	0.12

5.5 Exchange programme with other Universities:

1. Indo-German (BMFT) Scheme with Darmstadt, Germany (1997-2000) - I.I.T., Madras.

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

S.No.	Name of the Faculty	Level	Journal
1.	Dr.V.R.K. Murthy	Editor	Bulletin of Pure and Applied Physics
2.	Dr.Neelima M.Gupte	Editorial Board	Pramana
3.	Dr.S.Ramaprabhu	Member	International Journal of Hydrogen Energy
4.	Dr.V.Balakrishnan	Editorial Board	Indian J. Physics
5.	Dr.V.Balakrishnan	Editorial Board	Resonance

5.7 Research Publications:

(a) In Refereed National Journals:

1. H.S.Chakraborty, P.C.Deshmukh, D.W.Lindle and S.T.Manson, 'Photoionization of some closed shell atoms and ions' Pramana - J.Phys., 50, 607-615 (1998).
2. V.Madhurima, V.R.K.Murthy and J.Sobhanadri, Dielectric studies of hydrogen bonded polar binary mixtures of methanol with ketones and nitrile: A comparison with conformational analysis, Indian Journal of Pure and Applied Physics, 36, 85-90, (1998).
3. V.Madhurima, V.R.K.Murthy and J.Sobhanadri, Dielectric studies of hydrogen bonded binary systems Ketone and nitrile, Indian Journal of Pure and Applied Physics, 36, 144-148, (1998).
4. Janarthanan Gopalakrishnan, Janaswamy Srinivas, G.Sreenivasa Murthy, M.N.Sudheendra Rao, Cyclic S-N compounds and phosphorous regents - XVII synthesis and X-ray structural characterization of (Pcv) (DCA) (Me₂N) P = N - S₃ N₃ heterocycle, Proc. Indian Acad. Sci (Chem.Sci) 110, 75-81, (1998).

(b) In Refereed International Journals:

1. S.T.Manson, Z.Altun, H.S.Chakraborty, E.W.B.Dias, P.C.Deshmukh and C.S.Turner, Photoionization of Atomic Ions and Related Electron Scattering Processes, in Atomic Processes in Plasmas, ed. By M. Pindzola and E.Oks, American Institute of Physics, New York, (1998).
2. V.Damodara Das and P. Gopal Ganesan, Thickness and Temperature Dependence on Electrical Properties of Semiconducting $(\text{Bi}_{0.75}\text{Sb}_{0.25})_2\text{Te}_3$ Thin Films, Solid State Communications, 106, 315-320, (1998).
3. V. Damodara Das and S.Selvaraj, Size and Temperature Dependence of Electrical Resistance and Thermoelectric Power of $\text{Bi}_2\text{Te}_2\text{Se}_1$ Thin Films, J.Appl. Physics, 83, 3696-3702, (1998).
4. V.Damodara Das and Laxmikant Damodare, Characterization of n-CdSe_{0.7}Te_{0.3} / (aq) Polyiodide Energetic Interface and Photoelectrochemical Studies, Jpn. J. Appl. Phys., 37, 1897-1902, (1998).
5. V.Damodara Das and Laxmikant Damodare, A study of Substrate Variation Effects on the Properties of n-CdSe_{0.7}Te_{0.3} Thin Film / Polysulphide Photoelectrochemical Solar Cells, Materials Chemistry and Physics, 56, 48-55, (1998).
6. V.Damodara Das and Laxmikant Damodare, Photoelectrochemical Investigations on n-CdSe_{0.5} Thin Film Electrode/Polyiodide System, Materials Chemistry and Physics, 56, 116-124, (1998).
7. V.Damodara Das and P.Gopal Ganesan, Thickness and Temperature Effects on Thermoelectric Power and Electrical Resistivity of $(\text{Bi}_{0.25}\text{Sb}_{0.75})_2\text{Te}_3$ Thin Films, Materials Chemistry and Physics, 57, 57-66, (1998).
8. N.Krishna Mohan, J.S.Darlin, Majles M.Ara, M.P. Kothiyal and R.S.Sirohi, Speckle Photography with BaTiO₃ Crystal for the Measurement of In-plane Field Distribution of Distant Objects, Opt.and Laser in Engg., 29, 211-216 (1998).
9. J.S. Darlin, M.P. Kothiyal and R.S. Sirohi, Phase Conjugate Twyman-Green Interferometer with increased sensitivity for laser beam collimation, J. Mod. Opt., 45, 2371-2378 (1998).
10. J.S. Darlin, M.P. Kothiyal and R.S. Sirohi, A Hybrid Wedge Plate-Grating Interferometer for Collimation Testing, Opt. Engg., 37, 1993-1998 (1998).
11. S.Suja Helan, M.Majles Ara, J.S. Darlin, N.Krishna Mohan, M.P. Kothiyal and R.S. Sirohi, Phase Step Calibration and Phase Measurement in Image Plane Holography Using BaTiO₃ Crystal as a Recording Medium, Opt. Engg., 37, 2918-2925 (1998).
12. J.S.Darlin, M.P.Kothiyal and R.S.Sirohi, Wedge Plate Interferometry - a New Dual Field Configuration for Collimation Testing, Opt. And Laser Tech., 30, 225-228 (1998).
13. Ganesh Udupa, R.S.Sirohi, M.Singaperumal and M.P.Kothiyal, Assesment of surface geometry using confocal scanning optical microscope, J. Mechatronics, 8, 187-215 (1998).

14. S.Suja Helen, M.P.Kothiyal and R.S.Sirohi, Achromatic Phase-shifting using a rotating polarizer, *Opt. Commun.* 154, 249-254 (1998).
15. Garcia-Ochoa, A.Douhal, P.B.Bisht, F.Sanchez, E.Martinez-Ataz, L.Santos and H.B.Tripathi, Experimental and theoretical studies of the Proton-hopping in 7-hydroxyquinoline dissolved in viscous hydroxylic media, *J. Physical Chemistry A* 102, 8871-8880 (1998).
16. P.A.Ramakrishnan, U.V.Varadarajau, J.Majhi, G.V.Subba Rao, A.Maignan & B.Raveau, Studies on magnetic properties of $\text{M}_a\text{Ti}_{1-x}\text{Nb}_x\text{O}_3$ System, *Journal of Solid State Chemistry*, 136, 115-119 (1998).
17. V.Madhurima, V.R.K.Murthy and J.Sobhanadri, Dielectric studies and conformation analysis of Hydrogen bonded Acetone and Acetonitrile system, *Spectro Chemica Acta Part A* 54, 199-205, 1998.
18. T.Santhanakrishnan, P.K.Palanisamy and R.S.Sirohi, Optical configuration in speckle shear interferometry for slope change contouring with a two-fold increase in sensitivity, *Appl. Opt.*, 37, 3447-49 (1998).
19. T.Santhanakrishnan, P.K.Palanisamy and R.S.Sirohi, Fringe formation in an in-plane displacement measurement configuration with two-fold increase in sensitivity: Theory and experiment, *Appl. Opt.*, 37, 4150-53 (1998).
20. R. Ramaswamy, S.Sinha and N.Gupte, Targeting Chaos through Adaptive Control, *Phys. Rev. E* 57, R 2507 (1998).
21. S.Sinha and N.Gupte, Adaptive Control of Spatially extended Systems: Targeting Spatiotemporal Patterns and Chaos, *Phys. Rev. E*, 58, R 5221 (1998).
22. Liebe, H.Kang, L.Haupt, P.Mandal, I.V.Medvedeva, G.H.Rao, K.Baerner, A.Poddar, P.Murugaraj, R.Fischer, E.Gmelin, E.Gommert, R.V.Helmolt and J.Wecker, Heat Diffusivity of $\text{Nd}_x\text{Sr}_{1-x}\text{MnO}_{3-\delta}$ and $\text{La}_x\text{Ca}_{1-x}\text{MnO}_{3-\delta}$ Compounds *J. Appl. Phys.*, 83, 7148-7150 (1998).
23. Ch.V.Mohan, M.Seeger, H.Krönüller, P.Murugaraj and J.Maier, Critical Behaviour Near Ferromagnetic - Paramagnetic Phase Transition in $\text{La}_{0.8}\text{Sr}_{0.2}\text{MnO}_3$, *J. Magnetism and Magnetic Materials*, 183, 348-355 (1998)
24. Kesavan, S. Ramaprabhu, K.V.S. Rama Rao and T.P. Das, Hydrogen absorption in Laves phase $\text{Zr}_{0.2}\text{Ho}_{0.8}$ CoFe alloy, *J. Alloys and Compounds*, 268, 10, (1998).
25. Ramaprabhu, N. Rajalakshmi and Alarich Weiss, Design and development of hydrogen absorption/desorption high pressure facility, *Int. J. Hydrogen Energy*, 23, 797 (1998).
26. Ramaprabhu, Stability of dissolved hydrogen in Pd rich binary $\text{Pd}_{1-x}\text{Z}_x$ and ternary solid solution $\text{Pd}_{1-x-y}\text{Z}_x\text{Z}'_y$ alloys, *Int. J. Hydrogen Energy*, 23, 787 (1998).
27. Ramaprabhu, G.Bernardinelli, N.Amtutz and E.A.Lucken, Crystal structure and ^{63}Cu NQR studies of Cu(I) complexes formed between phosphine ligands [tris(o-methoxyphenyl) phosphine, tri-p-tolylphosphine] and Cu(I) halides, *Z.Naturforsch*, 53a, 625 (1998).

28. M. Venkatesan, U.V. Varadaraju, A. Maignan, K.V.S. Rama Rao and B. Raveau, Observation of magnetic frustration in $Dy_2Cr_2C_3$ system, *Solid State Commun.* 105, 169-172 (1998).
29. Venkatesan, U.V. Varadaraju and K.V.S. Rama Rao, Structural and magnetic properties of $HoErFe_{17-x}Ga_x$, *J. Magn. Mag. Mat.*, 184, 231-234 (1998).
30. Kesavan, S. Ramaprabhu, K.V.S. Rama Rao and T.P. Das, Hydrogen absorption and kinetic studies in $Zr_{0.2}Ho_{0.8}FeCo$, *J. Alloys and Compounds*, 268, 10-15 (1998).
31. Suresh, S.D. Mahanti and K.V.S. Rama Rao, Curie temperature of Re_2Fe_{17} compounds - A Friedel model approach, *Solid State Commun.* 106, 379-383 ((1998).
32. Harris, D.J. Fatemi, K.G. Suresh and K.V.S. Rama Rao, Effect of Al substitution on the local environments and magnetic properties of partially nitrogenated $(Er_{0.5}Pr_{0.5})_2 Fe_{17}$ permanent magnets, *J. Appl. Phys.* 83, 6920-6922 (1998).
33. S. Kishore, G. Markandeyulu and K.V.S. Rama Rao, Spin-flip metamagnetism in Laves phase compounds $Dy_{0.73}Tb_{0.27}Fe_{2-x}Co_xH_n$, *Solid State Commun.* 108, 313-318 (1998).
34. Shah, G. Markandeyulu and K.V.S. Rama Rao, Interfacing of a closed cycle helium refrigerator to a vibrating sample magnetometer for low temperature (12-300K) magnetization studies, *Meas. Sci. Technol.* 9, 1627-1631 (1998).
35. Shah, G. Markandeyulu, K.V.S. Rama Rao, M-Q. Huang, Sirisha K. and M.E. McHenry, Structural and Magnetic Properties of $Pr_3(Fe_{1-x}Co_x)_{275}Ti_{1.5}$ [$x = 0.0, 0.1, 0.2, 0.3$], *J. Magn. Mag. Mat* 190, 233-239 (1998).
36. Arathi Rani, T.A. Prasada Rao, J. Sobhanadri, V.R.K. Murthy, Measurement of dipole moment and lifetimes of triplet states of fluorene and its derivatives by time resolved microwave dielectric absorption, *J. Phys. Soc. of Japan*, 67, 1220-1225, (1998).
37. D. Srinivasan, K. Sethupathi, V. Sankaranarayanan, G. Rangarajan, R. Ashokan, B.L. Sharma, H.S. Dewan, V. Gopal, Magneto-transport measurements on single element photoconductive $Hg_{1-x}cd_x$ Te detector, *Diffusion & Defect Data, Part B, Solid State Phenomena*, 55, 177-179 (1998).
38. P. Nandakumar, A.R. Dhobale, Y. Babu, M.D. Sastry, C. Vijayan, Y.V.G.S. Murti, K. Dhanalakshmi and G. Sundararajan, Photoacoustic Response of CdS Quantum Dots in Nafion, *Solid State Communications*, 106, 193-196.
39. S. Uma, W. Schnelle, E. Gmelin, G. Rangarajan, S. Skanthakumar, J.W. Lynn, R. Walter, T. Lorenz, B. Buechner, E. Walker and A. Erb, Magnetic Ordering in single crystals of $PrBa_2Cu_3O_7$, *J. Phys. Condens. Matter* 10, L33-L39 (1998).
40. S. Seshadri, V. Balakrishnan and S. Lakshmi bala, Ladder Operators for Isospectral Oscillators, *J. Math. Phys.* 39, 838-847 (1998).

(c) In Proceedings of National Conference:

1. Chakraborty, P.C. Deshmukh and S.T. Manson, 'Low energy photoionization in the Ar isoelectronic sequence: complex effects of Z', XII National Conference on Atomic and Molecular Physics, Udaipur, December 29, 1998-January 2, 1999.
2. Chakraborty, P.C. Deshmukh, E.W.B. Dias and S.T. Manson, 'Z-dependence of photoionization properties in isoelectronic sequences', XII National Conference on Atomic and Molecular Physics, Udaipur, December 29, 1998-January 2, 1999.
3. Justin Rajesh, Prem B. Bisht and B.M. Sivaram, Calculations on diffraction efficiency of laser induced gratings by using Kramers-Kronig Relation; Abstracts of One day Symposium on mathematical methods and application, Dec. 22, 1998, Department of Maths, IIT, Madras
4. Justin Rajesh, Prem B Bisht and B.M. Sivaram, Studies on simulations and experimental observations of diffraction efficiency of the laser induced dynamic grating of cresyl violet in methanol, Seminar on Ultrafast Processes in Biology, Chemistry and Physics, University of Madras, Chennai-600 025., March 11-13, 1999.
5. Badnikar, N. Shanmugam and V.R.K. Murthy, Investigation on whispering Gallery modes in $Ba(Zn_{1/3}, Ta_{2/3})O_3$ system, National symposium on Advances in microwaves and light waves, 12-15, NSAML 98, University of Delhi, March 2-4, 1998.
6. Sirohi, C.J. Tay, H.M. Shang and W.P. Boo, Shear ESPI with small-objects, Proc. SPIE 3407, 1998.
7. Sirohi, F.S. Chau, S.L. Toh and E.T. Quek, An Optical Strain Gauge, Proc. SPIE-3407, 1998.
8. Udupa, M. Singaperumal and R.S. Sirohi, Characterisation of hydraulic pistons with form error by confocal microscope, Proc. ASOE, 1998.
9. J. Venkatesh and V.R.K. Murthy, Measurement of complex dielectric constant using co-axial holder by reflection method, National symposium on Advances in microwaves and light waves, 7-9, NSAML 98; University of Delhi, March 2-4, 1998.
10. Pattabiraman, P. Murugaraj, and G. Rangarajan, Magnetoresistance Characteristics of $Nd_{1-x}Sr_xMnO_3$ Solid Solutions, National seminar on "Perspectives in Magnetism" conducted by the Magnetism Society of India, Hyderabad, December 19-20, 1998.
11. T.R. Kesavan, S. Ramaprabhu and K.V.S. Rama Rao, The electrical resistivity studies of $Zr_{1-x}Ho_xFe_2$ alloys and their hydrides, IUMRS-ICA conference held at Bangalore, Oct 13-15 (1998).
12. Chitra M., B. Subramanyam and V.R.K. Murthy, Dielectric and Conformational analysis of polar mixture of a nitrite and ethylbenzoate in dilute solutions and benzene, Tenth National Seminar on ferroelectrics and dielectrics, Physics Dept., I.I.T., Madras, December 16-18, (1998).

13. Majles Ara, C.Vijayan, N. Krishna Mohan and R.S. Sirohi, Estimation of Figure of Merit Parameters for Photorefractive Beam Coupling in Some Ferroelectric and semiconducting Crystals, Tenth National Symposium on Ferroelectrics and Dielectrics, p 59-60 (Madras, Dec. 98).
14. Majles Ara, C.Vijayan, N. Krishna Mohan, M.P. Kothiyal and R.S. Sirohi, Dependence of Diffraction Efficiency of Photorefractive Gratings on Crystal Orientation in BaTiO₃ at Multiple Wavelengths, National Laser Symposium, Nov.98) p 147-148. (Kanpur 1998).
15. Pattabiraman, P.Murugaraj and G.Rangarajan, Transport Properties of Nd_{1-x}Sr_xMnO₃ solid solutions, 5th IUMRS conference, 16-18 Nov. 1998, Bangalore.
16. Shah, V.R.Markandeyulu, G. and Rama Rao, K.V.S., Magnetic properties of (Sm_{0.5}Pr_{0.5})₃Fe_{27.5}Ti_{1.5}: Proceedings of the ninth AGM of the Materials Research Society of India at Chennai, 60 (1998).

(d) In Proceedings of International Conferences:

1. Dr.V.Balakrishnan, Invited lecture on "Recurrences in Chaotic Dynamics" in the conference at Brussels (July'98) on Probabilistic Methods in Dyn. Systems
2. V.Damodara Das and Laxmikant Damodare, Study of Solar Power Conversion using Electro Chemical Photo voltaic Solar Cells of Vacuum Flash Evaporated Semiconducting n-CdSe_{0.7}Te_{0.3} Thin Film/Ferro-ferricyanide Electrolyte Junction, Physics of Semiconductor Devices, p. 432-435, (1998), [Eds. Vikram Kumar and S.K. Agarwal (Narosa Publishing House)].
3. V.Damodara Das and P.Gopal Ganesan, Size Dependence of Electrical Resistivity and Energy Band Gap of Semiconducting Bi_{0.8}Sb_{1.2}Te₃ Thin Films, Physics of Semiconductor Devices, p. 1157-1160, (1998), [Eds. Vikram Kumar and S.K. Agarwal (Narosa Publishing House)].
4. V.Damodara Das and S. Selvaraj, Structural and Optical Properties of Flash Evaporated Bi₂Te₂Se Thin Films, Physics of Semiconductor Devices, p. 1161-1164, (1998), [Eds. Vikram Kumar and S.K. Agarwal (Narosa Publishing House)].
5. P.C.Deshmukh, Current trends and perspectives in Atomic and Molecular Physics, Invited Talk at the Conference on Theoretical Physics Today: Trends and Perspectives, Indian Association for Cultivation in Sciences, April 22-24, 1998.
6. Steven T.Manson, Zikri Altun, Himadri Chakraborty, Eric Dias and Pranawa Deshmukh, Photoionization of atomic ions and related recombination processes, Laboratory Space Science Workshop, Center for Astrophysics, Harvard-Smithsonian Center for Astrophysics, April 1-3, 1998.
7. Chakraborty, P.C. Deshmukh and S.T. Manson, High energy behaviour of Ar 3p photoionization cross-section - interchannel coupling effects, XII International Conference on Vacuum Ultra-Violet Radiation Physics, Advanced Light Source, Ernest Orlando Lawrence Berkeley National Laboratory, San Francisco, U.S.A., Aug. 3-7, 1998.
8. Majles M. Ara, C. Vijayan, N. Krishnamohan, M.P. Kothiyal and R.S. Sirohi, Proc. Int. Conf. On Optics & Opto-electronics, Dehradun, (India); pp 932-935 (1998).

9. Suja Helen, M.P.Kothiyal and R.S.Sirohi, Measurement of fringe contrast function in white-light interferometry using phase-shifting interferometry, Proc. Int. Conf. On Optics & Optoelectronics, Dehradun (India), pp 1118-1121 (1998).
10. R.Sureshkumar and K.Hariharan, Ion transport and electrical relaxation studies on some doped silver vanadate glassy systems, Abstracts Sixth Asian Conference on Solid State Ionics, C-38, 1998.
11. R.S.Sirohi, Engineering applications of speckle phenomenon, Proc. Int. Conf. On Optics and Optoelectronics, 351-355, 1998.
12. R.S.Sirohi and F.S.Chau, Shear Speckle Photography: Problems and Prospects, Proc. Int. Conf. On Optics and Optoelectronics, 1114-1117, 1998.
13. Santhanakrishnan, P.K.Palanisamy and R.S.Sirohi, An optical configuration in speckle interferometry for contouring of three-dimensional objects with two-fold increase in sensitivity, Proc. Int. Conf. On Optics and Optoelectronics, 1146-1148, 1998.
14. Pattabiraman, Narayani Senthilkumaran, P.Murugaraj and G.Rangarajan, Metal-Insulator and Magnetic Transition in $Nd_{1-x}Sr_xMnO_3$ Solid Solutions, 43rd Annual Conference on Magnetism and Magnetic materials, Miami, Florida on 9-12 November 1998.
15. Suresh, G. Markandeyulu, S.D. Mahanti and K.V.S. Rama Rao, Effect of hydrogen on the magnetic properties of $(Er_{0.5}Pr_{0.5})_2Fe_{13}Al_4$ and its nitrides, Third Pacific Rim International Conference on Advanced Materials and Processing, Hawaii, U.S.A., July 12-16, 1998, PRICM 3-I, 927-932 (1998).
16. M.Venkatesan, U.V. Varadaraju and K.V.S. Rama Rao, Carbonation of RE_2Fe_{17} (RE = Rare earth) compounds by arc melting technique, Third Pacific Rim International Conference on Advanced Materials and Processing, Hawaii, USA, July 12-16, 1998, PRICM 3-I 971 - 974 (1998).
17. Aloka Sinha and T.A. Prasada Rao, Influence of structure on the nonlinear optical properties of liquid crystals, Proc. of the 5th IUMRS-ICA'98 (Oct.98,Bangalore).
18. Aloka Sinha and T.A. Prasada Rao, Novel material for third order non-linear optical effects, Photonics 98, International Conference on Fibre Optics and Photonics (Dec 1998, New Delhi).
19. Prasada Rao and Aloka Sinha, Electrooptic Kerr effect studies in the Pretransitional regime of a homologous series of liquid crystals, SPIE's Electronic Imaging, 99 (Jan 1999 San Jose, U.S.A.)
20. Nirmala, V.Sankaranarayanan, K. Sethupathi and V.Ganesan, Magnetic, electrical and transport properties of $PrCu_2Ge_2$, IUMRS-ICA '98 International union of Material research society - International conference in Asia held at Bangalore Oct. 13-17, 1998.

21. Majles Ara, C.Vijayan, N.Krishna Mohan, and R.S. Sirohi, Experimental Characterization of Photorefractive Beam Coupling for BaTiO₃ at Multiple Wavelengths, Proc. of International Conference on Optics and Optoelectronics, p. 161-162, (Dehra Dun, Dec.98) 1998.
22. Majles Ara, C.Vijayan, N.Krishna Mohan, M.P. Kothiyal and R.S. Sirohi, Photorefractive Nonlinearity in BaTiO₃: Fe and BaTiO₃: Ce at Multiple wavelengths, Proceedings of the International Conference on Fiber Optics and Photonics, p 816-819, PHOTONICS-98, (New Delhi, Dec.98).
23. M.Pattabiraman, Narayani Senthilkumaran, P.Murugaraj and G.Rangarajan, Metal Insulator and Magnetic Transition in Nd_{1-x}Sr_xMnO₃ Solid Solutions, 43rd Annual conference on Magnetism and Magnetic Materials, Miami, Nov. 9-12, 1998.
24. Seetharaman, P.Senni, E.Bhattacharyya and A.Subrahmanyam, Studies on PECVD grown a Si: Be-H alloys, SPIE Int'l Soc for optical engg., 1 (3316), pp 682-85, 1998.
25. Bhat Viswanath Krishna, A.Subrahmanyam and K.N. Bhat, Effect of Preoxidation cleaning on growth of ultrathin oxides of silicon by wet oxidation, SPIE Intl. Soc. for Optical Engg., 1 (3316), pp 599-603, 1998.
26. A.Subrahmanyam, Z.Horvath, J.Karanyi and I.Racz, Studies on Indiumtin oxid(ITD)/n-GaAs junctions, Proc. of 2nd World Conference on Photovoltaic Energy Conversion, IEEE Press, 2 (1998).

6. Distinguished Visitors to the Department:

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of visit
1.	Prof.M.L. Mukherjee, Dept. of Physics I.I.T., Kharagpur	17.08.1998	For discussions on Lasers Research Programme
2.	Dr. Arabinda Das, ISTEK, Japan	19.08.1998	To deliver a lecture
3.	Prof. D. Brinkmann, Physics Institute, University of Zurich, Switzerland	14.09.1998	To deliver a lecture
4.	Prof.K. Nagamine, Muon Science Lab., Institute of Physical & Chemical Research [RIKEN], Saitama, Japan.	12.10.1998	To deliver a lecture
5.	German Delegation for Humboldt Foundation headed by Prof. Reimar Lust	16.11.98	Research discussions
6.	Prof. S.T. Manson, Dept. of Physics & Astronomy, Georgia State University, Atlanta, U.S.A.	11.01.1999	To deliver a lecture &Research Discussions

7.	Dr.Venkat Ganesan Dept. of Chemical Engg. MIT, Cambridge, Mass., USA	13.01.1999	To deliver a lecture
8.	Mr.K. Subramanian Dept. of Elec.Engg. Cornell University, U.S.A.	06.01.1999	To deliver a lecture
9.	Prof. Bimal Sarma Physics Department Wisconsin University at Milwaukee U.S.A.	08.01.1999	To deliver a lecture
10.	Dr. Leong Ying Vice President CRYO Industries of America Inc. Atkinson, U.S.A.	29.01.1999	To deliver a lecture
11.	Sir Harold W.Kroto, Nobel Laureate Dept. of Chemistry University of Sussex, U.K.	04.02.1999	To deliver a lecture
12.	Dr.H.D. Henkel (former member of this Department)	08.02.1999	Research discussion
13.	Anil Maybhat Physical Research Laboratory Ahmedabad	05.03.1999	To deliver a lecture
14.	Dr.A.M. Niraimathi Hahn - Meitner - Institut, Berlin	10.03.1999	To deliver a lecture
15.	Dr.Ayse Erzan (Official)	05.02.1999	To deliver a lecture
16.	Dr.R.E. Amritkar	1-4.03.1999	Research discussion
17.	Prof.P.C. Schmidt Darmstadt, Germany	7-10.1.1999	Research Discussion INDO-GERMAN (IIT-BMFT) Scheme

Other Activities:

1. Research in development of Photo Electro Chemical Solar cells using Thin Films.
2. Computer Modelling techniques using semiempirical and ab initio methods on pure and binary liquid systems.
3. Preparation of and investigation of structural and magnetic properties of amorphous materials of rare earth-transition metal alloys.
4. Preparation of and investigation of structural and magnetic properties of magnetic semiconductors

5. CENTRES

5.1 BIOTECHNOLOGY RESEARCH CENTRE

1. Introduction :

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

2. Academic Programmes :

This Center offers Ph.D. programme alone.

2.1 New Courses Introduced :

S. No.	Course No.	Title	Structure Level	Faculty
1.	CH319	Introduction to Industrial Biotechnology	B.Tech. (Elective)	Biochemical Engg. specialisation
2.	CH418	Technology of biopolymers & biomaterials	B.Tech. (Elective)	Biochemical Engg. specialisation
3.	CH419	Protein Engineering	B.Tech. (Elective)	Biochemical Engg. specialisation
4.	CH420	Principles of Food Engineering	B.Tech. (Elective)	Biochemical Engg. specialisation

2.2. Number of Applications Received and Number of Candidates Admitted:

Programme	No. received	No. selected
Ph.D.	15	Nil
M.S. (Through Chem. Engg.)	07	02

2.3 Students on Roll :

Ph.D. - 11.

2.4 Number of Scholarship/Fellowship Holders:

Programme	Institute Scholarship	Others	Total
Ph.D.	10	01 (CSIR-RA)	11

2.5 Endowment Prizes Instituted:

47th Indian Pharmaceutical Congress - Endowment Prize

3. Faculty and Their Development:

3.1 Faculty:

Name & Qualification	Major Area of Specialisation
Prof.Megha Singh (Ph.D. Carolina)	Laser and ultra sound in medicine, Biofluid mechanics, Biomedical instrumentation
Prof.T.Panda (Ph.D. IIT Delhi)	Process development for industrial enzymes, Protoplast fusion technology and bioenergy
Prof.Chandra Sainathan (Ph.D. IISc Bangalore)	Basic and applied aspects of microbiology, Biotransformation, Fermentation of agroresidues for production of useful compounds
Prof.K.Lalitha (Ph.D. Mysore)	Applied microbiology, Biochemistry, Enzymology, Biomenthanation and waste treatment
Dr.T.Swaminathan (Ph.D. Kanpur)	Environmental biotechnology membrane, technology
Dr. A.K. Mishra (Ph.D. IIT Kanpur)	Development of fluorescence for protein and bilayer membranes
Dr. Anju Chadha (Ph.D. IISc Bangalore)	Biocatalysis, asymmetric synthesis and chiral technology

3.2 Short-Term Courses/ Workshops/ Seminars/ Symposia/Confernces Organised:

S. No.	Co-ordinators	Title	Period/Duration
1.	Prof.T.Panda	Process development and scale up of innovative biopolymer fermentation	May 18-23, 1998

3.3 Special Lectures Delivered by the Faculty in other Institutions:

S. No.	Name of Faculty	Topic of Lecture	Venue & Date
1.	Prof.T.Panda	Bioprocess optimization - is it necessary?	Madurai Kamaraj University, Feb.16, 1998
2.	Prof.T.Panda	Bioprocess kinetics"	Madurai Kamaraj University, Feb.16, 1998

3.4 Honours and Awards Obtained:

S. No	Name of Faculty	Name of Awarded by	Awarded for	Date
1.	Prof.T.Panda	AIBA award of 1998	Achievements in Biochemical Engineering & Biotechnology	Nov.4, 1998

4. Design and Development Activities:

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

1. Development of airlift reactor for chitinase production.
2. Process development for aqueous two-phase fermentation of endo-glucanase.

4.2. New Facilities Added and Major Equipment Produced through Project Funds:

UV-Visible Spectrophotometer

5. Research and Consultancy:

5.1 Sponsored Research Projects:

SL No.	Title	Period	Funding Agency	Amount (in lakhs)	Co-ordinators
1.	Biological production of chiral compounds for .. pharmaceuti-cals	Oct.1, 1997 to Sep.30, 2000	Ministry of Sci. & Tech., Korea	5 Million Korean Won	Dr.Chul-Ho Kim

5.2 Exchange Programme wth Other Universities:

1. Material Science Research Institute, Iran.
2. Korea Research Institute of Biosciences and Biotechnology.
3. Institute of Technical Biochemistry, University Stuttgart.
4. Technical University of Berlin.

5.3 Research Publications:

a) In Referred National Journals :

1. T.Panda : Biotechnology - Industries, Academic Institutions in India. AIBA, News Letter, Vol.5, No.5, Sep. - Oct., 1998
2. S.S.Bharathi & A.K.Mishra : Deconvolution of the fluorescence spectra into its component Gaussian - A method to analyse the binding coumarin to bovine serum albumin. Ind. J. of Biochemistry and Biophysics, 36, 188-194, 1999.

b) In Referred International Journals :

1. R.Srinivas & T.Panda : Localization of carboxymethyl-cellulase in the intergeneric fusants of *T.reesei* QM9414 and *S.cerevisiae* NCIM 3288. Bioprocess Eng., 18(1), 71-73, 1998.
2. J.Sinha & T.Panda : Comparative analysis of optimal endoglucanase production by *T.reesei* and intergeneric fusants of *T.reesei* / *S.cerevisiae*. Bioprocess Eng., 18(4), 261-266, 1998.
3. M.G`hl, R.Srinivas, W.Dammertz, M.R.Udupa & T.Panda : Localization of β -1,3-glucanase in *T.harzianum*. Bioprocess Eng., 19(3), 237-241, 1998.
4. D.Mantha, Z.Asalam Basha & T.Panda : Optimization of medium composition by response surface methodology for production of tartaric acid by *G.suboxydans*. Bioprocess Eng., 19(4), 285-288, 1998.
5. G.Satyanarayana Naidu & T.Panda : Production of pectolytic enzymes - A review. Bioprocess Eng., 19(5), 355-361, 1998.
6. M.Pazouki & T.Panda : Recovery of citric acid - A review. Bioprocess Eng., 19(6), 435-439, 1998.
7. G.Satyanarayana Naidu & T.Panda : Application of response surface methodology to evaluate some aspects on stability of pectolytic enzymes from *A.niger*. Biochemical Engg. Journal, 2, 71-77, 1998.
8. R.Srinivas & T.Panda : pH and thermal stability studies of carboxymethyl cellulase from intergeneric fusants of *T.reesei* / *S.cerevisiae*. J. Ind. Microbial. Biotechnol., 21, 178-183, 1998.
9. N. Palani, A.Chadha and K.K.Balasubramanian : Mechanism of lithium perchlorate diethylether (LPDE) catalysed rearrangement of α & β endo and exo dicyclopentadienyl ethers - use of deuterium leveling and chiral production. J. Org. Chem., 63, 5318-5323, 1998.

c) In Proceedings of National Conferences::

1. G.S.N.Naidu & T.Panda : Multiresponse analysis of microbiological parameters to develop a two-stage inoculum for the production of pectolytic enzymes by *Aspergillus niger* - a statistical approach. Abstracted in Association of Microbiologists of India, 39th Annual Conference, Dec. 5-6, 1998.
2. V.Venkata Dasu & T.Panda : Optimization of microbial parameters for improved griesofulvin production. Abstracted in Association of Microbiologists of India, 39th Annual Conference, Dec. 5-6, 1998.
3. M.Pazouki & T.Panda : Citric acid production from carbohydrate sources using *Candida lipolytica* NCIM 3472. Abstracted in Association of Microbiologists of India, 39th Annual Conference, Dec. 5-6, 1998.
4. P.Arthur Felse & T.Panda : Effect of concentration on growth and chitinase production by *Trichoderma harzianum*. Abstracted in Association of Microbiologists of India, 39th Annual Conference, Dec. 5-6, 1998.

d) In Proceedings International Conference s:

1. T.Panda & P.Arthur Felse : Biopolymers from fermentation - application, economics and future development. Proceedings for Int. Symp. Microbial Biotech. for sustainable dev. & productivity, Nov. 14-16, 1998.
2. R.V.Muralidhar, H.Hubner, T.Panda & R.Buchholz : Comparison of the stabilities of capsules of some common biopolymers after their encapsulation using polyethyleneimine and their suitability to vertebrate and invertebrate cell lines. Bioencapsulation VII - International Workshop on Microencapsulation, Easton, Maryland, USA, Nov. 20-23, 1998.

6. Visitors to the Department:

S. No.	Name of the Visit and Designation	Date of Visit	Purpose of Visit
1.	Prof.S.C.Kundu Head, Biotechnology Centre IIT Kharagpur	April 1998	Discussion
2.	Dr.S.Dey Head, Biotechnology Centre IIT Kharagpur	June 1998	Discussion & Visit
3.	Dr.Katharina Jenny Program Director Indo-Swiss Collaboration in Biotechnology, Zurich	September 1998	Possible collaborative projects with Switzerland
4.	Dr.V.Sridharan Dr.Reddy's Lab, Hyderabad	May 1998	Discussion & Seminar

S. No.	Name of the Visit and Designation	Date of Visit	Purpose of Visit
5.	Dr.B.M.Krishna Vice-President Aswini Biopolymer Limited Malladi Group, Tirupathi	May 1998	Discussion & Seminar
6.	Dr.Joshep Thomas Vice-President (Biotechnology) SPIC, Chennai	May 1998	Discussion & Plenary Lecture
7.	Dr.Sangeetha Ranganath Assistant Manager R&D Britannia Industries Limited, Chennai	May 1998	Discussion
8.	Dr.M.D.Nair Ex-Vice President SPIC Pharmaceuticals, Chennai	May 1998	Discussion & Plenary Lecture
9.	Dr.V.V.Akella Scientist, SPIC Science Foundation Chennai	August 1998	Discussion for proposed SPIC Science Foundation & IIT M interaction program
10.	Dr.B.N.Ganguli Emeritus Scientist CSIR UDCT Mumbai	September 1998	Possible collaborative projects
11.	Mr.Pankaj Kothari Spiral Chemicals Ahmedabad 380 009	May 1998	Possible collaborative projects
12.	Dr.K.Pandurangarao Deputy Director & Head of Biomaterials Division, CLRI, Chennai	May 1998	Discussion & Seminar
13.	Prof.P.Gunasekaran Madurai Kamaraj University, Madurai	May 1998	Discussion

5.2 COMPOSITES TECHNOLOGY CENTRE

1. Introduction:

Composites Technology Centre was 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:

- * Material Research and Development
- * Composites Manufacturing Technology
- * Composite Product design and Development
- * 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 an M.Tech. specialisation programme in Composites Technology admitting upto 9 students every year. Guidance of M.S., Ph.D. 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 Number of Applications received and number of candidates admitted :

Programme	No. received	No. selected
M.Tech	7	7

2.2 Students on Roll :

Programme	I Year	II Year	III Year	IV Year	V Year	Total
M.Tech	7	7	-	-	-	14
M.S	-	1	1	-	-	2
Ph.D	-	-	-	1	2	3
Total	7	8	1	1	2	19

2.3 Numbers of Scholarship / Fellowship holders:

Programme	Institute Scholarship	Others	Total
M.Tech	-	14	14
M.S	1	1	2
Ph.D	1	2	3
Total	2	17	19

2.4 Names of Student / Scholar attended conferences / Seminar and Symposia abroad / India :

Sl. No.	Name of the Student / Scholar	Programme	Name of the Conference / Seminar / Symposia	Date & Venue
1	V.V. Rao	Ph.D	8th NASAS, sponsored by ARDB, New Delhi	9-10, Oct. 1998, IIT Madras

2.5 Number of Degrees Awarded in the last Convocation :

Programme	Total
M.S	1
Ph.D	2
Total	3

3. Design Scientific Staff:

Name and Qualification	Major Area of Specialisation
Dr. S.K. Malhotra, Ph.D (IIT, Madras) Design Engineer	Composite Materials Research, Analysis, Design and Quality Control of Composites.
Dr. N.G. Nair, Ph.D (IIT, Kanpur) 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	Workshop on FRP Technology	22.6.98 to 27.6.98
		Workshop on FRP Technology	22.3.99 to 27.3.99

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	Seminar on Stealth Technology applied to Naval Environment	Naval Physical and Oceanographic Laboratory, Kochi	Nov.27-28, 1998
		8th NASAS	Sponsored by ARDB New Delhi (IIT Madras)	9-10, Oct. 1998

3.4 Special Lectures delivered by the faculty in other Institutions :

Sl. No.	Name of Faculty	Topic of Lecture	Venue & Date
1	Dr. N.G.Nair	Advances in Nano ceramics and polymer composites	University of Malaya on 13th June 1998
		Development in Composites Manufacturing process and products (Engineer day Lecture)	IIT Madras
		Composite product Design	India Composites 99 organised by All India Reinforced Plastics Manufacturers Association at Mumbai on 18th to 20th Nov.98

3.5 Visits Abroad by Faculty :

Sl. No.	Name of Faculty	Country Visited	Date	Purpose of Visit
1	Dr. N.G. Nair	Japan	18.10.98 to 25.10.98	As leader of the Indian team of Scientists to attend the 5th Indo-Japan Joint Seminar on Manufacturing Science of Advanced Composites

Sl. No.	Name of Faculty	Country Visited	Date	Purpose of Visit
	Dr. N.G. Nair	Kualumpur, Malaysia	12-14, June 1998	To attend and deliver invited lecture during the seminar on New Materials in High Tech. Industries.

4. Design and Development Activities :

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

- ❖ An autoclave cum pressure bag moulding facility with an autoclave chamber of 1 m dia and 2 m length has been designed, fabricated and installed under a Technology Development Mission Project. The heating is done using thermic fluid. This equipment is the first of its kind in India.
- ❖ A Nylon-Reaction Injection Pultrusion (NYRIP) facility has been designed, fabricated and installed under a Technology Development Mission Project. This development process is the first of its kind in India.

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

- ❖ FTIR Perkin Elmer make was installed for analysing the composites and their raw materials
- ❖ Ultrasonic flaw detector Krautkramer, Germany make suitable for composite materials has been procured and installed
- ❖ A composites Design Facility with 10 PCs was established under a project sponsored by TIFAC, DST, New Delhi.

5. Research and Consultancy :

5.1 Sponsored Research Projects on Hand (Only ongoing) :

S. No	Title	Period	Funding Agency	Amount (Rs. 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

S. No	Title	Period	Funding Agency	Amount (Rs. in lakhs)	Co-ordinators
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	Studies on Machining of FRP	3 years	ISRO-IIT(M), Space Tech. Cell	4.55	Dr. S.K. Malhotra

5.2 Industrial Consultancy :

S. No	Name of the Faculty	Title	Industry	Amount (Rupees in lakhs)
1.	Dr.N.G.Nair	Thermomechanical Analysis and Design of Ceramic Matrix Composites	DRDL, Hyderabad	Accounted in previous year
2.	Dr.N.G.Nair	Design of Cooling tower fan blades	Advanced Reinforced Plastics	0.50
3	Dr.N.G.Nair	FRP pile foundation	N.F. Railway	0.40
4	Dr.N.G.Nair	Design of FRP Insulated Boxes	Godrej Agrovet Ltd, Bangalore	0.20
5	Dr.N.G.Nair	Experimental Analysis of Composites cylindrical barrel	ARDE, Pune	0.15
6	Dr.N.G.Nair	Design of High pressure GRP pipelines	Sunrise Polymers and Industries, Baroda	0.05
7	Dr.N.G.Nair	Design of FRP pipes	Gandhi and Associates, Baroda	0.09
8	Dr.N.G.Nair	Design of FRP Chemical tank	Kinetic Technology India Ltd., New Delhi	0.05
9	Dr.N.G.Nair	Design of Acid traps and cloudy port receivers	Venkateswara Fibreglass Industries, Chennai	0.10
10	Dr.N.G.Nair	Design of FRP Gas Holders	Excellent Engineers, Pondichery	0.03

5.3 Exchange programme with other Universities :

- I. Mr. R.Ramaseshan Ph.D. scholar completed his research programme under an MoU signed with Osaka Prefecture University, Japan and joined back the Centre. Part of his thesis work was carried out at the Osaka Prefecture University.
- II. Mr. K. Sankar M.Tech. student in Composites Technology carried out his M.Tech. theses project at Technical University, Berlin.

5.4 Research Publications :

a) In refereed International Journals:

1. R. Suresh and S.K. Malhotra, "Some studies on buckling of laminated composite thin walled box beams", *Composite Structures*, V-40, n-3-4, pp. 267-275, 1998.
2. R. Suresh and S.K. Malhotra, "Vibration and damping analysis of thin walled box beams", *Jl. of Sound and Vibration*, V-215, n-2, pp. 201-210, 1998.
3. A.Selvam, N.G.Nair, Paramanand Singh, "Synthesis and characterisation of SiC whiskers from coconut shells". *Journal of Materials Science letter* Vol.17, 1998, pp. 57-60.

b) In Proceedings of National Conferences:

1. V.V.Rao, S.K. Malhotra and Ripudaman Singh, "3D Geometric Nonlinear Analysis of Bonded patch repaired specimens", *Proc. of 8th NASAS held at IIT, Madras on 9-10 Oct, 1998*, pp. 238-294.
2. J.Narayanadas and N.G.Nair, "Under water Acoustic Attenuation by short fibre matrix Composites, "Seminar 98 on Stealth as applied to Naval Environment", organised by Naval Research Board, Nov.27-28, 1998 at NPOL Kochi.

d) In Proceedings of International Conferences :

1. Sreejith, R. Krishnamurthy, K. Narayanasamy and S.K. Malhotra, "Machining Characteristics of Carbon / Phenolic ablative Composites", *Proc. of European Conf. On Composite Materials (ECCM-8)*, 3-6 June, 1998, Naples, Italy, Vol-2, pp. 503-507.
2. Ramaseshan H. Suda, H. Mabuchi, K.Morii S.K. Seshadri and N.G.Nair, "Reaction Processing of V.TiAl/Ti2 Al Composites from Elemented powders. International conference of structural intermetallics at seven springs Sept. 21-26, 1997.
3. N.G.Nair, C.V.S.S.B.R. Kameswara Rao, A. Selvam, "Development of Nylon Reaction Injection Pultrusion (NYRIP) process for manufacturing Fibre Reinforced Nylon Continuous Profiles", *Proceedings of the 5th Indo-Japan Joint Seminar on Manufacturing Science of Advanced Composite Materials University of Tokyo, October 1998* pp. 31-39.

6. Distinguished Visitors to the Department :

S. No	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1	Dr.Som Soni Adtech System Research Inc., USA	13.11.98	To deliver lectures on Analysis and Design of Bolted and Bonded Joints in Composites
2	Dr. Stephen Lange Technical University, Berlin, Germany	18.1.99	To deliver lecture on Design and Prototype development of FRP Train wheel

Other Activities :

Dr. N.G.Nair has took 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 the material science, composite Structures and FRP Pilot Plant Divisions 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 IICT Hyderabad.
5. Served as Expert Member of Review Committee of ISRO.

5.3 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 :

Ternary Superconductors Low T_c and High T_c ¹

Synthesis characterization and study of $T_c H_c^2$, and other parameters - Efforts to correlate T_c of copper oxides and search for non-copper oxide high T_c superconductors . Efforts to improve current densities in Bi-2212 superconductor using melt processing techniques.

Layered Transition Metal Dichalcogenides and Intercalation Compounds :

Synthesis, crystal growth and characterization and measurement of physical properties including intercalation and application as battery cathode materials.

Pervoskite Mixed Oxides :

Formulation, synthesis and characterization of new and novel rare earth containing pervoskite mixed oxides - crystal growth by flux techniques - Study of electrical and magnetic properties - Search for magnetic and semi-conductor-to-metal transition. Application in solar energy conversion.

Pyrochlore Mixed Oxides :

Formulation, synthesis, characterization of new and novel rare earth-transition metal pyrochlore mixed oxides - Study of their electrical and magnetic properties correlations - Applications in solar energy conversion; thermoelectric power conversion.

Magnetoresistance Studies

MR Studies on Giant Magnetoresistance (GMR) perovskites magnities and intermetallics.

GMR/CMR manganties : A new class of materials of this type $\text{La}(\text{Sr})\text{MnO}_3$ exhibiting huge changes in resistivity as a function of applied fields. Large changes in th MR ratios of this order of $\sim 10^8$ - $10^{10}\%$ could be achieved by doping. Apart from the underlying physics which is an 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) composities were prepared (single phase) and dielectric studies carried out. It is intended to use these materials in transducer applications.

Solar Energy Conversion/Storage using semiconductors in Photoelectrochemical (PEC) cells :

Electrolyte solar cells for solar energy conversion employing chalcogenide and pnictide semiconductor electrodes (anode and cathode) - Formation and study of new electrolytes with known electrodes. Solar Energy storages as hydrogen photoassisted electrolysis of water employing pure and mixed (perovskite, pyrochlore, spinel and scheelite type) oxide anodes. Study of oxide bronze and hollandite and related materials for PEC conversion.

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_2 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.

2. Academic Programmes :

B.Tech	:	Inorganic; Physical and General Chemistry
M.Tech	:	Synthesis and Characterisation Material
M.Sc.	:	Solid State Chemistry and Crystal Chemistry
Ph.D.	:	Advanced Solid State Chemistry

2.1 Students on Roll (as on 30.08.1998)

Programme	I Year	II Year	III Year	IV Year	V Year	Others	Total
Ph.D.	--	2	--	--	5	--	7

2.2 Number of Scholarship/Fellowship holders :

Programme	Institute Scholarship	Others	Total
Ph.D.	5	--	--

2.3 Name of Student/scholar attended Conference/Seminar and Symposia abroad/India :

S.No.	Name of the Student	Programme	Name of the Conf./ Seminar /Symposia	Date& Venue
01.	M.Venkatesan	Ph.D.	IUMRS, Bangalore	Oct 13-17, 1998
02.	V.Ravindranath	Ph.D.	- do -	- do -

2.4. Number of Degree Awarded in the last convocation :

Programme	Total
M.Tech	1
M.S.	2
Total	3

3. Faculty and their Development :

3.1. Faculty :

Name and Qualification	Major Areas of Specialization
Prof. K. Gopinath Ph.D.	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 new Materials for nuclear waste disposal. Fast Ion conductors
Dr.M.S. Ramachandra Rao Assistant Professor 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	MR Spring Meet-98	California	April 13-17, 98

3.3 Visits Abroad by Faculty

S.No.	Name of Faculty	Country Visited	Date	Purpose of Visit
01.	Dr.UV Varadaraju	California	April 10 - July 8, 1998	Present Paper and Visit Oregon Univ
02.	Dr.M.S.Ramachandra Rao	Germany	Jan'99 – Jul'99	Humboldt Fellowship

3.4. Fellowships of Academics and Professional Societies:

Name of Faculty	Name of the Academy/ Professional Society	Level	Year of Admission
Dr.M.S. Ramachandra Rao	Humboldt, Fellowship Germany	Fellowship	Jan 99-Jul.99

4. Design and Development Activities :

- ◆ Fabrication of high temperature thermoelectric power measuring apparatus.
- ◆ Fabrication of magnetoresistance measuring unit.
- ◆ Fabrication of hydrothermal units.

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

1. Fabrication is meant for characterising of thermoelectric material useful for heat to electricity conversion.
2. This apparatus is useful for characterising many perovskite based in manganese oxide. That are useful in sensor application/Computer high speed switches.
3. This apparatus is meant for preparation of material which are not possible under ambient addition.

4.2 Details of patents held in the Department with the date of filing :

Patents Awarded : G.V. Subba Rao, K. Krishnaiah, U.V. Varadaraju, K.D. Chandrasekaran and A. Baradarajan, " A method of, and an apparatus for, the preparation of oxygen enriched, orthorhombic, superconducting yttrium barium copper oxider powder", Indian Patent No. 173531 of 06.01.89 issued on 30.12. 1994.

5. Research and Consultancy:

5.1 Sponsored Research Projects:

S.No	Title	Period	Funding Agency	Amount (Rs.in lakhs)	Co-ordinators
01.	Studies on the Feasibility of ceramic hosts	1997-2000	BRNS Mumbai	15.0	Dr. U.V.Varadaraju
02.	Synthesis of new oxides and oxyfluoride catalysts ... C-H to C-Fconversion	199-2000	Dupont, USA	12.0	Dr.U.V.Varadaraju

5.2 RBIC :

S.No	Title	Period	Funding Agency	Amount (Rs.in lakhs)	Co-ordinators
01.	Development of metal sulphide based phosphors	6 mon	M/s.Anabond, Chennai	0.5	Dr.U.V.Varadaraju

5.3 Research Publications:

5.3.1. In Refereed International Journals:

1. M.Venkatesan, A.Maignan, B.Raveau, K.V.S.Rama Rao and U.V.Varadaraju, Observation of Magnetic frustration in $Dy_2Cr_2C_3$ system, Solid State Commun. 105(3), 1998, 169-172
2. M. Venkatesan, U.V. Varadaraju and K.V.S. Rama Rao. Structural and Magnetic properties of $HoErFe_{17-x}Ga_x$ system. J. Magn. Magn.Mater., 182(2), 1998, 231-234.
3. G.V.M. Kiruthika, K.V. Govindan Kutty and U.V.Varadaraju Effect of aliovalent ion substitution on the oxide ion conductivity in rare earth pyrohafnates $RE_{2-x}Sr_xHf_2O_{7-δ}$ and $RE_{2-x}Hf_{2-x}Al_xO_{7-δ}$ (RE = Gd & Nd; x = 0, 0.1 and 0.2) Solid State Ionics 110, 1998, 335.

4. M.Sugantha, N.R.S.Kumar and U.V.Varadaraju Synthesis and leachability studies of NZP and Eulytine phases J. Waste management 18 , 1998, 275 – 279.
5. P.A. Ramakrishnan, U.V. Varadaraju, J. Majhi, G.V. Subba Rao, A. Maignan and B. Raveau Studies on magnetic properties of $MnTi_{1-x}Nb_xO_3$ system J. Solid State Chem., 136, 1998, 115– 119.
6. G.V. Rama Rao, K. Swaminathan, O.M. Sreedharan, S. Venkadesan, S.L. Mannan and U.V. Varadaraju Effect of silver on the formation of $Bi_2Sr_2Ca_2Cu_3O_{10}$ (Bi-2223) super-Conductors by sol-gel process J. Mater. Sci., 33, 1998, 1511 – 1516.
7. A. Sundaresan, U.V. Varadaraju and B. Raveau Magnetization, relaxation and ageing in spin glass $(La,Y)_{1-x}Ca_xMnO_3$ ($x = 0.25, 0.3$ and 0.5) perovskite J. Magn. Mater., 184, 1998, 83 – 88.
8. P.A. Ramakrishnan, M.Sugantha, U.V. Varadaraju and T. Nagarajan Electrical and magnetic properties of pure and Li-intercalated $Bi_{1.7-x}Pb_xV_8O_{16}$ Mater. Let., 36, 1998, 137 –141.
9. C.S. Gopinath, M. Rajendran, U.V. Varadaraju and S. Subramanian Valence charge fluctuations and T_C retention in $Tl_{1-x}Pb_xSr_{1+x}La_{1-x}CuO_{5-y}$ ($0.0 \leq x \leq 0.5$) system J. Supercond. 11, 1998, 139 – 140.
10. G.V.RamaRao U.V.Varadaraju, S.Venkadesan and S.L.Mannan Thermoanalytical investigations on the sol-gel synthesis of $YBa_2Cu_3O_7$ and $Ba(K)Pb(Bi)O_3$ phases J. Thermal Analysis 48, 1997, 1051 – 1067.
11. K. Chandrasekaran R. Vijayaraghavan and U.V. Varadaraju Effects of oxygen non-stoichiometry and cationic substitutions on the properties of $Sr_2RuO_{4+\delta}$ Mat. Chem. Phys. 56, 1998, 63 – 69.

In Proceedings of International Conferences :

1. M.Venkatesan, U.V.Varadaraju and K.V.S.Rama Rao Neutron diffraction studies on $HoErFe_{15}Ga_2C_x$ ($x = 0, 2$) Proc. of the 5th IUMRS – ICA 98 International Conference in Asia held at Bangalore, October 13-16, p 407 – 408.
2. M.Venkatesan, U.V.Varadaraju and K.V.S.Rama Rao Carbonation of RE_2Fe_{17} ($RE \neq$ rare earth) compounds by arc melting technique Proceedings of the Pacific Rim international conference on magnetics, 1998, PRICM 3, Vol. 1, Ed. Imam et al., P. 971–974.
4. M.Venkatesan, U.V.Varadaraju and K.V.S.Rama Rao Diffusion of carbon into R_2Fe_{17} Lattice: A high temperature approach Proc. of MRS Spring Meeting held at Sanfrancisco, USA, April 13 – 16, 1998, p 408.
5. G.V.M. Kiruthika and U.V. Varadaraju Ionic conductivity studies on the new oxide conducting perovskite $LaGaO_3$ Proc. of MRS Spring Meeting held at Sanfrancisco, USA, April 13 – 16, 1998, p 419.

- 6 V. Ponnambalam and U.V. Varadaraju Semiconducting Molybdenum pyrochlores for high temperature applications Proc. Of MRS Spring Meeting held at Sanfrancisco, USA, April 13 – 16, 1998, p.115
- 7 V. Ponnambalam and U.V. Varadaraju Studies on the intermetallic $RuAl_2$ Proc. of MRS Spring Meeting held at Sanfrancisco, USA, April 13 – 16, 1998, p 115.
- 8 V. Ponnambalam and U.V. Varadaraju , Search for new semiconductors for high temperature applications: The $BaPb_{1-x}Bi_xO_3$ system Proc. of MRS Spring Meeting held at Sanfrancisco, USA, April 13 – 16, 1998, p.123
- 9 K. Sirisha, Narayanasamy and U.V. Varadaraju Effect of cationic size variation in the GMR compounds $Pr_{0.7-x}Ho_xSr_{0.3}MnO_3$ and in the charge ordered compounds $Pr_{0.5-x}Ho_xSr_{0.5}MnO_3$ Proc. of MRS Spring Meeting held at Sanfrancisco, USA, April 13 - 16, 1998, p.219
- 10 G. Buvanewari and U.V. Varadaraju A study of diffusion of Li in the NZP network Proc. of MRS Spring Meeting held at Sanfrancisco, USA, April 13 - 16, 1998, p. 418.
- 11 M. Deepa and U.V. Varadaraju, Enhanced oxide ion diffusion in the interlanthanide perovskite $LaTmO_3$ Proc. of MRS Spring Meeting held at Sanfrancisco, USA, April 13 - 16, 1998, p.417.
- 12 K. Chandrasekaran, R. Vijayaraghavan, M.S. Ramachandra Rao and U.V. Varadaraju Effects of closed d-shell (Sn) and partially filled d-shell (Ru) elements on the GMR properties of $La_{0.7}Ca_{0.3}Mn_{1-x}M_xO_3$ (M=Sn, Ru and vacancy) and $Pr_{0.7}Ca_{0.3}Mn_{1-x}M_xO_3$ (M=Sn, Ru) Proc. of MRS Spring Meeting held at Sanfrancisco, USA, April 13 - 16, 1998, p.219.
- 13 K.N. Marimuthu, U.V. Varadaraju, M. Hervieu and B. Raveau HREM study on new superconducting phase $ErBaSrCu_{2.9}(PO_4)_{0.1}O_v$ – An evidence for the presence of phosphate group Proc. Ninth AGM, Materials Research Society of India (MRSI), Madras, Feb. 11 – 13, 1998, p.51.
- 14 M. Venkatesan, U.V. Varadaraju and K.V.S. Rama Rao, Effect of non-magnetic dilution on the spin reorientation transition in the $HoErFe_{17}$ compounds" Proc. Ninth AGM, Materials Research Society of India (MRSI), Madras, Feb. 11 – 13, 1998, p.59.
- 15 M. Venkatesan, U.V. Varadaraju and K.V.S. Rama Rao Dependence of rare earth on the magnitude of magnetic frustration in $R_2Cr_2C_3$ (R = Tb, Dy, Ho and Er) Proc. Ninth AGM, Materials Research Society of India (MRSI), Madras, Feb. 11 – 13, 1998, p.59.

6.Distinguished.Visitors to the Department :

S.No	Name of the Visitor & Designation	Date of Visit	Purpose of Visit
1.	Dr. R. Suryanarayanan CNRS, France	03.04.1997	To deliver a talk
2.	Prof. Kroto United Kingdom	03.04.1997	To visit lab and to deliver a talk
3.	Prof. S. Sundaresan Israel	02.09.97	To deliver a talk
4.	Prof. A.M. Umarji IISc, Bangalore	22.10.97	- do -
5.	Prof. Shivashankar IISc., Bangalore	16.12.97	- do -

5.4 REGIONAL SOPHISTICATED INSTRUMENTATION CENTRE

1. Introduction :

Regional Sophisticated Instrumentation Centre (RSIC) established with the help of Department of Science & Technology (DST), GoI 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 Students on Roll (as on 31.08.1998) :

Programme	I Year	II Year	III Year	IV Year	V Year	Others	Total
Ph.D.	-	2	2	1	1		6

2.2 Number of Scholarship/Fellowship holders :

Programme	Institute Scholarship	Others	Total
Ph.D.	-	6	6

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.	N. Sandhyarani	Ph.D.	National Seminar of the	January 1999
2.	M. Venkataraman	Ph.D.	Mat. Res. Soc. of India	23-26,
3.	C. Baby	Ph.D.	NMRS Conference, Dehradun	February 1999

2.4 Number of Degrees Awarded in the last convocation :

Programme	Total
Ph.D	8

3. Faculty and their Development

3.1 Faculty :

Name and Qualification	Major Area of Specialization
S.P. Venkateshan, Ph.D Professor and Head	Heat Transfer, Instrumentation
T. Pradeep, Ph.D Assistant Professor	Chemical Physics, Spectroscopy, Clusters, Monolayers
T.S. Sampath Kumar, Ph.D. Assistant Professor	Materials Engineering, Surface Science, Biomaterials, composite superconductors
P.T. Manoharan Ph.D., FNA., FASc., CSIR Emeritus Scientist	Molecular Magnetism, Magnetic Resonance and Hemoglobin

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

Sl. No	Co-ordinators	Title	Period
1	T. Pradeep	Contact Programme on Materials and Molecules: Modern Trends	January 27 - Feb. 5, 1999

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.	S.P. Venkateshan	International Conference on Differential Equations and Numerical methods	University of Central Florida, Florida USA	March 17-19, 1999
2.	T.S. Sampath Kumar	Training Programme on Accreditation of Laboratories	NITSQM, BIS, Chennai	February 9-10, 1999

3.4 Special Lectures Delivered by the faculty in other Institutions :

Sl.No.	Name of Faculty	Topic of Lecture	Venue & Date
1.	T. Pradeep	Monolayers in two dimensions investigated by SERS Investigations of fullerene derivatives, metcars and tubules	Department of Chemistry, Purdue University West Lafayette, May 26, June 9, 1998
2.	T. Pradeep	Structure, stability, dynamics and reactivity of monolayers	Department of Chemical Engineering, Purdue University, West Lafayette, June 3, 1998

Sl.No.	Name of Faculty	Topic of Lecture	Venue & Date
3.	T. Pradeep	Structure, stability, dynamics and reactivity of monolayers on 2D surfaces	Department of Chemistry, Arizona State University, Tucson, August 6, 1998
4.	T. Pradeep	Surface enhanced Raman spectroscopy of monolayers Surface enhanced Raman spectroscopy of monolayers	Department of Physics, IIT Madras, March 20, March 30, 1999
5.	T. Pradeep	Analytical methods for novel materials	Department of Applied Physics, Cochin University of Science and Technology, Cochin, March 29, 1999
6.	T.S. Sampath Kumar	Imperfections in Solids, Ceramics in Clinical Care, Thermoanalytical methods, [3 lectures]	Dept. of Nuclear Physics and Metallurgical Science Centre, University of Madras Jan. 24, 1999
7.	T.S. Sampath Kumar	Bioactive Ceramics, Thermal Analysis. [2 lectures]	RSIC, IIT Madras January 29, 1999
8.	T.S. Sampath Kumar	Recent Progress in Spectroscopic Instruments for Pollution Monitoring	TBML College, Porayar March 21, 1999
9.	Dr. Babu Varghese	Application of Direct Methods in Crystallography (6 lectures)	Dept. of Biophysics & Crystallography. Madras University 7.12.1998 to 13.12.1998

3.5 Visits Abroad by Faculty :

Sl. No.	Name of Faculty	Country visited	Date	Purpose of visit
1.	S.P. Venkateshan	U.S.A.	15.3.99 - 26.3.99	Attended conference at Orlando, and visited JPL, California
2.	T. Pradeep	U.S.A.	May-Aug 1998	Research

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

Name of Faculty	Name of the Academy/ Professional Society	Year of Admission
P.T. Manoharan	Indian Academy of Sciences Indian National Science Academy	1981 1985

4. Design and Development Activities :

FT/ESR Spectrometer has been developed

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

- (a) Developed methodologies to make metal clusters and their superlattices.
- (b) X-Band ESR Spectrometer designed, developed and installed at Safety Research Institute of IGCAR, Kalpakkam.
- (c) Developed software for indexing twined crystals from X-ray reflection data.

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

- (a) Simultaneous thermogravimetric analysis (TG) and differential thermal analysis (DTA) coupled with a mass spectrometer (upto 300 amu) for evolved gas analysis has been recently installed along with a modern differential scanning calorimeter (DSC) including a low temperature cooling facility. The above thermo analytical techniques can be used to characterise the thermal behaviour of materials from -170° C to 1600° C.
- (b) A QMAX QT 200 general purpose board tester has been acquired for testing of digital and analog devices in power on condition (In-circuit and Out-circuit functional testing modes).
- (c) Quadrapole Mass Spectrometer has been fabricated.

5. Research and Consultancy :

5.1 Sponsored Research Projects on hand (only ongoing) :

Sl.No.	Title	Period	Funding Agency	Amount (Rs. in lakhs)	Co-ordinators(s)
1.	AERB Project on "Design and development of a compact X-band ESR Spectrometer for identifying the irradiated	1999-2001	AERB Bombay	26.68	S.P. Venkateshan G. Palanisamy
2.	Tandem Mass Spectrometer	1997-2000	DST	48.6	T. Pradeep
3.	Studies on blocked sub assemblies	1997-1999	IGCAR	19.00	S.P. Venkateshan
4.	Computer aided modules in conduction and Radiation	1998-1999	CCE	0.9	S.P. Venkateshan C. Balaji

Sl.No.	Title	Period	Funding Agency	Amount (Rs. in lakhs)	Co-ordinators(s)
5.	Chemistry of metallo-carhedrenes	1996-1999	DST	15.25	P.T. Manoharan T. Pradeep
6.	Spectroscopic & Investigations of Transitions ...	1995-1998	CSIR	7.00	P.T. Manoharan
7.	Magnetic Studies Resonance Lipsomes	1994-1998	DST	20.00	P.T. Manoharan

5.2 Industrial Consultancy (only ongoing) :

Sl.No	Name of the Faculty	Title	Industry	Amount Rs.Ps
1.	S.P. Venkateshan	Analysis of ESCA measurement	B.H.E.L., Bangalore	35, 000/-
2.	S.P. Venkateshan	Analysis of pharmaceutical samples by ICP instrument	The Union Pharma, Karaikudi	10, 460/-
3.	S.P. Venkateshan	Analysis of Triclosan samples by GCMS	M/s Reckitt and Column of India Ltd., Hosur	4,000/-
4.	S.P. Venkateshan	Analysis of Alloy steel	Vizhakapatnam Steel Plants, Visakhapatnam	4,000/-
5.	S.P. Venkateshan	Analysis of Gallbladder stones by IR instrument	Gastroenterologist Chennai - 20	15,000/-
6.	T. Pradeep	Report on the Coating Solution	Superintendent of Central Excise, Chennai - 45	5, 100/-

5.3 Journal Editorial Boards :

Sl.No.	Name of Faculty	Level	Journal
1.	S.P. Venkateshan	Secretary Indian Society For Heat and Mass Transfer	
2.	P.T. Manoharan	Secretary Indian National Science Academy	
3.	T. Pradeep	Member Editorial Board	Asian J. of Spectroscopy
4.	T.S. Sampath Kumar	Member Editorial Board	Trends in Biomaterials and Artificial Organs

6. Research Publications:

(a) In Refereed National Journals :

1. A. Venkataramaya, S.P. Venkateshan, Ajit Kumar Kolar, "Analysis of the effect of bubble traversing path on bubble rise velocity estimation in gas fluidized beds", Journals of Institute of Engineers (India), 78, 50-56, (1996).
2. N. Rajan, T.S. Sampath Kumar, K.G.M. Nair and K. Krishnan, Phase instabilities during Ti-nitride precipitation in nitrogen implanted Ti-6Al-4V alloy, Bull. Mater. Sci. 21, 303-308, (1998).
3. R. Selvan and T. Pradeep, Recent advancements in the chemistry of metallocarbohedrenes, Current Science, 74 666, (1998).

(b) In Refereed International Journals :

1. A. Venkataramayya, S.P. Venkateshan, Ajit Kumar Kolar, "Bubble detection with horizontal pressure gradient measurements in gas fluidized beds - Powder Technology", 97, 77 - 84, (1998).
2. R. Dharshan, N.K. Vaish, K. Shah, G.V.R. Chandramouli, B. Varghese, R. Muthukumaran and P.T. Manoharan. The Cu(II) promoted Supramolecular self-assembly of Core oxalo retro-lispeptides: Crystal structure and magnetic property of [Aib-COCO-Aib]Cu , J.Am.Chem.Soc. 117, 1643-44 (1995).
3. A. Asokan, B. Varghese, A. Caneschi and P.T. Manoharan, A Novel Polymer of Binuclear Nickel(II) Complex Bridged by 1,3-diaminopropane – Structure and Magnetism, Inorg. Chem. 37, 228-232 (1998)
4. B. Venkatesh, J. M. Rifkind and P. T. Manoharan, Hybrid Hemoglobins, Progress in Inorg. Chem. (Ed. K. D. Karlin, John Wiley & Sons, Inc.) vol.47, 563-684 (1998).
5. C. S. Gopinath, R. Muthukumaran, M. A. Bennett, L. L. Welli and P.T. Manoharan, XPS Studies on Dinuclear, Gold complexes, Chem. Phy. Letters, 296, 556-570 (1998).
6. P. Manikandan, B. Varghese, M.S. Moni and P.T. Manoharan, Ligand Dynamics in Tetracoordinate Copper(I) Complexes of Bis(pyrazolyl)pyridine Ligands J. Chem. Soc., Dalton Trans. 3219-3225 (1998).
7. R. Heucher, G. V. R. Chandramouli and P. T. Manoharan, Magnetic and Spectroscopic Investigations of Tetra-4-t-Butylphthalocyano Complexes of \square -Oxo Bridged Iron(II) dimer, J. Porph. Phth., 2, 415-421 (1998).
8. R. Heucher, G.V.R. Chandramouli and P.T. Manoharan, Magnetic and Spectroscopic Investigations of Tetra-4-t-Butylphthalocyano Complexes of Cobalt(II) and Copper(II), J. Porph. Phth., 2, 423-427 (1998).

9. Balagopalakrishnan, O.O. Abugo, J. Harsky, P.T. Manoharan, E. Nagababu and J.M. Rifkind, Superoxide produced in the heme pocket of a β -chain of hemoglobin reacts with β -93 cystein to produce a thiyl radical, *Biochemistry*, 37, 13194-13202, (1998).
10. T. Pradeep, J. Shen and R. G. Cooks, Rapid, C-C and C-F bond activation by transition metals in low energy atomic ion/surface collisions, *C. Evans, Commun. Mass Spectrometry*, 13 172-178, (1999).
11. S. Berchmans, V. Yegnaraman, N. Sandhyarani, K. V. G. K. Murty and T. Pradeep, J. Formation of nickel hydroxide monolayer on Au films through a self assembled monolayer of 5,5'-dithiobis (2-nitro benzoic acid): voltametric, SERS and XPS investigation of the modified electrodes, *Electroanal. Chem.*, (1999).
12. M. Venkataramanan, G. Skanth, K. Bandhyopadhyay, K. Vijayamohanan and T. Pradeep, Self-assembled Monolayers of Two Aromic Disulfides and a Diselenide on Polycrystalline Silver Films : An Investigation by SERS and XPS, *J. Coll. Interface. Sci.*, 212, 553-561, (1999).
13. N. Sandhyarani, S. Berchmans, V. Yegnaraman and T. Pradeep, A Combined Surface-Enhanced Raman-X-Ray Photoelectron Spectroscopic Study of 2-mercaptobenzothiazole Monolayers on Polycrystalline Au and Ag Films. *J. Coll. Interface Sci.*, 209 154-161, (1999).
14. J. S. Patrick, T. Pradeep, H. Luo, S. Ma and R. G. Cooks, Gas phase cleavage in perfluorohexane using W-, Si-, P-, Br- and I- containing ions: comparisons with reactions at fluorocarbon surfaces, *J. Am. Soc. Mass Spectrom.*, 9, 1158, (1998).
15. K. V. G. K. Murty, M. Venkataramanan and T. Pradeep, Self assembled monolayers of 1,4-benzenedimethanethiol on polycrystalline silver and gold films: an investigation of structure, stability, dynamics and reactivity *Langmuir*, 14, 5446, (1998).
16. N. Sandhyarani and T. Pradeep, Characteristics of alkanethiol self assembled monolayers prepared on sputtered gold films: a surface enhanced Raman spectroscopic investigation *Vacuum*, 49, 279, (1998).
17. M. R. Resmi, K. Smitha, T. N. Arungagiri and T. Pradeep, Spectroscopic investigations of $M(CO)_5-C_{60}$ ($M=W, Mo$) complexes: precursors for metal fullerides, *Fullerene Science and Technology*, 7(2) 123-146 (1999).
18. V. Bindu, M. Venkataramanan and T. Pradeep, Trapping of molecules in self assembled monolayer matrices, *Mol. Phys.*, 96 367-370 (1998).
19. N. Sandhyarani, K. V. G. K. Murthy and T. Pradeep, Simple method for the preparation of surface enhanced Raman active substrates, *J. Raman Spectrosc.* 29 359, (1998).
20. V. Bindu and T. Pradeep, Characterisation of alkanethiol self assembled monolayers by x-ray photoelectron spectroscopy, *Vacuum*, 49 63, (1998).
21. V. Bindu, K. Smitha and T. Pradeep, Tilted orientation of molecular chains at the surface of a series of perfluoropolyether liquids: an x-ray photoelectron spectroscopic investigation, *Mol. Phys.*, 93 85, (1998).

22. B. Latha, K. Ravichandran, D. Ravichandran, T. Nagarajan and T.S. Sampath Kumar, The effects of calcium content and silver doping on superconductivity of $(\text{Pb}_{0.5}, \text{Cd}_{0.5}) \text{Sr}_2(\text{Y}_{1-x} \text{Ca}_x) \text{Cu}_2 \text{O}_{7-\delta}$, ($0.3 \leq x \leq 0.5$), Supercond. Sci. Technology. 11 1367, (1998).
23. Shivaram S. Garje, Vimal K. Jain and Babu Varghese, Synthesis and Characterization of Arsacycloalkanes and their Palladium and Platinum complexes, and X-ray structure of $[\text{PdCl}_2(\text{PhAsCH}_2\text{CH}_2\text{CH}_2\text{CH}_2)]$, Appl. Organometal Chem. 13, 47-51, (1999).
24. Anshu Singhal, Vimal K. Jain, Babu Varghese and Edward R.T. Tiekink, Synthesis and characterization of mono and binuclear palladium and platinum complexes with organo chalcogenides, Inorganica Chimica Acta. 285, 190-196, (1999).
25. K. Sankaran, V., Vidya, K.S. Viswanaba, Lisa George and S. Singh, Trimethyl phosphate-water interaction. A matrix isolation infrared and abinitio study, J. Phys. Chem. A 102, 2944-2953 (1998).
26. V.T. Joy, Lisa George and T.K.K. Srinivasan, Absorption of 1, 3 dithiol 2 thione, -4,5 - dithiolate on the silver surface studied by SERS, Chemical Physics Letter, 302 (1999) 517-522 (1998).

(c) In Proceedings of National Conference :

1. T.S. Sampath Kumar, Bioceramics, Transactions of the 10th National Conference of the Society for Biomaterials and Artificial Organs - India, 147-151 (1998).
2. I. Manjubala and T.S. Sampath Kumar, Effect of MgF_2 on biphasic calcium phosphate ceramic synthesis using microwaves, Biomedical materials and Devices, Ed. M. Jayabalan, 138-142, (1998).

(d) In Proceedings of International Conferences :

1. Ramesh, N., Balaji, C. and Venkateshan, S.P., "Interaction of Surface Radiation with Natural Convection". International Conference on Differential Equations, Numerical Analysis and Non-Linear Mechanics, University of Central Florida, Orlando, Florida, USA, March 17-19, 1999.

(e) Others :

1. Self assembled monolayers, T. Pradeep, Resonance-Journal of Science Education, 3, 53-62, (1999).

6. Distinguished Visitors to the Department :

Sl.No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1.	Dr. V. Dhanaraj United Kingdom	22.10.1998	Delivered lecture on High Resolution crystal structure with its cognate kinate

5.5 CENTRE FOR SYSTEMS AND DEVICES

Centre for Systems and Devices was established in 1970 with large scale funding from Ministry of Defence, Government of India for carrying out research and development problems having relevance to defence applications. The ultimate objective of funding the centre being that the centre should be able to offer expertise in solving user oriented problems undertaken by Defence Research and Development Organisation of Government of India. Another related objective was training candidates sponsored by Defence in M.Tech and Ph.D. programmes of this Institute. Towards this end the centre receives permanent recurring grants and non-recurring project grants from DRDO. This centre is one among six centres established in IITs and IISc.

The Centre has made significant contributions towards defence R & D. As a consequence, now DRDO quite frequently seeks expertise of the centre in solving user oriented problems. During 1998-1999, the following R and D assignments / projects were carried out .

The centre is in a position to undertake user oriented R and D work primarily for DRDO's as well as for others requirements. The emphasis in the R and D work carried out at the centre is developing current technologies. The major strength of the centre lies in providing results in a time-bound manner to meet the critical time frames set by the sponsoring agencies.

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) was established in June 1986, by merging together the different units connected with Quality Improvement Programmes, Continuing Education and Curriculum Development activities.

6.1.2 Quality Improvement Programme (QIP):

Since inception, 274 faculty members of other institutions obtained Ph.D. degrees and 383 M.Tech. degrees under this programme.

During 1998-99, 13 Ph.D. scholars and 8 M.Tech. students were admitted under the above programme. 29 Ph.D. scholars and 15 M.Tech. students were on rolls during 1998-99.

Short Term Training Programme (STTP):

Under QIP, 10 courses were conducted during 1998-99 mainly for teachers of Engineering Institutions as well as for a few participants from industries.

From 1970-71 to 1998-99, 178 Short Term Courses were conducted under QIP, and 4,093 teachers from various engineering colleges participated and got benefited from these courses.

6.1.3. 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 are also sent to various engineering colleges/industries.

During the year under report, 13 programmes were taken up by various faculty members of the institute.

Model Curriculum Development:

AICTE has entrusted to this institute the development of Model Curricula in the following areas:

- * Metallurgical Engineering
- * 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 this Centre for all the areas. Also, Thermodynamics syllabus which has been planned as a common subject in first year B.E./ B.Tech 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, 26 books were published and 9 books are under preparation by various 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.

During the year 1998-99, 7 continuing education modules were approved by AICTE pending financial sanction and two more were submitted for approval.

Continuing Educational Programme (Short-Term Courses)

Institute faculty members organised several short-term courses under Continuing Education Programme for professionals from industry and R&D establishments on need basis. About 25 to 35 such programmes are organised every year. During 1998-99, 27 short term courses were conducted and 520 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 the specific request of 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 1998-99, 5 proposals were proposed by various 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. It facilitates active participation of the faculty in various interactive programmes organised for the benefit of industries. The Centre also provides administrative support for carrying out consultancy and sponsored research projects particularly for recruitment of project staff, maintenance of accounts and purchase of equipments and materials.

Some of the areas of major activities of the Centre are:

- * Sponsored Research programmes
- * Plan Schemes
- * Technology Development Mission Schemes
- * Consultancy programmes: Project/ research/ retainer based
- * Collaborative projects with foreign countries
- * Industrial Associateship Scheme
- * ISRO-IITM Cell Joint Projects
- * Projects sponsored by National Institute of Ocean Technology
- * Entrepreneurship Development Programmes
- * Technology Transfers
- * Patents, etc.
- * IGCAR-IITM Cell Joint projects

Prof S Srinivasa Murthy, Dean IC & SR.

6.2.2. Staff

D Balakrishnan	Chief Techno Economic Officer
R Sundaram	Senior Techno Economic Officer
V Suresh	Senior Techno Economic Officer
K Sekar	Assistant Registrar
B Ramaswamy	Asst Registrar (Project Purchase)
N Mahalingam	Asst Registrar (F&A)

6.2.3. Sponsored Research:

57 projects of value totalling Rs 942.52 lakhs were taken up by the Institute during 1998-99.

6.2.4. Plan Schemes:

Plan Schemes were sanctioned to this Institute by the Ministry of Human Resources Development in the following areas:

- * Nationally coordinated project on Telematics
- * Nationally coordinated project on Educational Technology
- * Infrastructure for Decision Support Systems for Cyclone Disaster Management
- * Online Monitoring of Anaerobic Fluidized Bed Process
- * Integrated Design for Rapid Prototype Development
- * New Sintered Bearings Performance Improvements

6.2.5. Consultancy Programmes:

679 consultancy assignments of value totalling to Rs 565.06 lakhs were taken up during 1998-99. Research Based Industrial Consultancy activity contributes nearly Rs 256 lakhs of the total value of the assignments. Also 12 faculty were retained as consultants of various industries. Interdisciplinary programmes for providing consultancy to TNPCB continued.

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 Eng, Metallurgy and Ocean Eng Centre continued during the year. Also several projects under Indo-US, Indo-EEC, Indo-French etc. have continued.

6.2.7. Industrial Associateship Scheme:

More than 243 industries are members of this Scheme (Large scale 23, medium-scale 124 & small scale 96). The following Technology Appreciation Programmes were organised during 1998-99.

- * Analytical Tools for Engine Emission Diagnostics
- * ISO 14000 Environmental Management System
- * Computer Aided Inspection
- * Polymeric Materials
- * Mechatronics
- * GIS Applications in Industries
- * Industrial Mathematics & Scientific Computing Powerful tools for industry

6.2.8. Other Programmes:

IGCAR Cell:

5 projects sanctioned in the previous year were continued during the year. Proposals for funding new projects were discussed. Also, IGCAR has proposed funding projects under M.S. and Ph.D. programmes.

ISRO-IITM Cell Joint projects:

This is an ongoing activity sponsored by the ISRO where research projects of interest to ISRO are being taken. 7 ongoing projects were continued during the year and 5 projects were sanctioned.

6.2.9. Patents:

During the year under report, applications were made for taking 4 patents in the name of the Institute and 2 were sanctioned.

6.2.10. Visitors:

The following visited during the year:

1. Mr Pramod K Rastogi, Swiss Federal Institute of Technology, Lausanne.
2. Mr Max Thompson of Romteck Pvt Ltd, Australia.
3. Dr Jean-Michel Giovannoni, Swiss Federal Instt. of Technology, Switzerland.
4. Dr Upinder Jit Kaur, Minister for Technical Education & Industrial Training and Sri N S Rattan, IAS, Principal Secretary to Govt of Punjab, Directorate of Technical Education & Industrial Training.
5. Mr P L Narasimhan and Mr R Venkataraman, Lakshmi Machine Works Ltd., Coimbatore.
6. Mr Thierry Chambolle, Vice President of one of the biggest French Industrial Groups, (Suez-Lyonnaise des Eaux).
7. Delegates from FHTE (Fachhochschule Hochschule fur Technik, Esslingen) - Presidents of the German Universities.
8. Dr S Ganguly, DST visited IIT for the "Distinguished Technologists Lecture Series".
9. Delegates from National University of Singapore
10. Prof Dr Ing U Dilthey, Institut fur Schweisstechnische Fertigungsverfahren, Aachen, Germany.

6.2.11 Technology Development Missions:

The projects taken up under the Missions on "New Materials" and "Energy Efficient Technologies & Devices" were continued during the year.

The National Steering Committee of the TDMs was held in Delhi in April 1999 wherein it was decided that the duration of the projects taken up under these two Missions can be extended upto 30th Sep 99 without any financial commitments.

6.2.12. MoUs signed by IIT Madras with other organisations/ Institutions during 1998-99.

- * Swiss Federal Institute of Technology, Switzerland
- * NLC, Neyveli
- * VSCC
- * CVRDE
- * Defence Electronics Application Lab
- * Lucas TVS Ltd.

- * Chief System, Navy
- * Mormugao Port Trust
- * DRDL Hyderabad
- * Madras Refineries Ltd.
- * Tripartite agreements between
IITM, Banyan Networks & BPL Telecom
IITM, Banyan Networks & ARM
IITM, Banyan Networks & Himachal Futuristic Co Pvt Ltd.
- * Dept of Electronics
- * Ajitha Power Systems
- * Chief Engineer (Navy), Port Blair.

6.2.13. Publications:

- * The first issue of IIT Madras bi-monthly News Letter was published in April 99 and four issues were released during the year.
- * "NewsTech", a News Letter for Industrial Associates continued to be published.
- * Abstracts of M.Tech & M.S. theses were published.

6.2.14. The "Summer Assistantship Scheme" was continued for 3rd year B.Tech/B.E. students of other Engineering colleges. 12 students joined the scheme during the year.

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 I.IT, Madras, 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 programmes 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 programmes. These trained personnel play a major role in the maintenance of electronic equipment not only in the institute but also several other outside organisations. From time to time, this Centre conducts short term courses, orientation programmes, and tailor-made courses in the area of maintenance of electronic equipment.

Indoor and outdoor laboratory facilities were established in the area of Solar Photo Voltaics. This year, the Centre had completed a major Training Programme Project in the area of Solar Photo Voltaics, by training 748 Engineers and Technicians from all over the country.

So far, this Centre had 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 had 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 had also developed instrumentation systems to suit the industry-specific needs for a number of organisations in this country. Currently, there are numerous ongoing Industrial Consultancy Projects on diversified industrial problems in the area of Electronics & Instrumentation.

6.3.2 Training Programmes

Long Term CEC Training Programme:

Regular CEC Training Programme of one year duration was conducted. Eleven candidates completed their training this year.

AMET (Academy of Maritime Education and Training) Training Programme:

Subsequent to the letter of Agreement signed between IIT Madras and AMET Chennai, Electro-Technical Officers Training Program for the Marine Radio officers of the Merchant Navy was designed in co-ordination with AMET. This is a unique program and it is reported to be the first endeavour at international level to retrain Marine Radio Officers to make them full fledged Electro-Technical Officers.

Co-ordinator	Title	Period	No. of candidates trained
Dr.M.Kumaravel	Electro-Technical Officers Training Program	12 weeks 25.1.99 to 16.4.99	16

The project was sponsored by AMET, Chennai. The project value is Rs 12 Lakhs.

SPV (Solar Photo Voltaics) Training Programmes:

This year, following nine programmes of one week duration were conducted in collaboration with Siemens Solar Industries, U.S.A. 273 candidates were trained in this year, making a total of 748 candidates in the project period of 3 years.

S. No	Co-ordinator	Title	Period	No. of candidates trained
1.	Dr.M.Kumaravel	Field Technician Program	11.5.98-16.5.98	22
2.	" "	" "	18.5.98-23.5.98	17
3.	" "	" "	25.5.98-30.5.98	35
4.	" "	" "	8.6.98-13.6.98	36
5.	" "	" "	15.6.98-20.6.98	36
6.	" "	" "	22.6.98-27.6.98	33
7.	" "	" "	6.7.98-11.7.98	33
8.	" "	" "	13.7.98-18.7.98	32
9.	" "	" "	20.7.98-25.7.98	29

The project was sponsored by IREDA. Total value of the project is Rs 40.54 Lakhs.

6.3.3 New Facilities added and major equipment procured

Name of the Facility	Cost –Rs. in lakhs
i. SMD Workstation (O.K , USA)	1.65
ii. Logic Analyser (HP, USA)	Gifted by Hewlett Packard
iii. Chip writer (Data I/O, USA)	0.6
iv. Uninterrupted Power Supply	0.7

6.3.4. Some of the Important Consultancy Projects completed

S. No	Co-ordinator	Title of Project	Organisation	No of Assign.	Project Value Rs. in Lakhs
1.	Dr.M.Kumaravel	CNC M/C Modules	Heavy Vehicles Factory Ministry of Defence Avadi, Chennai	25	4.18
2.	-do-	Special function modules for CNC Machines	HAPP Ministry of Defence, Trichy.	9	1.49
3.	-do-	CNC M/C Modules	GEC Alsthom Pondicherry	3	1.00
4.	-do-	Controllers For Textile Machinaries	Euro Tech Chennai	2	0.26
5.	-do-	CNC Machine Modules	Ashok Leyland Ltd, Chennai	3	0.28
6.	-do-	Audio Cassette Loading Machine	Sorex Ltd, Chennai	1	0.12
7.	-do-	DC/AC Drives	TAMIN Ltd, Chennai	2	0.52
8.	-do-	SPV Powered Water Pump	Polyene Industries Chennai	2	0.04
9.	-do-	R-core winding M/C	Probis Industries	2	0.24
10.	-do-	Force Measurements	Periyar Dam	1	0.06
11.	-do-	VLSI Testing System	SPIC Electronics Ltd Maraimalai Nagar	8	1.05

6.3.5. Special Lectures:

Name of Faculty	Topic of the Lecture	Organisation	Date
Dr.M.Kumaravel	Solar Phot-Voltaics - Alternative Power Source and Challenges	30th National Seminar on Emerging Challenges in Energy and Environment organised by Energy and Fuel Users Association of India	December 12, 1998

6..3.6. Publications in proceedings of the National Conference

Dr.R.Ramarathnam, Prof.G.Sridhara Rao, Prof.K.Radhakrishna Rao, Dr.M.Kumaravel and Dr.S.S.Yegnanarayanan , " Energy conservation using High Frequency Tools", 30th National Seminar on Emerging Challenges in Energy and Environment, Energy and Fuel Users Association of India, Dec 11-12, 1998.

Dr.M.Kumaravel , "Solar Photo Voltaics - Alternative Power Source and Challenges ", 30th National Seminar on Emerging Challenges in Energy and Environment, Energy and Fuel Users Association of India. Dec 11-12, 1998.

6..3.7. Design and Development Activities:

Energy Efficient High Speed portable electric drill/grinder has been developed for Electro Dynamic Industries Ltd, Chennai under RBIC Project and Technology has been transferred.

6.3.8 Staff Strength

The Centre has 12 Technical, 4 Administrative and 3 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 Systems were shutdown with effect from Nov.95. The present IBM RS 6000 models 590 and 370 offer powerful numerical performance. Multiple computing units on a high-speed network provide parallel (loosely coupled) and distributed computing platforms for research and development. The computing facility was enhanced with H.P highend server cluster and a file server under ICOSER scheme.

Computer Centre also provides Campus network connecting all the departments and Internet facility using VSNL 64Kbps radio link. Currently an ATM based high-speed backbone for the campus is being 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.

The facilities at the Computer Centre will enable students to learn the state-of-the-art computing techniques and methodology for problem solving in analysis and design. The installation provides new opportunities for computing for students and faculty apart from rendering the Centre as one of the most modern among its peer academic institutes in the country.

The PC Maintenance cell provides services for repairs and maintenance of PCs in the institute including projects totaling to about 1200 machines. In addition Computer Centre has been serving the total computerisation of the following establishments of the IIT:

- | | |
|-------------------------|--------------------------------|
| i. Academic | vi. Engineering Unit |
| ii. Administration | vii. Guest House Accommodation |
| iii. Finance & Accounts | viii. Hostels |
| iv. Hospital | ix. Stores & Purchase |
| v. Library | |

6.4.2 Staff:

Name and Qualification	Major Area of Specialization
Head: Sriram P, Ph.D	Computer Networks, Distributed & Parallel computing.
Senior Systems Engineer Dheenadayalu R, M.Sc(Engg)	Data Centre Operations, System Administration. Application Software System selection.

Name and Qualification	Major Area of Specialization
System Engineers 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 Engineer Gr.I Vatsala, M.S.	System Analysis & Design, Application Software Development, Systems programming, Database Management.
Systems Officer Gr.I Sourirajan C.S, M.Sc.	System Administration, Programming Languages, Small computers, Application Software Development.
(Mrs.) Vijayalakshmi Sirohi, Ph.D.	Internet applications, Numerical Computing, Application Software, System Analysis & Design, Design & development, Information Systems, Web publication, Educational software, Java programming Human-Computer interface, Computers and Education.
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. & 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)	System Analysis and Design, Database Management Systems, Software Development (Unix), Internet Application development, Data Warehousing and Data mining.
Junior Systems Engineer Sreekumar P.Y, B.Tech(C.S)	Computer Networks, Database management Systems, Systems Administration.

System Trainees on Roll: (1997-99)

- | | |
|--------------------------|--------------------|
| 1. Stanly Manual | 7. L Senthilkumar |
| 2. R Lakshmi | 8. Suresh Ganesan |
| 3. K S Vidyasankar | 9. R Vanitha |
| 4. V Surendra Kumar | 10. B Jayashree |
| 5. B Uthandaraman | 11. S Vijayakumar |
| 6. Madikonda Pavan Kumar | 12. K Punithavathi |

6.4.3 New Facilities / Equipment Added:

Additions:

HARDWARE

ICOSER Machines	:	HP C240 RISC Compute Servers	- 5 Nos.
		HP C200 RISC File Servers	- 1 No.
		HP C200 Graphics Workstation	- 1 No.
		HP Pentium II	- 15 Nos.
		Digital Pentium II	- 10 Nos.
		Sun spark ultra 10	- 5 Nos.

6.4.4 SOFTWARES

A number of simulators such as SABER, NISA, FLOW, MATLAB-SIMULINK, GIS, ALIGH-4, Windows NT Server, etc. were procured for an effective analysis, design and simulation of engineering systems.

NETWORKING

The Campus network was expanded connecting more buildings. Currently about 15 buildings were connected using Remote bridges in the campus network. This network provides access to machines in Computer Centre and Internet.

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 Ms. Vatsala Mr. Banavath Baman Mr. C.N. Vijayaraghavan
4.	GATE Data Processing	Mr. S.K. Ramesh Mr. V. Ravichandran

S. No.	Title	Coordinators
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.	Tramani Guest House Automation System	Mr. Banavath Baman
12.	Employee's Database for IIT	Mr. P.Y. Sreekumar
13.	Faculty Academic Profile	Mr. Banavath Baman
14.	Hostel Employees Payroll	Mr. V. Ravichandran
15.	Teachers Evaluation	Mr. C.S. Sourirajan

6.4.6 Consultancy Projects:

S.No.	Title	Period	Funding Agency	Amount (Rs.in Lakhs)	Co-ordinator(s)
1.	GIS Lab. For Engg Appl. Under Thrust Area in Tech. Education	1996-1998	AICTE	7.00	S.K. Ramesh
2	Educational Software Module for Systems Design	1998-1999	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	Dr. Vijayalakshmi Sirohi	Germany	Aug-96 to Jul 98	Visiting Scientist
2	Dr. Vijayalakshmi Sirohi	Singapore	Aug - 98	Visiting Scientist
3	Mr. C.S. Sourirajan	USA	Jun - Jul 98	IBM S390 Curriculam Training

6.4.8 Research Publications:

S. Jayaprakash and C.R. Muthukrishnan, "A permission based fault-tolerant distributed mutual exclusion algorithm". International Journal of Computer Systems Science and Engineering, Jan. 1999.

Vijayalakshmi Sirohi & Peter Gorny, "WWW - based educational software", BERICHTE - Technical report, C G & S Erg 97/1, Fachbereich informatik, Carl V. Ossietzky Universitaet oldenburg, Oldenburg, Germany.

Vijayalakshmi Sirohi & Peter Gorny, LIPTOF : A Web based software for teaching light propagation through optical fibers. Proc. Intl. Conf. On Optics and Opto-electronics Dehra Dun; India, Dec. 9-12, 1998, pp 1229-1234.

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
Carpentry	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
Electrical Shop	Simple wiring and winding
Instrument Shop	Pressure testing facilities upto 100 Kg.
Welding Shop	Arc and gas welding, Brazing and soldering
Foundry	Oil fired furnace, Cupola and Sand Plant
Smithy	Hand forging and a power hammer

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 1998-1999, 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 and 186 II year undergraduates ME 203 and ME 207 titled Advanced Workshop Training with 2 credits each.

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. 360 work orders were executed during 1998-99

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.

Currently Workshop training programme to students is being modified and updated. In that plan Pneumatic Laboratory, Training was introduced during 1998-99. Central Workshop is in the process of installing machinery and equipment in new fields like hydraulic, FRP and Plastics and electronic Engineering to the tune of about Rs.20 lakhs in collaboration with Industries (FESTO-Yuken).

Successful execution of the objectives of Central workshop is reflected in acquiring ISO 9001 certificate accorded, in the year 1998-99. During this period, all the quality testing equipment were recalibrated outside and some staff of Central workshop got trained in most of the new trades in the outside institutions like ATI and CIPET, Guindy.

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 450 job orders during 1998-99 to a value of Rs.60,000/-. 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 1998-99:

Industrial Gases:

Item	Order	Consumption
1.Oxygen	2500 Cu.m	1950 Cu.m
2.Dry Nitrogen	2500 Cu.m.	2044 Cu.m
3.Dissolved Acetylene	267 Cu.m.	190 Cu.m
4.Hydrogen	350 Cu.m.	192 Cu.m

Special Gases:

1.Argon Gr.I	1950 Cu.m	1950 Cu.m
2.High Purity Nitrogen Gr.I	200 Cu.m.	158 Cu.m
3.Zero Air	250 Cu.m	182 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 1998 to March 1999 is 181.

Amount earned in terms of service charges during the above period is Rs.23,282.00.

7.6 Educational Technology Cell:

The Educational Technology Cell at IIT Madras was established in 1987 with the principal objective of producing resource materials, mainly employing the media of video and Computer assisted learning.

A fully equipped video studio has been set up for the production of these resource materials. A Multimedia system with 3D graphics/animation facility was installed. As on 31.3.1999 sixteen visual based video programmes and eighteen lecture series video programmes totalling to about 550 hours has been completed. Video support was given for three research projects. A sum of Rs.15 lakhs was earned through the sale of video programmes.

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.

8.1 Cd-Rom Networking:

Considering the advantages of CD-ROM products over printed media and online search, the Central Library has installed an integrated 56 drive Meridian-956 CD-ROM network system with six user terminals with 300 MHZ Pentium processor, 6.1 GB HDD, 64 MB RAM, 32X high speed CD-ROM drives 14" VGA monitor and keyboard. The server is pre-loaded with Novell's intranetware (Ver.4.11) to provide access on a Local Area Network (LAN) as well as remote access over a Wide Area Network (WAN). The existing CD-ROM server with 8 drives is also integrated with the new server to provide access to a total of 64 drives. The advantage of the present system is that it allows multiple users to access all the CD-ROM disks simultaneously from any workstation.

8.2 Bar Coding :

Realising the importance of bar-coding in the library activities, the Central Library had procured the following bar-coding equipments.

- Thermal label printer
- Hand held and flat bed scanners
- Data capture unit
- Bar-code label stationaries

In addition to this, the Central Library organised training for bar-code generation for staff members, bar-coding of book bank collection and bar-coded membership card for library members. Necessary Software for the generation of bar-coded ID cards was also been installed and tested.

8.3 Computerization :

The Central Library is actively engaged in the software upgradation. In this direction, the following major activities were undertaken.

- a. Sample data entries were made in KLAS programme in association with the software team of Computer Centre.
- b. KLAS programme was tested with 100 records in association with a software team of Computer Centre successfully.
- c. Modifications required in the software was identified and given to the software team of Computer Centre for implementation of KLAS software.

- d. New UPS system for 5 KVA capacity was installed in the Computer room of the Central Library for providing uninterrupted power to CD - ROM networking system, book bank, project room and Librarian's room.

8.4 ISO 9001 :

The Central Library participated in the ISO 9001 activities along with other units of the Institute. In connection with ISO 9001, the major activities undertaken by the Central Library are given below:

1. Internal Quality Audit Team (Dr.S.S. Gokhale, Dr.Krishnamurthy, Shri S. Essakimuthu, IAO and Shri P. Ramachandran, Assistant Registrar), visited the Central Library on 17-9-1998 and studied the entire functions of the Central Library.
2. A detailed systems and procedure manual for the entire Library activities was prepared and submitted to the Management Representative for ISO 9001 on 29-09-1998.
3. TUV Audit for ISO 9001 certification was completed for the Central Library on 24-11-1998.
4. Quality Circle was formulated comprising of Deputy Librarian, Assistant Librarians, Batch Leaders, Section In-charges for discussing various ways and means to improve and implement quality based services for the users on 22-03-1999.

8.5 Patent Literature And Information Service :

The Central Library was established special facilities and services for accessing patent literature in printed and non-printed forms. In this direction, 494 patent specifications were received on 15-10-1998 from patent office, Calcutta. A new sequence in the main catalogue for patent specifications had been created for the use of Faculty / Industrial Associates / Research scholars. A special collection on patents, copy right, industrial design etc. was developed and made available for use at First Floor Reading Hall.

8.6 Special Presentation :

The Central Library organised the following presentation for the benefit of faculty and students.

Dr.H.K.Kaul, Director, DELNET, New Delhi on "Library Networking in India with specific reference to on - line access to DELNET data bases through Internet" on 11-02-1999.

8.7 New Services Added :

1. 25 new journals under ASP package plan were received in the areas of Electrical Engineering, Computer Science and Engineering and Aerospace Engineering.

2. Arranged institutional membership of IGCAR Library . Under this five library cards were received from IGCAR which were made available to the users. Facility to have free xerox copies of articles on mutual basis was also arranged.
3. Central Library made arrangement to provide INTERNET access for 890 + Elsevier journals for providing access to full text journals available through Science Direct against the user ID allocated by Elsevier on trail basis during the month of September - October 1998.

8.8 Staff User Meet :

The Central Library organised the staff user meets to enable the library staff and users to interact with each other. Distinguished professionals from other institutions also delivered lectures on the following topics.

Name of the Speaker	Topic	Date
1. Dr.K. Nithyanandam Librarian, Pondicherry Engg. College.	Role of Information Technology in S&T libraries	18.05.1998
2. Dr.Subbaiah Arunachalam, M.S.Swaminathan Research Foundation, Chennai	From Print to Electronic : What it mean to developing countries?	17.08.1998
3. Dr . G. Chandra Prabha, Senior Research Scientist, OCLC,NC.Dublian,OHIO,USA.	Impact of O C L C (On line computer library centre) on Librarianship	22.12.1998

8.9 Visitors :

1. 50 Librarians from Engineering College libraries visited on 29-06-1998.
2. Prof.Parameswaran, Head, Dept. of Library and Information Science, along with a team of students visited Central Library on 28-07-1998.
3. 30 foreign students from National Institute of Small Industry Extension Training, Hyderabad visited on 10-09-1998.
4. Library & Information Science students along with the faculty members of Gulburga University visited on 27-11-1998.
5. 31 foreign delegates from National Institute of Small Industry Extension Training, Hyderabad, visited on 10-12-1998.
6. Dr.H.K.Kaul, Director, Delhi Library Network visited Central Library and also had brief discussions with Librarian and Chairman LAC on 11-12-1999.
7. Ms.Pal Simpson, Library Director, Monterey Public Library, USA visited on 25-01-1999.
8. Ms. Barbara Hutchinsen, Director Arid Lands Information Center, University of Arizona, Tucson, USA visited on 9-2-1998.

8.10 Resource Sharing :

The Central Library participated in the resource sharing at local as well as national level. In this connection, Librarian attended resource sharing meeting convened by

Prof. Tarun Kant at IIT, Bombay during 09-11-1998 & 10-11-1998.

List of journals subscribed at IITs, TIFR , BARC in diskette form was sent to all departments and centers with the request to identify the journals not available at IITM but required by the faculty of IITM for document delivery service under resource sharing arrangement on 17.02.1999.

8.11 Publication Of Brochures:

The Central library brought out the following brochures giving important information for the benefit of library users.

- Book Bank Facilities, September 1998.
- Library and Information Services, October 1998.

8.12 Staff Training:

The following staff members attended the training programme as listed below:

- Mr.G.Kumar and Mr.V.Baskher Rao, SPAs for special training on creation of bibliographic record conducted by Delhi Library Network during 26-04-1998 to 29-04-1999.
- 15 staff members (Group A-3 ,Group B-7, Group C-5) have participated in HRD program on "Organizational Effectiveness " at ICSR Hall - III during 12-2-99 to 13-02-99.

8.13 Publications of Library Staff:

1. Harish Chandra (1998), Impact of Prof.S.M. Tripathi on Indian Library Science research scholars: Some personal reminiscences under publication. Indian Journal of Information, Library and Society, Vol.10, No.3-4, p.9-16.
2. Harish Chandra (1998), Augumenting library finances in S&T libraries from concept to application. In. Sustainable Library & Information Services. Edited by T.A.V. Murthy etal. Delhi, ILA, p.503-513.
3. Harish Chandra (1999), Patent information sources on Internet for R&D activities. In. Academic Libraries in Internet Era. Edited by P.S.G. Kumar and C.P. Vashitha, Ahmadabad, INFLIBNET, p.220-227.
4. Harish Chandra (1999), Financial resource generation and shift to electronic information era at the Central Library of IIT Madras. In. Library & Information Services in the Electronic Information Era. Edited by J.L. Saradana, Delhi, ILA, p.67-75.

8.14 Short term courses / workshop / seminar / Symposia / conferences / organised

S.No.	Co-Ordinator	Title	Date / Period
1	Librarian	Workshop on creation of bibliographical records in AACR II Format for non-book materials (NBMS) for a Digital Library.	11.07.1998
2	Librarian	MS EXCEL	20.08.1998 and 21.08.1998
3	Librarian	16th AIP- ARDB meeting .	27.08.1998 to 29.08.1998
4	Librarian	Bar-coding implementation	05.10.1998
5	Librarian	Training programme on the use of newly installed CD-ROM system conducted by M/s.Informatics (I) Pvt Ltd, Bangalore for Library staff.	06.10.1998 and 07.10.1998
6	Librarian	Organised training programme on operating systems/Windows 95 / MS Word/MS DOS/MS Excell / Power Point for Assistant Librarians, Graduate Trainees and Project staff	09.03.1999

8.15 Short term courses/ workshop / seminar / symposia /conferences / training attended by faculty in recognized Academic Institutions and Public sector Units :

Sl.No	Name Of Faculty	Title	Institution	Period / Duration
1	Dr.Harish Chandra	44th All India Library Conference	ILA & P.S Telugu University, Hyderabad	24.02.1998 to 28.02.1998

8.16 Special Lectures Delivered by faculty in other Institutions :

Sl.No	Name Of Faculty	Topic Of Lecture	Venue & Date
1	Dr.Harish Chandra, Librarian	Library Management Changing Scenario	KV.CLRI Madras. 05.05.1998
2	Dr.Harish Chandra, Librarian	Total Quality Management	University of Madras, 27.11.1998
3	Dr.Harish Chandra, Librarian	Multimedia in Libraries	INSDOC, Madras. 18.12.1998
4	Dr.Harish Chandra, Librarian	Information Support Services at Central Library, Madras.	INSDOC, Madras. 18.12.1998
5	Dr.Harish Chandra, Librarian	Current Challenges before Library and Information Managers in India.	INSDOC Madras. 22.02.1999
6	Dr.Harish Chandra, Librarian	Digital Library	REC Trichy 26.03.1999.

8.17 Sponsored research projects on hand (on - going)

Sl.No	Title	Period	Funding Agency	Amount (In Lakhs)	Co-Ordinators
1	Creation of patent information support services for research and development activities.	96 - 97	AICTE	5,00,000	Librarian
2	Creation of full text CD-ROM databases of Ph.D thesis submitted at IIT Madras	1998-99	ARDB - AIP project	5,37,000	Librarian

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

Sl.No	Name Of Faculty	Level	Journal
1	Dr.Harish Chandra , Librarian	Secretary	Journal of Mathematical and Physical Sciences.

8.19 Library and Information Services Statistics

a. Membership

Institute Members	1998-1999	Total
Staff ..	74	1,144
Retired faculty ..	10	28
Students ..	1,022	2,410
Alumni Members ..	6	25
Corporate Members ..	4	12
Industrial Associateship Members	47	295
Special members ..	14	48
Project Coordinators ..	3	13
	-----	-----
Total	1,180	3,975
	-----	-----

b. Collection

Books	2,033	1,60,088
Theses	110	2,254
Pamphlets and Reports ..	119	62,116
Microfilms/Fische	12	1,842
Book-Bank (General) ..	1	4,500
Book-Bank (Weaker Section) ..	18	6,500
Current Periodicals by subscription ..	722	---
Current Periodicals by Exchange/Gift ..	87	---
Back Volumes of periodicals	1,621	74,549
	-----	-----
Total	4,723	3,05,349
	-----	-----

c. Services

Circulation

Number of Readers visited ..	1,95,220
Number of Books/Journals issued ..	1,42,849
Number of Books issued through ..	
Bank Book (General)	1,500
Number of Books issued through ..	
Bank Book (Weaker Section) ..	3,000
Consultation cards issued to users ..	350
Overdue & other charges collected ..	Rs.3,06,961
Xerox charges collected ..	Rs.4,75,885

Reservation of Books

Registered	..	22,245
Fulfilled	..	16,700

Loans

Department Loan (under issue)	..	5,300
Permanent Loan issued	..	840

1998-1999**Inter Library Loans**

Borrowed from other Libraries	..	..	320
Loaned to other Libraries	37

Literature Search

CD-ROM search by users	4,450
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Reprint service

From International Sources i.e. British Library	935
INSDOC etc	2,050
Supply of reprints to other libraries	..	..

Reprography Service

Number of Xerox copies supplied	..	..	8,12,331
DTP output	..	..	7,750
Number of copies printed on Rotoprinter	..	..	3,69,790

Binding

Number of Books and journals bound (internal)	..	..	1,300
Number of Miscellaneous publications bound (internal)	..	..	650
Number of Books & journals bound through external binders	..	..	2,494
Departments works (Miscellaneous)	..	..	2,500

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 2396 single rooms and 120 double rooms accommodation. During the period under report, there were 2301 men 236 women students in residence.

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 270 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.K. Ramar, Professor of Electrical Engg. upto 14.06.1998 Dr. S. Kumaraswamy Professor of Mechanical Engg. from 15.06.1998
Assistant Registrar	Sri. P. Paramanandam upto 25.08.1998 Sri.V. Ganesan from 14.09.1998
<u>Name of the Hostel/Unit</u>	Warden
Alakananda	Dr.R.P. Viswanath Asso. Professor of Chemistry
Brahmaputra	Dr.N. Ramesh Babu Asso. Professor of Mechanical Engg.
C.S.U.	Dr.K. Ramar Professor of Electrical Engg. upto 14.06.1998 Dr.S. Kumaraswamy Professor of Mechanical Engg. from 15.06.1998

Ganga	Dr.Shreesh Chaudhary Professor of Hum. & Soc. Sciences
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.
Mandakini	Dr.U.S. Paramananda Shet Professor of Mechanical Engg.
Narmada	Dr.T. Swaminathan Asso. Professor of Chem.Engg. upto 29.04.1998 Dr.C. Pandurangan Professor of Computer Science & Engg. from 30.04.1998
Saraswathi	Dr.K. Ganesh Babu Professor of Ocean Engg. Centre
Sarayu	Dr.Nanditha Das Gupta Asst. Professor of Electrical Engg. upto 24.09.1998 Dr.Hema A. Murthy Asst. Professor of Computer Science & Engg. From 25.09.1998
Tapti	Dr.R. Palaninathan Professor of Applied Mechanics

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 on 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.57,579/= was reimbursed to 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, Rivolver 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 the above tournament from 25th to 29th September 1998 in the following Sports : Badminton, Basket Ball, Foot Ball, Hockey, Table Tennis, Tennis and Volley Ball for men colleges. Badminton, Basket Ball, Table Tennis, Volley Ball for women colleges.

IITM performed creditably well in all events. Institute basket ball team reached the finals and played a superb match against the winners MCC which had Sports excellence quota players. Badminton team also played well against the opponents in the league rounds.

IIT Sportstar Cricket Tournament:

The most prestigious cricket tournament in the city for college students sponsored by "Sportstar" was conducted from 22.08.98 to 27.09.98 with twenty two teams participating in the competition.

In one of the severely contested matches, IIT 'A' team lost to Anna university very narrowly. Gurunanak, last year winners lost to RKM Vivekananda college in the semifinal match. The rain affected Sportstar Cricket final match was replayed on 13.03.99 and RKM Vivekananda won the trophy defeating Pachaiyappa's College.

Inter IIT., Aquatic Meet:

This meet was held from 30th September to 2nd October 1998 at IIT Bombay. Five IITs excluding IIT Guwahati participated in the above meet in which our contingent finished third in the swimming events.

Inter IIT., Sports Meet:

This year, the meet was held at IIT Bombay from 14th to 19th December 1998 and IITM contingent came fourth in the overall position. Institute teams were placed second in basket ball badminton and cricket.

All India Inter Collegiate Invitation Basket Ball Tournament:

This tournament which was conducted from 13th to 17th January'99. attracted outstation teams this year from Kerala, Karnataka, Andhra Pradesh, Maharashtra and TAMIL Nadu. The large number of spectators who attended this tournament witnessed many exciting matches.

Our boys put up an excellent performance to beat Dr.G R Damodaran College, Coimbatore and went down to Annamalai University in a closely contested 2nd round encounter. St. Joseph College, Trichy won the Gerhard Fischer Cup for men colleges and Mount Carmel College, Bangalore won the Kokila Rajaiah Trophy for the women colleges.

Inter Hostel Tournament:

The tournaments staggered throughout the academic year were keenly contested and Jamuna Hostel won the Schroeter Trophy for General Championship.

Non Media Tournaments:

3-a-side basket ball and volley ball, 9-a-side cricket and 6-a-side hockey and 6-a-side foot ball events had as usual attracted large participants and students spectators .

All the Gymkhana facilities like Fitness Club, Badminton Club, Tennis Club, Swimming Club and Table Tennis Club functioned well during the period under report.

Swimming Pool:

The Swimming Pool is functioning well and it was maintained with good standards. 'Learn to Swim' summer coaching camps for beginners commenced from 5th April'99 onwards. The users were highly satisfied with the perfectly 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.

This year nearly 125 first year under-graduate students were registered under this scheme. Officials 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:

During the first week of February'99, the Rotary international cricket tournament was conducted at our IIT Cricket Grounds. The participants from various countries including UK, Australia, Newzealand, Srilanka and India felt the facilities were very good and expressed their high opinion and complete satisfaction.

The Women World cup Volley Ball participants had their practice schedule at our IIT multi purpose indoor stadium from 01.09.'98 to 06.09.'98 at SAC. The Cuba, (Olympic and World Cup winner), Russia (Olympic Runner up), Italy and South Korea practised at our stadium. Thus the campus residents and students had the opportunity of watching the practice schedule of the Olympic and World Class level players during their preparations.

CULTURAL ACTIVITIES

The academic year 1998-99 witnessed an increasing interest and commitment to cultural activities among students.

1. Freshies' Nite:

On 10th August 1998, the Freshies' Night was held. The newly admitted UG and PG students presented a variety programme of music (Classical, Film, Ghazals, Western and Fusion), dances (Bharathanatyam, Bhangra and Popular) and skits.

2. Independence Day:

On 14th August 1998, the eve of Independence Day, a special programme was held in the Open Air Theatre to mark the close of the Golden Jubilee Celebrations of India's Independence. Patriotic songs in various Indian languages were rendered by Balabrundam, a children's choir conducted by Smt.Seetha Rajan. A one-act play "The Trial", on the famous trial of Mahatma Gandhi in 1922 at Ahmedabad, was presented by faculty, students and staff of IIT Madras. A premiere screening of the award-winning documentary "India 5555" produced by M/s Krishnaswamy Associates, Chennai, was done. At the stroke of the midnight hour a "Freedom Run" was organised. In the morning of 15th August, the Director hoisted the National Flag and delivered his Independence Day address. The students sang patriotic songs for the large audience consisting of students, faculty and staff.

3. Bharat Utsav '98:

This festival celebrating India's hoary culture, traditions, and achievements, was celebrated on 27 and 28 September, 1998. In spite of heavy rains, the participation touched new heights this year. The festival opened with a rousing performance of folk

dances and shadow puppetry by artistes affiliated to Dakshina Chitra, a culture and tradition action project of the Madras Craft Foundation.

Other activities and events in the festival included:

- Lecture-demonstrations by M/s Pentafour on Special Effects in Indian movies, and Smt.E.Gayatri on Carnatic Music.
- a variety of Competitions such as India Quiz, Heritage Quiz, Debate, Elocution, Choreography (folk dances), Nostalgia (popular songs of yesteryears), Classical music, Antakshari, Creative writing, Painting, Sketching, College and Rangoli.
- Workshops on Pottery, Glass Blowing, Paper Mache, and Toy making.
- an orientation programme on Indian Astrology.
- a book Exhibition by M/s. Orient Longmans, and
- a Carnatic Classical flute recital by Padmasri Dr.N.Ramani.

4. Gandhi Jayanthi:

Gandhi Jayanthi was celebrated with an expert talk on "Agriculture and Food Security: Contrasting the current state of affairs with Gandhiji's insight", presented by Dr.V.Balaji of M.S.Swaminathan Research Foundation (MSSRF), Chennai. It was followed by discussions among faculty and students, and a rendition of bhajans by the students.

5. After-dinner talks:

1. Professor V.Krishnamurthy (former Director, Birla Museum, New Delhi and former Deputy Director, Birla Institute of Technology and Science, Pilani) presented two talks on science and spirituality titled, "Can we help Stephen Hawking know the mind of God?" on 04 and 05 August, 1998, in the Central Lecture Theater.
2. Professor Gopal K.Ganesh (Professor of Marketing, University of North Texas, USA and Class of 1973 alumnus of IITM) presented a talk "Outside Looking Inside" about how IITians can make various positive contributions to national development in all its aspects. The talk was featured on 10 November, 1998 and was held in the Language Laboratory, Department of Humanities and Social Sciences.
3. Sathguru Jaggi Vasudev presented a talk on "Inner Engineering for Effortless Living" in which he explained about the nature of consciousness and the need for spiritual development so that people can live a purposeful, joyous and fulfilling life. The talk was held on 23 March 1998 in the Central Lecture Theater. The after-dinner talks drew large audiences and members of the audience participated most enthusiastically.

6. Special talks:

Smt.Arundhati Ghose, former Ambassador of the Government of India to the United Nations and Chief Negotiator for the Government of India at the CTBT (Comprehensive Test Ban Treaty) international negotiations presented a talk, "The Buddha smiled again - what does it mean to India?" in which she forcefully argued India's standpoint on the issue. The students and faculty who attended the talk in large numbers asked several probing questions to which she responded convincingly.

7. Music Teaching:

Beginning August, 1998, the students were provided the opportunity of learning Western instrumental music on the guitar, keyboards and the drums. Mr.Rajeevan, a well-known professional musician in Chennai, was regularly handling classes twice a week for about twenty students.

8. Debating Society:

The Debating Society was revived during the current cultural year and there was a very good response from students. Two meetings were organized in which currently popular issues were debated upon.

9. Campus Magazines:

Two issues each of Focus and Campustimes were brought out during this year. The students have felt a strong need for more regular publication of the magazines. The content and production quality of the magazines was widely appreciated.

10. Yoga Classes:

Yoga classes were organized in the O.A.T., thrice a week, beginning April 1999 in the evenings, for the benefit of students and other campusites. The classes were conducted by Smt.Raji Ramakrishnan of the International Sivananda Yoga Vedanata Centre. The response was very good and many requests were received to conduct more frequent classes and special classes for ladies. The Gymkhana planned to resume the classes regularly from the beginning of next semester.

11. Inter-hostel/Open Events:

The usual variety of inter-hostel and institute-open competitive events were held throughout the July-December 1998 semester. The events included: 1) Pictionary. 2) Crossword. 3) Dumb Charades. 4) Western Music (Solo). 5) Scrabble. 6) Tintoretto. 7) Light Music (group). 8) Western Music (group). 9) Elocution. 10) Debate. 11) Audio-Visual Quiz. 12) Light Music (Solo). 13) Dramatics. 14) Pot Pourri. 15) Main Quiz. 16) Just-A-Minute. 17) Cluedo. 18) Choreography. 19) Fete. 20) Treasure Hunt. 21) Creative Writing (English). 22) Creative Writing (Hindi - during Bharat Utsav). 22) Collage. 23) Painting. 24) Sketching. 25) Rangoli (during Bharat Utsav). 26) India Quiz (during Bharat Utsav). 27) Nostalgia (during Bharat Utsav). 28) What's the good word. 29) Heritage (Indian Mythology) Quiz (during Bharat Utsav).

All the events drew a great number of participants and a more sizeable audience than previous years'.

12. SAARANG '99:

This festival was inaugurated on January 21st by the Director, Prof.R.Natarajan. What followed was five days and six nights of joyous celebrations, participation and stiff-neck competition and simple gay abandon. The prizewinners contributed a part of their earnings for social and altruistic causes including activities of the Spastics Society of India, Cancer Institute and Blue Cross.

Coca Cola was the main sponsor of the festival. Hero Honda, TVS Scooty and Levi-Strauss were the co-sponsors. In addition there were several event sponsors like Lee jeans, Exide batteries, The Hindu, Marico Industries, TTK Eva, All-India Travel Agency, I-Genesis Software and Amrutanjan.

This year's festival recorded the highest level of participation in the history of IIT Madras' students' cultural festivals. The competitions and informals were of very high quality and drew packed crowds. The Mr. and Ms. Saarang, Festival of Dresses, Choreography, Quizzes, JAM, Elocution, Debate and Music competitions - Carnatic, Indian Light and Western - set new standards of excellent performance by the competing individuals/groups.

The level of PG participation was most heartwarming. They organized a new event which was a runaway success and recorded the highest participation among all events in Saarang. The PGs also conducted a survey among the participants about various aspects of our nation including education, sports, culture, citizenship, etc. The PGs of the Department of Humanities and Social Sciences organized a Personality Assessment Cell (PAC) and received all round praise.

The craft as well as self-improvement Workshops were heavily attended. During the last two festivals students evinced intense interest in the self-improvement Workshops including Meditation, Pranic Healing and Transaction Analysis.

The Professional Shows by Padmasri K.J.Yesudas and his troupe (Indian Light Music), Chitra Visweswaran and her students (Bharatanatyam), Brahmma (Fusion Music) and Tantra (Western Music) were enjoyed by huge audiences that filled OAT to capacity.

A significant change was made in the organization structure of the festival through the introduction of an independent "Monitoring and Feedback Committee" consisting of two faculty members and three students (including the Speaker-Student Affairs Council). The Committee submitted its Report to the Steering Committee and made several observations and useful recommendations regarding the organization of Saarang.

Many participants of the visiting teams openly expressed their admiration for the way the festival was planned and organized. They felt that Saarang was their ultimate festival and beyond compare.

9.7 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-ups 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 1997-98.

SI No.	Branch	Number Placed		Total	No Placed More than one job
		OC	SC/ST		
I B.Tech					
1.	Aerospace Eng.	9	-	9	-
2.	Chemical Eng.	33	2	35	2
3.	Civil Eng.	36	-	36	4
4.	Computer Science & Eng.	20	2	22	-
5.	Electrical Eng.	40	1	41	3
6.	Mechanical Eng.	51	7	58	5
7.	Metallurgical Eng.	18	1	19	-
8.	Naval Architecture	17	-	17	1
Total I		224	13	237	15
II . M.Tech					
1.	Aerospace Eng.	3	-	3	-
2.	Applied Mechanics	11	-	11	1
3.	Chemical Eng.	23	-	23	-
4.	Civil Eng.	15	3	18	-
5.	Computer Science & Eng.	23	9	32	2
6.	Electrical Eng.	33	5	38	-
7.	Ind. Management	11	1	12	1
8.	Mechanical Eng.	47	10	57	5
9.	Metallurgical Eng.	11	3	14	-
10.	Ocean Engg. Centre	6	-	6	2
11.	Solid State Tech.	3	1	4	-
Total II		186	32	218	11
III . Ph.D, M.S. and M.Sc.					
		NUMBER PLACED			
		Ph.D	M.S.	M.Sc	
1.	Aerospace Eng.	-	1	-	
2.	Applied Mechanics	-	8	-	
3.	Chemical Eng.	-	1	-	
4.	Chemistry	-	-	-	
5.	Civil Eng.	-	9	-	
6.	Computer Science & Eng.	1	6	-	
7.	Electrical Eng.	-	14	-	
8.	Ind. Management	-	5	-	
9.	Mathematics	-	-	8	
10.	Mechanical Eng.	1	21	-	

SI No.	Branch	Number Placed	Total	No Placed More than one job
11.	Ocean Eng.	-	6	-
12.	Metallyrgical Eng.	-	1	-
13.	Physics	-	-	1
Total III		2	72	9

During the year 1998-99, 538 students/scholars were placed.

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 1998-99 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 31 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 1998-99 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 31.3.99, 20 students benefitted. The year-wise details of number of students benefitted are also given in Table 10.1.

Table 10.1

Year	MCM	SC/ST
	Scholarship	Scholarship
1	7	4
2	6	9
3	9	4
4	9	3
Total	31	20

In addition to the above, the Institute sanctioned notional prize of Rs.100/- to the top ranking (in the JEE) 25 first B.Tech. students.

10.2 M.Tech:

Students who joined M.Tech. programme through GATE were awarded Half-time Teaching Assistantship (HTTA) at Rs.2500/- per month. During the period under report 214 fresh assistantships and 233 renewed assistantships were given. The department-wise details are given below:

Table - 10.2
No. of M.Tech. HTTA awarded

Sl.No.	Discipline	Fresh	Renewal	Total
1.	Aerospace Engineering	3	7	10
2.	Applied Mechanics	6	13	19
3.	Chemical Engineering	25	26	51
4.	Civil Engineering	34	23	57
5.	Computer Science and Eng.	18	32	50
6.	Electrical Engineering	29	36	
7.	Industrial Management	23	9	32
8.	Mechanical Engineering	53	64	117
9.	Metallurgical Engineering	13	16	29
10.	Ocean Engineering	5	4	9
11.	Solid State Technology	5	4	9
	Total	214	233	447

10.3 M.Sc:

Students admitted to M.Sc. programme were sanctioned Rs.300/-p.m. merit scholarship. Exemption from payment of tuition fee was also given to certain students. During the period under report 57 students benefitted. The department-wise details are given below:

Table 10.3

Sl.No.	Course	Year	No.of merit scholarships awarded	No. of freeships (tuition fees waiver) granted
1.	Chemistry	1	6	3
		2	6	2
2.	Maths	1	7	6
		2	6	2
3.	Physics	1	6	3
		2	6	4
	Total		37	20

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 184 scholars received this assistantship of whom 74 were fresh scholars. The department-wise details of the assistantships awarded and renewed are given below:

Table 10.4
Number of HTRA awarded

Sl.No.	Department	Fresh	Renewal	Total
1.	Aerospace Engineering	5	7	12
2.	Applied Mechanics	10	12	22
3.	Chemical Engineering	7	6	13
4.	Civil Engineering	8	13	21
5.	Computer Science & Eng.	12	16	28
6.	Electrical Engineering	16	23	39
7.	Humanities & Social Sciences	3	5	8
8.	Mechanical Engineering	6	23	29
9.	Metallurgical Engineering	1	2	3
10.	Ocean Engineering	6	8	14
Total		74	110	184

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 180 students obtained assistantships of whom 37 were fresh scholars. The department-wise details of the assistantships awarded and renewed are given below:

Table - 10.5
Number of Ph.D. HTRA awarded

Sl.No.	Department	Fresh	Renewal	Total
1.	Aerospace Engineering	-	1	1
2.	Applied Mechanics	2	9	11
3.	Chemical Engineering	6	15	21
4.	Chemistry	7	49	56
5.	Civil Engineering	2	9	11
6.	Computer Science & Engineering	2	5	7
7.	Electrical Engineering	1	3	4
8.	Humanities & Social Sciences	2	10	12
9.	Mathematics	5	12	17
10.	Mechanical Engineering	5	12	17
11.	Metallurgical Engineering	1	4	5
12.	Ocean Engineering	1	2	3
13.	Physics	3	12	15
Total		37	143	180

Financial Assistance for presentation of paper:

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 , 6 scholars were given the above benefit.

11. WEAKER SECTION AND FOREIGN STUDENTS

11.1 B.Tech:

As per the GOI orders 15% and 7 ½% 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 '98 33 SC and 4 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 the capability and interest of them. When a student finds the chosen branch is tough, he is allowed to switch over to lower JEE cut-off branch.

Students admitted against reservation are given the following benefits:

- * Travelling allowance (IInd Class train fare/ordinary bus fare) from the place of residence to Madras to join the B.Tech. programme.
- * Free tuition.
- * Free lodging and messing (basic menu) and pocket allowance of Rs.70/- p.m. provided their parents' income is Rs.50920/= net per annum or less (as per Government of India revised order) and exempted Hostel seat rent as well as Hostel Caution Deposit.
- * A Book Bank as part of Central Library is maintained for the benefit of the SC/ST students. The students are issued 12 tickets for taking books from the Book Bank. Books are issued for a semester.
- * Drawing instrument (Mini-drafter) free of cost.
- * Help in getting placement. Wherever possible, industries are requested to conduct separate interviews for SC/ST students and the requirements for these students are lower than those for the general category.

11.2 Preparatory Course for B.Tech:

A preparatory course of one academic year was initiated by the Ministry of Human Resource Development, Government of India, during the year 1983-84 exclusively for SC/ST students. Selection for this course is made from the SC/ST students' Joint Entrance Examination list who did not get admission through the Joint Entrance Examination. After successfully completing the preparatory course at the IIT, they would be eligible to join the B.Tech programme and they were not required to write the JEE again. In the year 1998-99, 30 SC and 28 ST students joined this course in July 1998.

11.3 M.Tech./M.Sc:

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 1998-99, 60 SC/ST students were admitted to the M.Tech programme.

Out of this 60, 49 belong to SC (Boys 48 and 1 girl) and 11 belong to ST (all boys).

Admission was made to the M.Sc. programme through entrance examinations only.

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.

11.4 Foreign Students and Indian National Residing Abroad:

In the academic year 1998-99, 5 foreign nationals and 31 Indian Nationals residing abroad joined B.Tech Programme under DASA Scheme. The following are the details:

B.Tech.		M.Tech.		M.Sc.	
Malasian	1	Bangaladesh	1	U.S.A.	1
SouthKorea	1				
U.S.A.	1				
Indian National	31				

At the end of March 1999, 18 foreign nationals and 67 Indian nationals residing abroad were on the rolls of the Institute.

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. Construction of Canteen Block for IC&SR Building	18.50
2. Construction of a room for field pressing unit with corridor for MSRC	4.05
3. Extension of One bay at ME & MH Lab of NIDT	6.14
4. Interior of Conference Hall of V Floor of Admn.Block	7.50
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

Hostel:

1. Construction of First and Second Floor over common room of Alakanda, Godavari, Saraswathi , Tapti and Narmada Hostels	55.35
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 I	65.00
2. Construction of E1 type quarters – One block of 12 flats and One block of 11 flats	78.30
3. Construction of C2 type quarters – One block of 12 flats Phase II	120.50

Many other minor works had been taken up and completed during 1998-99.

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 13,500 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. Arunkumar, MBBS	Junior Medical Officer
Dr. A. Selvam, MBBS	Junior Medical Officer

Part-Time Consultants

Dr. S.Kameswaran,	ENT Surgeon
MS, PhD, FRCS(ED), FRCS(GL), FRCS(DLO), DSc.	
Dr. S.Devaji Rao, MS, MNAMS, FICS	General Surgeon
Dr. S.Rathanamala, MBBS, DO	Ophthalmologist
Dr. R.Rajkumar, MD, DPM	Psychiatrist

Paramedical Staff:

Lay Secretary	:	1
Staff Nurses	:	8
Pharmacists	:	4
Lab. Technician	:	2
Male & Female Helpers	:	8
Others	:	7

Out-Patient Service:

Hospital has fully computerised the O.P. card registration. 53,545 out-patients were treated in the hospital during the period under report.

In-Patient Service:

Hospital has 35 beds for treating in-patients. In 1998-99, 503 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. 2,896 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 are available. In 1998-99 about 14,700 clinical laboratory tests were conducted. About 5,440 biochemical tests (blood sugar and urea) were done in 1998-99. A modern computerised EG recorder facility is available round the clock. 806 ECGs were recorded during 1998-99.

Operation Theatre:

A well equipped operation theatre with sophisticated operating microscopes, endoscope, instruments for IOL surgery, cardiac monitor etc., is available. In 1998-99, 64 general and 125 minor surgeries, 35 ENT and 30 Eye surgeries (including 27 Intra-Ocular-Lens operations) were done.

Immunization Programme:

Under the preventive health with the help of Lion's Club of East Chennai, Hepatitis B vaccination was given to about 600 students (I dose on 29.1.99 and II dose on 5.3.99).

Treatment for Non-entitled:

Nonentitled guests of staff member when accompanied by the staff member or his authorized dependent, can avail emergency treatment on payment basis subject to the Institute rules.

Stores and Dispensary:

A medical cum surgical stores manned by a qualified pharmacist is available. All activities, enquiry, comparative statement, indenting, issues, etc., are computerized. It had dealt with the purchase worth more than Rs.11.00 Lakhs in 1998-99.

All the drugs purchased at our hospital are decided by the hospital drug committee. To ensure that the drugs are of superior quality, quotations are called for from the recognized drug companies only.

Hospital Office:

Apart from dealing with the administration of the hospital, hospital office staff processes medical reimbursement claims. A sum of Rs.27,97,620/- was reimbursed to the staff members in the year 1998-99.

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 Comptroller and Auditor General of India.

The Finance Committee of the Institute in its meeting held on 29.12.1998 recommended the Non-plan revised estimates 1998-99 (Gross) for Rs.7439.30 lakhs and the Budget Estimates 1999-2000 for Rs.8011.70 lakhs. The committee also recommended the Plan Revised Estimates and Budget Estimates of Rs.1851.51 and 2640.50 lakhs respectively for 1998-99 and 1999-2000 respectively subject to review at a later date.

The following are the details of financial estimates for 1998-99 and 1999-2000:

Rs. in Lakhs

Head	<u>Budget Estimates for 1998-99</u> (as proposed and allocated by Board of Governors)	Revised Estimates 1998-99 as per Board of Governor's approval	Budget Estimates 1999-2000 (as proposed)
I Non-Plan:			
Income			
Income Generated	877.83	1074.85	1300.19
Grant demanded from MHRD	5083.42	6439.45	6711.51
Total	5961.25	7439.30	8011.70
Expenditure			
1. Recurring	5861.25	7289.30	7811.70
2. Non-Recurring	100.00	150.00	200.00
Total	5961.25	7439.30	8011.70
II Plan:			
Income:			
Grant demanded from MHRD	1092.50	1471.50	2640.50
Opening Balance	380.01	380.01	--
Total	1472.51	1851.51	2640.50
Expenditure:			
Committed Expenditure	\$ 380.01	\$ 380.01	
1. Recurring	27.00	12.00	
2. Non Recurring	1065.50	1459.50	2640.50
Total	1472.51	1851.51	2640.50

\$ - carry over from 1997-98 Account and represents irrevocable commitments.

13.1 Audit:

The accounts of the Institute for the year 1997-98 was audited by the Accountant General between May 1998 - July 1998. The audited report (both English and Hindi versions) on the accounts of the Institute for the year 1997-98 was sent to the Ministry of Human Resource Development, GOI for placing the same on the table of the parliament.

The salient features of the 1997-98 accounts are given below:

S.No.	Item	Rs. in Lakhs
I. Receipt :		
1.	Opening Balance	67.10
2.	Grant from GOI for 1997-98	3685.00
	Special Grant from GOI	300.00
3.	Institute Receipt:	
	Fees, etc	188.00
	Application Fees	113.52
	Income from Vehicles	10.75
	Income from Buildings	75.06
	Other receipts	484.80
4.	Recovery of Advances	872.13
5.	Deposits	55.88
		490.08
	Total	5470.19
II. Payments :		
a. Capital Account		
1.	Buildings and Constructions	381.69
2.	Furniture/equipment and fittings	10.60
	Research Centres & Central Services	162.06
3.	Library Books and Journals	172.66
4.	Others	128.15
		37.89
	Total (a)	720.39
b. Revenue Account:		
1.	Academic Departments/Centres:	
	Pay & Allowances of Teaching Staff	578.00
	Pay & Allowances of Non-Teaching Staff	338.19
	Department running expenses	54.05
	Library staff salary and running expenses	44.93
	Central Workshop staff salary and running expenses	60.04
	Research Centres Pay & Allowances including CEC & AC Unit	99.85
	running expenses, Centres, Central services working expenses,	
	Rural Development Research Activities	
	Institute scholarships/HTTA other items	269.47
	NCC, NSS and NSO: Pay & Allowances and running expenses	18.24
	Total (b.1)	1462.77

2. Central Administration:

Pay & Allowances	313.65
Hostel	146.70
Stores Pay & Allowances	19.56
Lawns & Garden	1.50
Service & Maintenance (Telephone, Power, Water, Furniture repair & Maintenance, Oil, Petrol, etc.)	369.24
Dispensary including staff salary	44.90
Vanavani Matriculation Hr. Sec. School	5.00
Amenities	0.65
SC/ST Special coaching/Preparatory course	0.69
Director Discretionary Fund (DDF)	2.64
Total (b.2)	904.53

3. Works & Maintenance :

Pay & allowances and other expenses (b.3)	278.58
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4. General Expenses :

Postage; Liveries; Stationery; Printing; etc.	
TA to authorities & Institutes selection Committee members, Candidates called for interview, Reimbursement of stamp duty, sundries; etc.	130.52
PF/Gratuity/Pension	672.18
Advances paid	46.30
Deposits refunded	43.75
Investment of corpus fund	213.69
Total (b.4)	1106.44

(b.1+b.2+b.3+b.4) (b) **3852.32**

Total a + b **4472.71**

5. Closing Balance :

	997.48
Total	5470.19

THE SENATE

Chairman

R Natarajan

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Prof Ajit Kumar Kolar	Prof C S Krishnamoorthy
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Prof D R Gopalakrishna Achar	Prof S D Pathak
Prof K Gopinath	Prof K M Patil
Prof M S Gopinathan	Prof P K Philip
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Prof P A Janakiraman	Prof M R Pranesh
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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
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**Three Educationists from outside
the Institute**

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Prof U Sankar

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N Mahendar Reddy
Ravi Kiran Nalla

Invitee (Administration)

Shri K Panchalan

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