

# ANNUAL REPORT

2003 - 2004

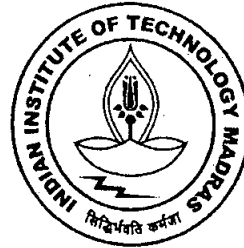


INDIAN INSTITUTE OF  
TECHNOLOGY MADRAS  
CHENNAI



# FORTY FIFTH ANNUAL REPORT

2003 - 2004



INDIAN INSTITUTE OF TECHNOLOGY MADRAS  
CHENNAI – 600 036



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## 1. DIRECTOR'S REPORT

### 1.1 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 15 Departments and 5 Research Centres. The Institute has nearly ninety well-equipped laboratories attached to the different Departments. The Institute Campus covers an area of 256 hectares of forestland and houses a community of about 10,000 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 specially designed user oriented M.Tech. programmes and undertaking initiatives in continuing education programmes. The Institute also offers part-time PG programmes that enable working professionals to acquire higher degrees. Our Preparatory Courses Programme for Weaker Sections Students offers intensive coaching to eligible candidates to prepare them for entry into the IIT on successful completion of this one-year Programme. 51 (38 SC & 13 ST) candidates have been admitted to this Course in 2003. 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 India, Australia, Germany, Japan, Singapore, UK and USA.

This brief Report provides a summary of our activities, achievements and accomplishments in the different spheres of our activity during the year 2003-04.

### 1.2 Our Contributions to Manpower Development:

Our 40<sup>th</sup> Convocation was held on 9<sup>th</sup> August 2003. A total of 1146 degrees was awarded : 73 Ph.D., 109 M.S., 417 M.Tech., 86 M.Sc., 40 M.B.A., 66 Dual Degree and 355 B.Tech. These degrees cover a wide range of disciplines and specializations offered by the nine Engineering departments, three Science departments, and the department of Humanities and Social Sciences, including the Management division. Among the Graduands are : 41 QIP candidates (teachers from other colleges), 26 sponsored candidates (sponsored by Industry and Government Agencies). 126 Ladies, comprising 16 Ph.D., 16 M.S., 22 M.Tech., 36 M.Sc., 9 M.B.A., 2 Dual Degree and 25 B.Tech. students.

Our Preparatory Course Programme for Weaker Section students offers intensive coaching to eligible candidates to prepare them for entry into the IIT on successful completion of this one-year Programme. Fifty-One (38 SC & 13 ST) candidates were admitted to this Course in 2003.



### 1.3 Our Contributions In Academic Research:

IIT Madras continues to be very active in research and during the year under review. Our faculty and research scholars have published 392 research papers in the refereed International (284) and National (108) Journals and have presented 610 research papers in International (337) and National (273) Conferences. At the risk of over simplification, I will attempt to give a flavour of the results obtained.

#### Ph.D Work

Mallikarjun S. Holi & Prof. S. Radhakrishnan have carried out a quantitative assessment of osteoporosis by measuring the bone mineral density (BMD) of lumbar spine using DEXA. Quantitative ultrasound technique has also been used non-invasively to evaluate calcaneous bone stiffness in different subjects and post treatment in osteopenics / osteoporotics. A finite-element analysis of a mathematical model of Lumbar spine has been developed to evaluate the stresses and displacements and estimate the fracture risk under osteoporotic condition.

M. Suseela Devi and Dr. K. Vidyasagar have synthesized new low-dimensional sulfides and polysulfides at relatively low temperatures, by employing alkali metal polysulfide fluxes. One such polysulfide is one-dimensional  $\text{CsGaS}_3$ , which undergoes facile ion-exchange reactions with other monovalent ions. M. P. Minimol & Dr. K. Vidyasagar have synthesized new solid-state tellurite compounds possessing a variety of structures with versatile coordinations of  $\text{Te}^{4+}$  by solid-state reactions. Some of these tellurites, such as  $\text{KSb}_3\text{Te}_2\text{O}_{12}$ , exhibit nonzero second-harmonic generation (SHG) response and are thus potentially useful as SHG materials. Alok Diwakar Bokare & Dr. Archita Patnaik have achieved a bottom-up approach for functional materials based on fractal concept by studying the fullerene fractal aggregates with an in-house fabricated positron lifetime spectrometer. Rashmi Ranjan Sahoo & Dr. Archita Patnaik have investigated, in collaboration with Max-Planck Institute, Mainz, Germany, static and dynamic forces between fullerene modified self-assembled monolayers in confined geometry with a possible application to lubrication and wetting in nanoscale materials.

K. Sriram & Prof. M. S. Gopinathan have revealed the rich dynamics of complex oscillations and chaos through experimental and modelling studies on delayed feedback in a chemical oscillator. It is also shown that delayed feedbacks can be used to model efficiently the circadian (daily) rhythms in biological systems. C. Baby & Prof. M. S. Gopinathan have unraveled the solution structure of some biologically important oligosaccharide systems using multidimensional NMR techniques. High pressure NMR has been used to study such systems in super critical carbon dioxide as an alternative solvent. R Ganesan & Prof. B.Viswanathan encapsulated inorganic complexes of various metal ions like Fe, Cu in typical zeolite matrices in order to mimic enzymes and characterised them with respect to the changes in the redox properties both experimentally and theoretically. The work elucidates how the alteration of the redox potential of the encapsulated complexes mimics the enzymes present in protein mantles.

C.D.Venkatakrisnan & Prof.T.S.Chandra have obtained a new strain of Thiobacillus ferrooxidans from Kolar Gold field acid mine water which can tolerate up to 2.6 mM Sodium molybdate, the highest concentration so far reported. It could leach Mo, Ni, and Cu from molybdenite concentrate byproduct obtained from Jadaguda mines. Prashant Shankar Hegde & Prof.T.S.Chandra have identified Kodo millet ('varagu' in Tamil) and finger millet ('ragi') were as potent sources of phenolic anti-oxidant nutraceuticals. Their inclusion in diet of alloxan-induced diabetic rats controlled glucose, cholesterol, antioxidant enzymes, GSH, and vitamin E levels; prevented protein collagen glycation and necrosis of kidney, heart and liver tissues, establishing the benefits of millet-based



diet on control of early diabetes and its secondary complications in animal model. Braja Gopal Mishra & Dr. G. Ranga Rao have shown how cerium incorporation in mixed oxides and silicate clay sheets enhances significantly the activity and selectivity of certain industrial and environmentally important chemical reactions. R. Padma Sree & Prof. M.Chidambaram have proposed methods for identifying a suitable transfer function model and for designing PID controllers for stable and unstable systems with delay and with or without inverse response. These methods are simple to use and also give improved performances over available methods. Durga Rani Korlapati & Dr. R. Sivanandan have developed a methodology and related models for evaluation of diversion strategies during incidents for an urban traffic corridor in India (in the context of ATMS) and assessed the benefits of traffic diversion. The computer models developed in this study can serve as useful tools to traffic managers in developing optimal diversion strategies. V. Ramani Bai & Prof. S. Mohan have developed a novel approach combining the fuzzy Logic and neural network model to derive optimal releases from a reservoir system. The data mining concepts have been utilized in deriving the minimum length of data requirement for derivation of optimal operating policies. The advantages of the proposed models have been demonstrated in the case of the Vaigai reservoir system. Mr. Reebu Zachariah Koshy & Prof. V. Thamizh Arasan have developed a simulation model in C++ to study the micro level characteristics of non-lane based mixed traffic over a wide range of traffic flow and road geometry. The model was validated and applied to develop guideline for capacity of different types of roads and to study the effect of bus stops on traffic flow. Arual Jayachandran & Prof. V. Kalyanaraman present geometric nonlinear finite element formulations for computational elastic post-buckling analysis of structural systems consisting of truss, beam, plate and shallow shell elements based on Secant Matrix Technique, using either total Lagrangian or co-rotational format.

P.C.Reghu Raj & Prof. S. Raman address the issues related to the lexical semantics and compositional semantics in the representation of text documents. The work offers solutions that represent moving up from the present approach of keyword-based indexing to the higher levels of phrasal and conceptual indexing. B. S. Manoj & Prof. C. Siva Ram Murthy propose novel architectural, routing, load balancing, and pricing solutions for using multihop relaying in infrastructure-based wireless networks in order to provide high capacity. T.Nagarajan & Dr. Hema A. Murthy explore new methods for automatic spoken language identification, which do not require segmented and labeled speech corpora. To capture the variation in the acoustic realization of the same phoneme in different languages, a K-means clustering based minimum distance classifier has been used. M. Sakthi Balan & Prof. Kamala Krithivasan have studied unconventional models of computing that use peptides and antibodies. After a survey on DNA computing and peptide computing, the thesis deals with solution of the two NP-complete problems; namely, Hamiltonian path problem and exact cover by 3-sets problem.

S.R.Mahadeva Prasanna & Prof. B. Yegnanarayana propose an event-based approach for the analysis of speech, inspired by the nature of speech production. The proposed event-based approach is illustrated using two important events; namely, the Glottal Closure (GC) and the Vowel Onset Point (VOP). Philips Koshy & Prof. S.V. Raghavan propose a quality adaptation algorithm at the application layer, a size based resource allocation policy at the transport layer, and an information theoretic approach for stable cluster head selection for ad hoc networks at the network layer. The algorithm looks at the future bit requirement by maintaining a sliding window and truncates the video appropriately, so that there is a smoother variation in received video quality.

S. Vijayakumar & Dr. R. Rama have studied the general sorting by transpositions problem in computation biology in the light of strip moves. The power of strip moves against general transpositions is also studied. The investigation especially leads to a conditional reduction from sorting by strip moves to sorting by transpositions.



K. Lakshmanan & Dr. R. Rama derived new variants of P systems and tissue P systems (in short tP systems) which are of biologically motivated and analyzed their computability, complexity and efficiency from the mathematical point of view. P. Saikrishnan & Dr. Satyajit Roy have studied numerically the simultaneous effects of temperature dependent fluid properties and non-uniform slot injection (suction) on flow separations over cylinder, sphere, yawed cylinder and rotating sphere. Inverse boundary layer computations have also been performed for cylinder and sphere cases. R. S. Raja Durai & Dr. W. B. Vasantha studied a class of rank-distance codes and introduced a new type of error erasure decoding technique. The coding problem for noisy two-user F-adder channel is solved. R. Ravindran & Prof. R. Usha have investigated the dynamics of a thin liquid film on a rotating disk where there exists a variation of temperature in the liquid film as an application to spin coating problems.

J. M. Issac & Dr. N. Sitaram have developed a more efficient diffuser for centrifugal compressors combining best features of low solidity and partial vane diffusers and experimentally validated the new design. S. Pugazhenti, Prof. T. Nagarajan & Prof. M. Singaperumal have developed a comprehensive methodology of trajectory planning for Stewart platform manipulator along specified path. Algorithms for optimal location of specified path and optimal instantaneous velocity profile are developed. The performance of the algorithms is experimentally studied using a hydraulic Stewart platform. The proposed optimal instantaneous velocity algorithm offers better tracking accuracy when compared to other traditional approaches. This work increases the application potential of Parallel Kinematic Machine tools for contour machining. K. Srithar & Prof. A. Mani have established a Pilot plant consisting of FRP solar flat plate collector and PVC Spraying systems at M/S Shafeeq Shameel Co, Ambur and studied tannery effluent evaporation. The plant is 3-4 times more effective than conventional solar evaporation shallow ponds.

K. Krishnakumar & Prof. G. Venkatarathnam have studied experimentally the heat transfer and flow friction characteristics of matrix heat exchangers, a class of compact heat exchangers used in cryogenic systems. A new two-parameter model was used to reduce the transient test data and estimate the heat transfer coefficients. A generalized correlation for heat transfer coefficient and friction factor in terms of Reynolds number, as well as the different geometric parameters was determined. K. E. Reby Roy, Prof. B.V.S.S. Prasad and Prof. S. Srinivasa Murthy carried out a conjugate thermal analysis for a configuration of rotating disk cavities for a turbo pump.

G. Gerald Moses & Prof. S. Narasimha Rao studied the behaviour of Indian marine clay under cyclic loading showing that the cementation due to precipitation compounds is disrupted under cyclic loading. A model has been developed to predict the degradation in the behaviour. This work has potential application for the design of gravity offshore platforms. T. Rajesh Kannah & Dr. R. Natarajan have carried out experimental investigations on turret moored FPSO System. The work is important in the offshore oil industries. R. Balaji & Prof. V. Sundar have tested slotted wave screens formed with circular, horizontal intercepting elements and assessed their performance as a breakwater and as an absorber. Ms. Anitha Joseph, Prof. V. G. Idichandy & Prof. S. K. Bhattacharyya have carried out experimental and numerical investigations of the coupled dynamic behavior of a mini Tension Leg Platform suitable for deepwater marginal offshore oil fields with special attention to strong hull-tether coupling. A scaled-model study achieved accurate experimental confirmation of higher mode tether dynamics and its effect on hull response using a nonlinear finite element methodology based upon a hybrid wave force model.

S. Angappane, Prof. G. Rangarajan & Dr. K. Sethupathi have done a systematic and detailed microscopic magnetic study of Manganates in polycrystalline, single crystal and thin film forms to determine the nature of the magnetically ordered states. S. Pandian,



Prof. K. J. L. Iyer, Prof. K. V. S. Rama Rao & Dr. V Chandrasekharan (Research Coordinator, DMRL, Hyderabad) have succeeded in individual and combined elemental additions of rare earth elements, 3d transition elements and some non-magnetic elements to Nd-Fe-B. Considerable improvements of the magnetic properties with reference to permanent magnet applications have been achieved.

### **M.S. Work**

Sivannarayana Cheedella & Prof. J. Lakshminarasimhan studied the effects of interference on three-dimensional bluff bodies with square cross-section placed in side-by-side arrangement for a low-rise or a high-rise body. The extent of the interference effects are brought out by varying the spacing between two bodies.

S. Ratheesh & Dr.A. Kannan have studied the influence of hydrodynamic parameters such as flow distribution between catalyst and non catalyst layers, capacity limitations and hold-up on reactive distillation for a popular structured packing with catalysts through experiments and flow-visualization experiments. D.Swati & Prof. M.Chidambaram have proposed a design of a cascade controller based on the Wiener model for control of a pH process. Experimental and simulation results are given for the improved performance of the proposed controller. K.M.Usha, Prof N. R. Neelakantan & Dr.S.K.Malhotra have carried out experimental cure studies and developed mathematical models on silica and carbon phenolic composites.

Sanjay Kumar Nayak & Prof. Devdas Menon have analysed the present methods of estimation of short-term deflections and crack-widths in one-way RC slabs and suggested improvements to the IS code formulations on the basis of analytical work and experimental studies conducted on six slab specimens. K.I.Harikrishnan & Prof.K.Ramamurthy have studied the parameters influencing the pelletization process and sintering of fly ash aggregates, the influence of various binders on properties of sintered fly ash aggregate, and the strength and permeation behaviour of sintered fly ash aggregate concrete.

Anil Kumar Sao & Prof.B.Yegnanarayana have proposed three representations; namely, edge gradient, edge orientation and potential field of the edge gradient. These representations are computed by 1-D image processing, which has the advantage that it provides multiple partial evidences for a given face image. Anvita Bajpai & Prof. B. Yegnanarayana have demonstrated the presence of audio-specific information in the excitation source part of the audio signal. The linear prediction (LP) residual is used to represent the excitation source. In this thesis, the auto-associative neural network (AANN) models are used to capture the audio specific information from the LP residual of signals. Saladi Dharma Rao & Prof.C. Siva Ram Murthy present a new, efficient distributed algorithm for dynamically establishing connections to support QoS to the users and also provide fault-tolerant communication in WDM networks.

Guruvu. Sirisha, Dr.Hema A. Murthy & Prof. Timothy A. Gonsalves have designed a DSP Virtual Machine, which is useful in porting an application written for one DSP processor onto another. This thesis has focused on the translation of virtual machine language instructions to target machine instructions, and on the generation of efficient target code. L.Kalyan Kumar & Dr.V.Kamakoti describe novel pseudo online methods for detecting and locating multiple faults in Lookup Tables, interconnects and dedicated clock lines of field programmable gate arrays (FPGAs). The proposed algorithms employ the pseudo-exhaustive Built-In-Self-Test techniques using partial reconfiguration capabilities of modern FPGAs. Karthigeyan & Prof. C. Siva Ram Murthy present a new, efficient MAC layer protocol called Distributed Laxity Based Priority Scheduling protocol for supporting time-sensitive traffic in Ad hoc Wireless Networks. P.C.Karthik &



Dr.P.Sreenivasa Kumar have improved the XML-based internet query system by considering the collection of XML documents as a single database, and posing queries over this collective database. B. Radhika Selvamani & Dr. Deepak Khemani have studied the various diagnostic methods and their inadequacy in dealing with the problems in a manufacturing domain. The need to integrate CBR with knowledge discovery techniques to aid experts in the analysis of problems and consequent diagnosis has been emphasized.

K.Ravichandran & Dr.P.Sreenivasa Kumar have used a recently proposed rule-based query language XMIS in the development of query analysis and modification for caching of XML data. Rupali Sharma & Prof. S. Raman present a phrase-based model for text representation that uses rule-based Natural Language Processing (NLP) techniques for extracting key-phrases from the text document by a process of partial parsing. M.A. Saifulla & Prof. Timothy.A. Gonsalves have successfully modelled traffic corresponding to different Internet services exhibiting statistical invariance by a mixed distribution of parameters. A simple K-means clustering based approach has been used to determine the shape of distribution for each traffic type. Siva Nageswara Rao Borra & Dr.V.Kamakoti have proposed efficient genetic algorithms to solve the spatial partitioning problem to map the given application into a multi-FPGA architecture so as to reduce the inter-FPGA communication and associated delays as well as the placement and routing processes problem to map the elements of a given netlist onto the programmable elements of a given FPGA architecture likewise.

N.Sridhar Krishna, Dr. Hema A. Murthy & Prof. Timothy A. Gonsalves address some of the issues involved in Text-To-Speech (TTS) systems. The common multilingual diphone database for Indian languages and linguistic/prosodic processing modules for Telugu and Hindi have been developed. A.Srinivasa Reddy & Prof. S.V. Raghavan addresses the problem of reducing congestions by minimizing bandwidth requirements using two techniques: Temporal Smoothing and Statistical Multiplexing. They present a node-to-node ( $n^2n$ ) communication architecture for the rate adaptation of bursty traffic at the intermediate nodes. Vadali Srinivasa Murty & Prof. S. Raman present an algorithm for string matching and stemming, and also the details of their hardware implementation, considering both approximate and exact matches between the input word and the lexical entry. The proposed algorithm is a modification of Porter's stemmer, and combines affix stripping and look-up table based approaches. B.S. Venkatesh & Prof. B. Yegnanarayana propose a technique to detect face by extracting probable eye regions from gray scale image using multilevel thresholds. The face detection system performs with 78% success rate, for face images in cluttered background.

P. Vinod, Prof. B. Yegnanarayana & Dr. Sukhendu Das approach the problem of audio-visual person authentication as a development over an existing baseline acoustic text-dependent speaker verification system. Two strategies have been explored for integration of audio and visual information; namely, feature level integration and decision level integration. Kiran Kumar Penta & Dr. Deepak Khemani look at the problem of automating Satellite Health Monitoring (SHM) using Case Based Reasoning (CBR). The approach is based on seeking the cases actively at regular intervals from the streaming telemetry data, and verifying whether the extracted case is anomalous with respect to the existing case base. Paul P.Mathew & Dr.P.Sreenivasa Kumar capture the structure and multiplicity of XML document elements using a DOT graph. DOT and Binding API for Java, proposed in this thesis, generate dynamic object binding of XML documents and allow the users to access the XML data using user defined interfaces. V.C. Srivathsan & Prof. D. Janaki Ram explore ways of improving the performance of database servers under heavy load. A special class of transactions called Preferential Transactions has been identified and a mechanism of performing such transactions efficiently in three-tier system has been proposed. The concurrency control algorithm to resolve middle-tier



transaction conflicts, thus reducing the transaction aborts has been successfully implemented.

C.Kumaravelu & Dr.V.Jayashankar propose a model reference based analysis for identification of failure during lightning impulse tests on power transformers. It is a departure from conventional methods of treating the transformer as a linear time invariant system. Simulation and experimental results validate the method. U. Venu Babu, Dr. E. Bhattacharya and Prof. K.N. Bhat have optimized process steps for the fabrication of surface micromachined polysilicon cantilever beams. The beams have been characterised electrostatically and the experimental values compared with analytic and simulated values. An estimate of stiction energy has been made. Polysilicon surface modifications have been carried out and the contact angle monitored with a view towards reducing stiction energy. A method for electrical measurement of stiction force using an improved structure has been suggested and process and mask design completed for the same. Basu, Dr. E. Bhattacharya and Dr. A. Chadha have developed a silicon potentiometric biosensor that is less labour intensive, requires small sample quantities and has the possibility of integration and amplification of signal. The sensor successfully detects tributyrin (a short chained triglyceride) and urea. Rohit Budhiraja & Prof. Bhaskar Ramamurthi propose a new scheme for efficient low bit-rate channelisation in the DECT standard, in which data can be transferred at one-fourth the existing bit-rate, using a fourth of the bandwidth, without increasing latency and with increased receiver sensitivity, in a backward compatible manner.

S Ganesh, Prof. T. T Narendran and Prof. V R Muraleedharan have carried out a case study of the drug inventory management system in Public Health care systems in Tamil Nadu by collection of data from the field, the internet, and by simulation. The study has resulted in the development of a drug inventory management assessment tool (DIMAT) which will be useful to the Central drug distribution system of Tamil Nadu. Manish Kumar & Dr. M. Thenmozhi have shown that artificial neural network outperforms the traditional models in forecasting forex returns for different types of trading strategies.

T. Gayathri, Prof.R.Usha and Dr.R.Natarajan have studied the hydrodynamic performance of twin horizontal plate breakwater, consisting of single surface plate and a submerged plate of same dimension below the surface plate both experimentally and theoretically. The results show that the performance of the twin plate breakwater is better than that of the single surface plate breakwater and that it is more effective for a relative submergence spacing of 0.23.

N. Subramanyam, Prof. M.P.Maiya and Prof. S. Srinivasa Murthy have carried out studies on a desiccant assisted air-conditioning system and show that it can provide low humidity conditions efficiently in space with potential for practical use. M. Madhubabu & Dr. N. Sitaram have carried out computational studies on vaneless, vane, low solidity diffusers as well as diffusers combining best features of low solidity and partial vane models. S. Viswanadha Gupta & Prof. Raju Sethuraman have proposed a novel method for the evaluation of non-linear stress-strain state using elastic solution based on modified energy density criteria. R. V. Rajesh, Prof.B.V.S.S.S. Prasad and Prof. B.H.L. Gowda designed, fabricated and used an experimental setup with a scaled up model of 37 rod wire wrapped pin assembly for investigating the effects of porous partial flow blockages.

N. K. Ramakrishna Naidu and Dr. S. Ganesh Sundara Raman have studied the effect of contact pressure and shot blasting on the fretting fatigue behaviour of aluminium alloy AA 6061 and estimated the fretting fatigue limit. The present work has led to the availability of a well-designed fretting fatigue test facility, which would be extremely useful for performance evaluation of different coatings. P. Venkateswaran, Dr. S. Ganesh Sundara





Raman and Prof. S. D. Pathak studied fatigue short crack growth behavior in a nuclear grade SA 333 Grade 6 steel weld metal supplied by Bhabha Atomic Research Centre, Mumbai. Different stress vs crack length curves within the short crack regime were generated for the prediction of stress levels for the material with or without different initial flaws to achieve the desired fatigue lives. K. Srinivasan & Dr. S. S. Bhattacharya developed an alternate extrusion and compression (AEC) route as a severe plastic deformation process for the processing of commercially pure aluminium in order to produce sub-microcrystalline and nanocrystalline grained microstructure in the bulk form. Successful processing resulted in a substantial improvement in the hot ductility.

K.Hemalatha & Prof.S.Narasimha Rao studied sea bed anchors subjected to inclined loading. In this work, the behaviour of sea bed anchors fixed to the buoy system mooring in an inclined configuration has been analysed for the first time and mechanisms of load transfer to the sea bed soil have been proposed. Y.Amarnath & Prof.K.Ganesh Babu studied the development and evaluation of a very highly economical concrete composite, roller compacted concrete (RCC), exclusively adopted for mass concrete applications like pavements and dams. The results show that it is possible to achieve excellent strength, impermeability and high performance composites with significantly high volume replacements of fly ash. T.Gayathri & Dr. R. Natarajan present the concept of a twin-plate breakwater system comprising a surface plate and a submerged plate of same dimensions just below the surface plate to serve as an effective wave barrier. The optimum submergence ratio for which the twin-plate breakwater system has minimum transmission coefficient and higher reflection and loss coefficients has been established. N.Premkumar, Prof.V.G.Idichandy and Prof.S.K.Bhattacharyya investigated the hydrodynamic behaviour of a towed transmitter body (TTB), which is a part of an active towed array sonar (ATAS) that finds extensive use for "over the horizon" range of detection and underwater surveys. The experimental and numerical investigations have been carried out on a scaled model and the data generated used in the design and fabrication of TTB and the system is proved in the field trial using the accelerometer based instrumentation developed for the measurement of body motion.

#### 1.4 Academic Distinctions Secured by our Faculty Members And Students :

Several academic distinctions - Honours and awards, Fellowships of Professional societies, Memberships on Editorial Boards of Journals, Books and Monographs, Patents - have been bestowed on our faculty and students in recognition of their academic achievements during the current year. Some of these are listed below:

#### 1.5 Awards :

Dr. K. Kasturirangan Chairman, Board of Governors	• Man of the Year Award by The Centenarian Trust
Prof. S. Santhakumar Aerospace Engineering	• Kalpana Chawla Award by Hindustan Group of Institutions
Prof. S. Narayanan Applied Mechanics	• Dr. S. Bhagavantam Award by Acoustical Society of India
Prof. B. Viswanathan Chemistry	• Bharat Jyoti Award by Indian International Friendship Society
Prof. C. Siva Ram Murthy Computer Science and Engineering	• Hari Om Ashram Prerit Dr. Vikram Sarabhai Research Award
Prof. Ashok Jhunjhunwala Electrical Engineering	• Centenarian Award by the Centenarian Trust



Prof. Bhaskar Ramamurthi Electrical Engineering	<ul style="list-style-type: none"> <li>Tamil Nadu Scientist Award by the Tamil Nadu State Council for Science &amp; Technology</li> </ul>
Dr. S. Ponnusamy Mathematics	<ul style="list-style-type: none"> <li>Tamil Nadu Scientist Award by the Tamil Nadu State Council for Science &amp; Technology</li> </ul>
Prof. M. Thamban Nair Mathematics	<ul style="list-style-type: none"> <li>C.L. Chandna Award by the Canadian World Education Foundation</li> </ul>
Prof. V. Ganesan Mechanical Engineering	<ul style="list-style-type: none"> <li>UP Government National Award by Indian Society for Technical Education</li> <li>Tamil Nadu Scientist Award Tamil Nadu State Council for Science &amp; Technology</li> </ul>
Prof. S. Narasimha Rao, Ocean Engineering	<ul style="list-style-type: none"> <li>Terzaghi's Award by India Concrete Institute and Assoc. of Consulting Engineers (Civil),</li> </ul>
Prof. R. S. Sirohi Physics	<ul style="list-style-type: none"> <li>Padma Shri Award</li> <li>Sir C V Raman Award: Physical Sciences by Hari Om Ashram Trust</li> </ul>
The Telecommunications and Computer Networks (TeNet) Group	<ul style="list-style-type: none"> <li>National Award for Technology Business Incubation for the year 2003 by the Department of Science and Technology</li> </ul>

#### 1.6 Fellowships

Prof. B. Yegnanarayana Computer Science & Engineering	<ul style="list-style-type: none"> <li>Indian Academy of Sciences</li> </ul>
Prof. S. H. Kulkarni Mathematics	<ul style="list-style-type: none"> <li>Form D' Analyses</li> </ul>
Prof. P. Veeramani Mathematics	
Prof. S. Srinivasa Murthy Mechanical Engineering	<ul style="list-style-type: none"> <li>International Energy Foundation, Saskatchewan, Canada</li> </ul>

#### 1.7 Membership of the Editorial Boards

Prof. S. Narayanan Applied Mechanics	<ul style="list-style-type: none"> <li>Member, Editorial Board, International Journal of Computational Methods Published by World Scientific</li> </ul>
Prof. C. Pandu Rangan Computer Science & Engineering	<ul style="list-style-type: none"> <li>Series Editor for lecture notes in Computer Science Series, Springer – Verlag, Germany</li> </ul>
Dr. S. Ponnusamy Mathematics	<ul style="list-style-type: none"> <li>Editorial Advisory Board, Journal Bulletin of the Malaysian Mathematical Sciences Society</li> <li>Editor-in-Chief, Mathematics News Letter, Ramanujam Mathematical Society</li> </ul>
Dr. K. C. Hari Kumar Metallurgical and Materials Engineering	<ul style="list-style-type: none"> <li>Associate Editor, Calphad Journal (an Elsevier Publication)</li> </ul>
Dr. Mahaveer Kumar Jain Physics	<ul style="list-style-type: none"> <li>Member, Editorial Board, Sensor Letters Published by American Scientific Publishers</li> </ul>



### 1.8 Best Paper Awards :

Shri M.S. Manikantan Shri H. Vikram Aerospace Engineering	<ul style="list-style-type: none"> <li>A certificate of appreciation for their poster at the Symposium on Advances in Fluid Mechanics held in Jawaharlal Nehru Centre for Advanced Scientific Research</li> </ul>
Dr. N. Unnikrishnan Prof. K. Rajagopal Prof. N. R. Krishnaswamy Civil Engineering	<ul style="list-style-type: none"> <li>IGS-Dr.Shamsher Prakash Biennial Award for the best paper on 'Soil Dynamics' published through the Indian Geotechnical Society.</li> </ul>
Shri T. Godwin Humanities and Social Sciences	<ul style="list-style-type: none"> <li>Best Student Paper Award in the VII Annual International Conference of The Society of Operations Management</li> </ul>
Shri Manish Kumar Dr. M. Thenmozhi Prof. C. Rajendran Humanities & Social Sciences	<ul style="list-style-type: none"> <li>Cash Prize of 1000/- for their research paper by the UTI Institute of Capital Markets Conference</li> </ul>
Shri Sony Thomas Dr. M. Thenmozhi Humanities & Social Sciences	<ul style="list-style-type: none"> <li>Cash Prize of 1000/- for their research paper by the UTI Institute of Capital Markets Conference</li> </ul>
Shri Rakesh Gupta Dr. M. Thenmozhi Humanities & Social Sciences	<ul style="list-style-type: none"> <li>Cash Prize of 1000/- for their research paper, by the UTI Institute of Capital Markets Conference</li> </ul>
Shri M. Kantha Babu Prof: O. V. Krishnaiah Chetty, Mechanical Engineering	<ul style="list-style-type: none"> <li>Certificate of Merit for their paper by the Institution of Engineers (I)</li> </ul>
Prof. N. Ramesh Babu, Mechanical Engineering  Prof. K. Prasad Rao Dr. T.S. Sampath Kumar Metallurgical and Materials Engineering	<ul style="list-style-type: none"> <li>Best Poster Award in the Special Poster Session at the International Conference on Advances in Surface Treatment</li> </ul>
Shri K. Kumaran Shri Titus Leo Dr. Uday Chakkingal Metallurgical and Materials Engineering	<ul style="list-style-type: none"> <li>Second Prize for best paper in the Metal Science category at the Annual Technical Meeting of the Indian Institute of Metals</li> </ul>
Shri M. Vasudevan, Shri A. K. Bhaduri Prof. K. Prasad Rao Metallurgical and Materials Engineering Baldev Raj, ICGAR, Kalpakkam	<ul style="list-style-type: none"> <li>H. D. Govindaraj Memorial Award for the best Paper on Research and Development in the National Welding Seminar</li> </ul>
Shri Umakanta Tripathy Physics	<ul style="list-style-type: none"> <li>Best poster for a cash prize of Rs.500/-by the Trombay Symposium on Radiation and Photochemistry</li> </ul>
Shri P. Sandeep Physics	<ul style="list-style-type: none"> <li>Best among the thirteen papers by the Trombay Symposium on Radiation and Photochemistry</li> </ul>

### 1.9 Books :

Prof. C. Siva Ram Murthy Shri B. S. Manoj Computer Science & Engineering	<ul style="list-style-type: none"> <li>Ad Hoc Wireless Networks : Architectures and Protocols, Prentice Hall, New Jersey, USA</li> </ul>
Prof. S. Jayachandran Humanities and Social Sciences	<ul style="list-style-type: none"> <li>Marketing Management – Text and Cases, Excel Publications, New Delhi</li> </ul>
Prof. P. R. Parthasarathy Dr. R. B. Lenin Mathematics	<ul style="list-style-type: none"> <li>Applied Birth and Death Models : A Time Dependent Perspective, The American Sciences Press, New York</li> </ul>



### 1.10 Patents Filed :

Dr. T. Pradeep Shri A. Sreekumar Nair Chemistry	<ul style="list-style-type: none"> <li>• Halocarbon mineralization by nanoparticles</li> </ul>
Prof. R. P. Viswanath Shri M. Sathish Chemistry	<ul style="list-style-type: none"> <li>• Divided cell for the Electrolysis of water</li> </ul>
Prof. B. Viswanathan Prof. T. K. Varadarajan Shri S. Shunmugam Chemistry	<ul style="list-style-type: none"> <li>• A process for the manufacture of an inorganic - organic membrane for use, interalia, in fuel cells, lithium batteries &amp; electrochemical displays</li> <li>• A process for the manufacture of a bromate ion sensitive electrode &amp; electrode manufactured by the said process</li> </ul>
Dr. T. S. Sampath Kumar Prof. S. K. Seshadri Shri D. Siva Rama Krishna Metallurgical and Materials Engineering	<ul style="list-style-type: none"> <li>• A process for the preparation of calcium phosphate from egg shell waste</li> </ul>

### 1.11 Patents Granted:

Prof. N. R. Neelakantan Shri G. Kumar Chemical Engineering	<ul style="list-style-type: none"> <li>• A process for the preparation of polyacetol / ethylene-propylene-diene terpolymer blends</li> </ul>
Prof. S. Karmalkar Shri D. Sridhar Electrical Engineering	<ul style="list-style-type: none"> <li>• An apparatus for maintaining a study plating current in pulse electro plating operations</li> </ul>
Dr. R. Vasudevan Metallurgical Engineering Prof. P. C. Majhee Electrical Engineering	<ul style="list-style-type: none"> <li>• A device for fatigue testing of materials</li> </ul>

### 1.12 Other Distinctions:

Prof. E. G. Tulapurkara Aerospace Engineering	<ul style="list-style-type: none"> <li>• President, National Society of Fluid Mechanics and Fluid Power</li> </ul>
Prof. C. Pandu Rangan Computer Science & Engineering	<ul style="list-style-type: none"> <li>• Member, Board of Directors, International Association for Cryptologic Research, USA</li> <li>• International Panel of Experts for assessing the project proposals submitted for funding to University Grants Commission, Hong Kong</li> </ul>
Prof. U. S. P. Shet Mechanical Engineering	<ul style="list-style-type: none"> <li>• Vice Chairman, Combustion Institute, Indian Section</li> </ul>
Prof. V. Sundar Ocean Engineering	<ul style="list-style-type: none"> <li>• Member, Executive Committee, Asia Pacific Division of International Association of Hydraulic Engineering and Research</li> </ul>

### 1.13 Industrial Consultancy And Sponsored Research:

Industrial consultancy not only provides technological solutions towards industrial development, but also brings a sense of relevance to the teaching-learning processes. Sponsored research is an important part of IITM's activities. Since 1973, we have maintained a steady and sustained growth in our interaction with industry and other



agencies, both in terms of the number and value of sponsored research and consultancy projects. The number of active sponsored projects during the year is 237 for a total value of Rs. 624 millions including 4 international projects for a value of Rs. 9 millions and 32 large projects of value exceeding Rs. 2 millions each; the number of faculty members involved in these projects as Principal Investigators and Co-principal Investigators is 135.

The number of active consultancy projects during the year is 772, for a total value of Rs.86 million including 37 Research Based Industrial Consultancy projects for Rs. 30 million. The number of faculty members involved in these consultancy projects is 125 while 11 have been retained as Consultants in various industries at a cost of Rs. 1.6 million.

The ISRO-IITM Space Technology Cell renewed 19 projects and sanctioned 3 new projects during this year. Under the IGCAR-IITM Cell 4 projects were continued and 5 new projects are being initiated. Periodic monitoring and review of these projects are the major responsibilities of these Cells.

The Industrial Associateship Scheme has now 250 members facilitating continuous interaction with industry. The Centre for IC & SR organized 6 Technology Appreciation Programmes for the benefit of these Industrial Associates during the current year. We have signed 21 Memoranda of Understanding during the year under review with industries such as Murugappa Group of Companies, Tata Chemicals Ltd, General Motors Corporation (USA), Honeywell Technology Solutions Lab Pvt Ltd, Intel Technology India Pvt Ltd.

The Centre for IC & SR publishes Quarterly Reports of the activities of the Institute in an attractive format under the banner of *IIT Madras News*, in addition to the release of regular Newsletters. A CD has been prepared highlighting the several facilities and activities of the Institute.

#### **1.14 Continuing Education And Educational Technology Activities:**

The Centre for Continuing Education (CCE) has been very active in promoting activities for the benefit of working professionals in industries and faculty members of other technical institutions. During the year, our faculty members organized several courses/training programmes: 5 under the Quality Improvement Programme, 28 under Continuing Education and 14 under Educational Consultancy. The CCE generated a revenue of Rs. 64.36 lakhs during the year.

The Centre encourages other activities such as preparation of computer aided instructional packages and production of technical video programmes. During the year under review, a major thrust has been given to development of web based course materials. A Web Studio has started functioning mainly to web-enable many courses. Under the Book Writing Scheme, 7 proposals have been received. Two books have been published.

The Educational Technology Cell's studio equipment has been upgraded from Analog to Digital, serving the needs of many research projects and multimedia CD ROM projects. Conversion of the available material in tape format to CD ROM format is in progress. About 600 hours of video material is being disseminated to various colleges and R & D establishments at a subsidised rate. This year's activities also include: 125 Semester programmes, 114 laboratory shoots, 80 hours non-linear editing and 84 hours LCD projections.

#### **1.15 Our Contributions To The National S&T Educational System :**

IIT-Madras plays a lead role in providing guidance and assistance to the other Engineering Institutions in the country. We have been implementing the Quality



Improvement Programme (QIP), which provides opportunities for teachers of engineering colleges to upgrade their qualifications towards Ph.D. and M.S.. Under the QIP 328 faculty from other institutions have obtained their Ph.D. degrees and 477 faculty from other institutions have obtained their M.Tech. degrees since its inception. Currently we have a total of 97 QIP Scholars (63 Ph.D. & 34 M.Tech. which includes 11 women in Ph.D. and 9 woman in M.Tech) in the Institute.

The All India Council for Technical Education, including the National Board of Accreditation, has been utilizing the expertise of our faculty members in several of their Committees and activities. Many of our faculty members are also on the Governing Councils of several S & T institutions in the country. CCE assists AICTE in the selection process of candidates for the Early Faculty Induction Programme scheme and in 2003, 150 candidates have been accepted under this scheme.

The National Programme on Technology Enhanced Learning (NPTEL) project involving all the IITs and IIMs co-ordinated by IITM has been funded by MHRD. A Virtual Centre for TEL has been established through an MoU involving IITs, IIMs in India and CMU in the US. VCTEL partners in India will jointly put 300 courses on the Web within the next 2 years. These courses will be made available at highly subsidized rates to all engineering and management institutions in India, thus enhancing the reach and quality of technical education in the country.

IIT-Madras has been playing a lead role in the design of activities towards IIT-NIT Networking. The activities proposed include joint projects, faculty and student exchange, and joint activities such as workshops, seminars, etc. The Summer Assistantship Scheme, which was initiated a few years ago, provides opportunities for summer training to top-ranking third year B.Tech/B.E. students of other Engineering Colleges all over the country; 30 students participated in the programme this year.

#### **1.16 International Collaboration :**

IITM has been interacting with several International Organizations for collaborative research, exchange of faculty and students, etc. During the year, we have signed MoUs with the following five international universities: University Malaysia Sabha, Technische Universitat Darmstadt, Simon Fraser University, Kyungpook National University, South Korea and Swiss Federal Institute of Technology, Lausanne.

With these, the total number of MoUs signed by IIT-Madras with international universities amounts to 55. We have also signed 3 MoUs with International Companies and Research Laboratories for collaborative R & D. Collaborative research projects have been approved for funding by BMBF, Germany. Support through GTZ for procurement of spares continued during the year.

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

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

#### **1.17 International Student Exchange Programmes :**

Over the past few years, the Institute has created several opportunities for International Student Exchange. One of the major initiatives in this regard is the Indo-German Agreement between the five IITs and six Technical Universities in Germany. Under this Programme, we have deputed 11 M. Tech. students and 3 M. S. scholars to undertake



their project / thesis work in these German Universities last year. We have also received a few Ph.D. and Dipl.-Ing. scholars from Germany to undertake their projects in our research laboratories. Under the MoU with EPFL, 6 students from EPFL studied in IIT-Madras for one/two semester(s), beginning July 2003. Two of our M.Tech. students in Industrial Mathematics were deputed to the University of Kaiserslautern for training.

#### **1.18 Career Development And Welfare Schemes For The Employees :**

HR training has been planned and implemented for providing opportunities to our technical and administrative staff to update and upgrade their knowledge and skills, in order to enable them to perform their work more effectively. Under this scheme, 33 training programmes (167 programme-days) with 808 participants were conducted during the year. Special Programmes were conducted on Communication Skills, Memory Skills, Speed-Reading, Teamwork and Career Guidance for the children of faculty and staff members in different age groups.

#### **1.19 Our Quality Initiatives :**

We are setting up Visiting Committees for the various Departments of our Institute, on the lines of the best practices obtaining at leading institutions world-wide. The Visiting Committees for Chemistry, Civil Engineering and Metallurgical Engineering have completed the visits and have provided us valuable reports already.

IIT-Madras was the first Higher Technological Institution to have secured ISO-9001 Certification for six units in 1999. Six more units secured ISO-9001 Certification in 2001. The Central Electronics Centre will receive NABL Certification soon.

#### **1.20 Infrastructure Development :**

Significant additions have been made to the logical infrastructure in the Campus. The IBM main frame has been upgraded to P690 series, with 64 CPU, 128 GB and 4 Terabytes of disk space. As a step towards achieving the Digital Library, a Sunfire 15,000 Enterprise Server with 64 CPU 128 GB and 4 Terabyte has been acquired. Another similar system has been put in place for the purpose of e-learning.

The entire hostel area has been networked connecting all the hostel rooms to the rest of the Campus and the rest of the world. Each student's room is equipped with direct access to Campus-wide computer facilities, Internet and a telephone with Direct Inward Dialing (DID) facility. Each hostel has a common room to cater to the computing needs of those who cannot afford computers in their respective rooms. These developments in the hostel section is made possible by the liberal donation of our alumnus, Shri K. Gopalakrishnan who is currently the Deputy Managing Director and Chief Operating Officer (COO) of Infosys. Digital Knowledge Centre (DKC) has been established in the Central Library to enable students to access e-journals. DKC is a 100 seater based on Thin Client Technology.

A Data Centre has been established with state-of-the art facility. Populated with 30 Intel Xeon CPUs in dual/quad formation with 1:2 GigaByte memory and 6 Terabytes of storage, the Data Centre features all conceivable modern architectural features. A Record Room has been created which houses all the physical records of the Institute for periods ranging from 5 to 10 years depending on the administrative requirements. Meanwhile digitisation process to capture the last 50 years of IIT Madras in electronic form is at the final stage of completion. The concept of the work flow has been adopted for launching Institute wide administrative applications. A sample for the Stores and Purchase Section has been created. The Institute Wide ICE Information System based on IITM portal will enable on-line access to the Data base cutting across the entire Institute.



A Smart Card which is capable of carrying information in itself and enabling access to various facilities has been finalized and will be issued shortly to faculty, staff and students. These cards will regulate access to Library, enables the students to access messing facilities and the computer facilities across the Campus. The Class Room Complex consisting of 3 halls of 194 student-seating capacity and 10 halls of 105 seating capacity has been acoustically treated, electronically enabled, and Internet connected. Further, the three large halls are video-integrated – that means a lecture being delivered live can be seen in the other two large halls in "video-live" mode. 45 class rooms of the Institute have been modernised with LCD Projectors and computer systems with all necessary softwares. Network connection has also been given in the class rooms. The ambiances of the class rooms have also been improved considerably.

### **1.21 Student Co-Curricular And Extra-Curricular Activities :**

The academic year 2003-04 has been remarkable as far as the co-curricular and extra-curricular activities of our students are concerned. Eminent personalities from all walks of life addressed our students in the Extra Mural Lecture series and these after Dinner lectures and the lively discussions that follow are becoming very popular among students.

The annual technical festival SHAASTRA held during October 9<sup>th</sup> to 12<sup>th</sup> 2003 attracted student's participation from all over the country. The Quality Management system in place for the conduct of Shaastra has been awarded ISO 9001 making it perhaps the unique festival in the world to get the certification. Popular lectures, video conferences, workshop and a number of formal and informal events make Shaastra one of the major technical festivals of the country.

SAARANG held during January 21<sup>st</sup> to 26<sup>th</sup> January 2004 attracted thousands of students from the length and breadth of the country. This year Saarang had a unique event, a Unity Concert on the Republic Day where an Indian and a Pakistan bands played harmoniously in OAT to a record crowd.

Our B.Tech. students team consisting of Mr. M.Shamanth, Mr.S.Sriram, Mr.A.V.Rangarajan and Mr.S.Karthik reached the quarter finals of University Challenge organized by BBC and a team from MBA programme represented by Mr. Indrajeet Kelkar and Mr. Rohit Morde bagged the second runners-up spot at CNBC-TV18's "Trial By Fire", a nationwide Business School Competition.

Participation of our students in various Inter university technical and cultural festival has been on the increase and every team left their mark wherever participated. An All India OPEN QUIZ was organized this year on 18<sup>th</sup> April which attracted teams from all over the country. This event will be an annual feature from now on. Five of our students participated in a Seminar on "Role and Relevance of the Rajya Sabha in India Polity" held to commemorate the 200<sup>th</sup> session of the Rajya Sabha in Parliament.

In sports, our students team won the General Championship in the Inter-IIT Sports meet held at IIT Bombay and our Student Captain Mr.V.M. Biju was adjudged Best Athlete and Mr. IIT 2003. We are now preparing to organize the Inter IIT Sports Meet at IIT M during December 2004. Our student Mr. Praveen Joseph, Department of Civil Engg. represented INDIA in this year's Asia-Pacific Student Entrepreneurship Society's (ASES) summit held during 3<sup>rd</sup> to 10<sup>th</sup> April 2004 at Stanford University. He was one of the 45 students selected worldwide (and the only one from INDIA) to attend this year's conference.

### **1.22 Socially Relevant Activities :**

IITM's vision envisages, inter alia, an institute in dynamic equilibrium with its social environment. Accordingly we have proactively addressed the technological and





managerial issues in meeting social development needs in a structured fashion. Based on the inputs from a follow-up Workshop with all the stake holders, a project has been initiated in IITM for developing technological solutions for social development. We are happy to report the enthusiastic support of our faculty and students in this initiative. Our NSS students under the guidance of the Coordinator, Prof. B. Subramaniam of the Humanities and Social Sciences department deserve special mention in this context. Further, based on the initiative of Principal Scientific Advisor to the Government of India, a new project has been funded under the initiative of Rural Technology Action Group (RuTAG), to support faculty and students' initiatives to help find and improve technical solutions to rural technology problems.

### 1.23 Alumni Matters:

Our Institute has so far awarded a little over than 25000 degrees, ranging from Ph.D. to B.Tech. The education and training our alumni have received at the Institute have enabled them to launch themselves into professionally satisfying and successful careers. They have distinguished themselves professionally, and many of them occupy top positions in the Industry, Government and the Academe. Since 1997, we have been honouring selected alumni for their accomplishments through the Distinguished Alumnus Awards. I am happy to announce that the Awardees for this year are:

- 1) Dr. Thomas Thindat  
Distinguished Scientist  
Oakridge National Laboratory & University of Tennessee
- 2) Dr. Ashok Khanna  
CMD, Controls and Switchgear Group, New Delhi
- 3) Dr. Marti G. Subramanyam  
Professor, Stern School of Business, New York
- 4) Dr. B. Santhanam  
CEO, Saint Gobain India, Chennai
- 5) Dr. B. N. Suresh  
Director, VSSC, Trivandrum
- 6) Dr. B. R. Pai  
Director, NAL, Bangalore

The Office of Alumni Affairs coordinates the interaction between the Institute and the Alumni. In addition to the parent Alumni Association on Campus, we have several Chapters within the country and abroad. The 1979 batch will celebrate its Silver Reunion this year.

### 1.24 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; professionals from other organizations who have assisted our Institute in several of our endeavours; and our alumni. The Institute is grateful to the Ministry of Human Resource Development, Government of India, for its continued and sustained support. We look forward to reaching new heights of achievement in all our endeavours with the able guidance of our Board of Governors headed by our dynamic and visionary Chairman.

I would like to take this opportunity to wish each and every one of our Graduands a successful professional career full of prosperity, happiness and job satisfaction.

## 2. ADMINISTRATION

### 2.1 General:

Indian Institute of Technology, Madras is an autonomous statutory organisation functioning within the "Institutes of Technologies Act, 1961, "as amended by "The Institute of Technology (Amendment Act, 1963)". The seven Institutes of Technology (others being at Mumbai, Kanpur, Kharagpur, Delhi, Guwahati and Roorkee) are administrated centrally by the Councils of IITs, an apex body established by the Government of India to co-ordinate the activities of these Institutes. The Minister for Human Resource Development, Ministry of Human Resource Development of the Government of India is the Chairperson of the Council. Each Institute of Technology has a Board of Governors responsible for the 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 various 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 the Appendix. The Finance Committee gives financial advice to the Institute. The Buildings and Works Committee advises the Institute on matters relating to buildings and works activities.

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 compositions of the above Committees and Boards together with a list of other officers are also given in the Appendix.

### 2.2 RWTuV, Germany ISO 9001:2000 Certification:

The following sections/centres of the institute were certified ISO9001: 2000 by RWTuV:

- |                     |   |
|---------------------|---|
| 1. Academic Section | 4. Computer Centre  |
| 2. Central Library  | 5. Centre for Industrial Consultancy and Sponsored Research |
| 3. Central Workshop | 6. User Oriented  |

The certificate for this group is valid until August 2005. Surveillance audit for the QSM-1 group was conducted by RWTUV in April 2003.

The following sections of the institute are under QSM-2 and are also certified ISO9001: 2000 by RWTUV:

- |                         |                               |
|-------------------------|-------------------------------|
| 1. Administration       | 4. Security                   |
| 2. Finance and Accounts | 5. Engineering Unit           |
| 3. Stores and Purchase  | 6. Central Electronics Centre |

The certificate for this group is valid until February, 2005. Surveillance audit for the QSM-2 group was conducted by TWTUV in July 2003 and January 2004.

### 2.3 Staff Position:

As on 31.03.2004, 339 Faculty, 22 Scientific Staff, 4 Design Staff, 287 Technical Staff and 609 Administrative Staff were in position totaling 1261. During the period under report 144 faculty / staff members comprising 43 Professors, 30 Associate Professors, 30 Assistant Professors and 41 other staff were appointed. 54 staff members comprising 14 Faculty members, 3 Officers and 37 Staff retired from their services. 1 faculty member and 1 staff member took voluntary retirement. 151 staff members retired under Special Voluntary Retirement Scheme on 1.1.2004. 3 Staff members expired. 33 faculty members and 2 staff members were on long leave. The details of all the above are given below:

#### 2.3.1 Faculty / Staff appointed from 01.04.2003 to 31.03.2004:

Sl. No	Name Dr./ Shri./ Ms.	Designation	Dept.	DOJ
1.	M. Murali Prakash	Asst. Exe. Engg.	Engg. Unit	01.04.2003
2.	Debashish Acharya	Asst. Professor	Humanities	10.04.2003 A.N.
3.	N. Sudha	Asst. Professor (on contract)	Computer Science	16.04.2003
4.	Chidella Srinivasa Rao	Asst. Professor	Mathematics	21.04.2003

Sl. No	Name Dr./ Shri./ Ms.	Designation	Dept.	DOJ
5.	K. Srinivas Reddy	Asst. Professor	Mechanical	25.04.2003
6.	S.A. Sannasiraj	Asst. Professor	Ocean	01.05.2003
7.	R. Radha	Asst. Professor	Mathematics	07.05.2003
8.	K.C. Siva Kumar	Asst. Professor	Mathematics	07.05.2003
9.	K.P. Sudheer	Asst. Professor	Civil	12.05.2003
10.	Souvik Chattopadhyay	Asst. Professor	Electrical	12.05.2003
11.	B. Srikrishna	Asst. Professor	Electrical	19.05.2003
12.	N. Sreekumar	Asst. Professor	Humanities	20.05.2003
13.	N. Harish Kumar	Asst. Professor	Physics	26.05.2003
14.	Usha Titus, IAS	Registrar	Admn.	31.05.2003
15.	A. Ravishankar	Asst. Professor	Electrical	09.06.2003
16.	L.Arulmurugan	Asst. Professor	Physics	12.06.2003
17.	S. Ramanathan	Asst. Professor	Chemical	30.06.2003
18.	K. Murali	Asst. Professor	Ocean	16.07.2003
19.	G. Saravanan	Mechanic	IC & SR	17.07.2003
20.	R. Mehanathan	Mechanic	CWS	17.07.2003
21.	Mahesh Kumar	Asst. Professor	Electrical	23.07.2003
22.	Karthik K. Srinivasan	Asst. Professor (on contract)	Civil	23.07.2003
23.	M. Manivannan	Mechanic	Fin. & Accts.	25.07.2003
24.	P. Hariharan	Mechanic	CWS	28.07.2003
25.	D. Sasikumar	Mechanic	Humanities	28.07.2003
26.	K.P. Geetha	Helper Gr.I Nursing	Instt. Hospital	28.07.2003
27.	P.N. Santhosh	Asst. Professor	Physics	04.08.2003
28.	M.M. Sidhiq	Helper Gr.I Nursing	Instt. Hospital	11.08.2003
29.	R. Thiruneelagandan	Mechanic	Compuer Centre	14.08.2003
30.	P. Padmavathi	Helper Gr.I Nursing	Instt. Hospital	18.08.2003
31.	R. Gopinath	JMO	Instt. Hospital	29.08.2003
32.	Priya Mahadevan	Asst. Professor	Physics	15.09.2003
33.	Aradhyam Gopalakrishna	Asst. Professor (on contract) Regularised	Chemical	29.09.2003  12.1.2004
34.	Srinivasa Aatreya	Asst. Professor (on contract) Regularised	Metallurgy	13.10.2003  12.1.2004
35.	S. Venkataramanaiah	Asst. Professor (on contract)	Mechanical	28.11.2003
36.	Shri V. Ganesh	Scientific Officer Gr.I	Applied Mechanics	28.11.2003
37.	K. Krishnamurthy	Scientific Officer Gr.II	Chemical	28.11.2003
38.	R. Balachandran Pillai	Scientific Officer Gr.II	Chemistry	28.11.2003
39.	K. Chandrasekaran	Scientific Officer Gr.I	MSRC	28.11.2003
40.	P. Ramasheshagiri Rao	Chief Design Engineer	Electrical	28.11.2003

Sl. No	Name Dr./ Shri./ Ms.	Designation	Dept.	DOJ
41.	H. Renganathan	Sr. Scientific Officer Gr.I	Electrical	28.11.2003
42.	T.V. Gopal	Sr. Scientific Officer Gr.I	Electrical	28.11.2003
43.	P. Prabhakara Rao	Scientific Officer Gr.I	Electrical	28.11.2003
44.	M. Subbi Reddy	Sr. Scientific Officer Gr.I	Civil	28.11.2003
45.	S. Raja Rao	Scientific Officer Gr.II	Mechanical	28.11.2003
46.	G. Jothinathan	Sr. Scientific Officer Gr.I	Metallurgy	28.11.2003
47.	S. Annamalai	Sr. Scientific Officer Gr.I	Metallurgy	28.11.2003
48.	N. Krishna Mohan	Sr. Scientific Officer Gr.I	Physics	28.11.2003
49.	T.R. Kesavan	Scientific Officer Gr.II	Physics	28.11.2003
50.	A.T. Seshadri	Scientific Officer Gr.II	Physics	28.11.2003
51.	S. Sainathan	Scientific Officer Gr.II	Physics	28.11.2003
52.	M. Veerabhadra Rao	Scientific Officer Gr.II	Physics	28.11.2003
53.	R. Murugesan	Scientific Officer Gr.I	SAIF	28.11.2003
54.	M.S. Moni	Sr. Scientific Officer Gr.I	SAIF	28.11.2003
55.	Babu Varghese	Sr. Scientific Officer Gr.I	SAIF	28.11.2003
56.	M. Kumaravel	Chief Design Engineer	CEC	28.11.2003
57.	S. Sundaravinagayam	Asst. Registrar	Admn.I	01.12.2003
58.	D. Ravi	Asst. Registrar	Engg. Unit	01.12.2003
59.	Prema Chakrapani	Asst. Registrar	Placement Office	01.12.2003
60.	S. Sugavanam	Asst. Registrar	Stores & Purchase	05.12.2003

61.	Sasank Sekar Sarma	Sr. Exe. Engr. (on deputation)	Engg. Unit	08.12.2003
62.	V. Saravanagopi	JMO (ad hoc)	Instt. Hospital	22.12.2003
63.	Ramakrishna Mokkaapati	Professor	Aerospace	12.01.2004
64.	P.Sriram	Professor	Aerospace	12.01.2004
65.	S.Swarnamani	Professor	Applied Mechanics	12.01.2004
66.	M.Ramasubba Reddy	Professor	Applied Mechanics	12.01.2004
67.	C.Sujatha	Professor	Applied Mechanics	12.01.2004
68.	J.Lakshminarasimhan	Professor	Applied Mechanics	12.01.2004
69.	S.Sankara Narayanan	Professor	Chemical	12.01.2004
70.	P. Sesha Talpa Sai	Professor	Chemical	12.01.2004
71.	Ashok Kumar Mishra	Professor	Chemistry	12.01.2004
72.	R.Dhamodharan	Professor	Chemistry	12.01.2004
73.	M.V. Sangaranarayanan	Professor	Chemistry	12.01.2004
74.	T.Pradeep	Professor	Chemistry	12.01.2004
75.	D.Loganathan	Professor	Chemistry	12.01.2004
76.	T.K. Varadarajan	Professor	Chemistry	12.01.2004
77.	R.P.Viswanath	Professor	Chemistry	12.01.2004
78.	M.S.Subramanian	Professor	Chemistry	12.01.2004
79.	B. S. Murty	Professor	Civil	12.01.2004
80.	K.Ramamurthy	Professor	Civil	12.01.2004
81.	Devdas Menon	Professor	Civil	12.01.2004
82.	Anumolu Meher Prasad	Professor	Civil	12.01.2004
83.	K.N.Satyanarayana	Professor	Civil	12.01.2004
84.	Koshy Varghese	Professor	Civil	12.01.2004
85.	A.Ramachandraiah	Professor	Civil	12.01.2004
86.	D.Janaki Ram	Professor	Computer Science	12.01.2004
87.	S. Karmalkar	Professor	Electrical	12.01.2004
88.	P.Sasidhara Rao	Professor	Electrical	12.01.2004
89.	T.J.Kamalanabhan	Professor	Humanities	12.01.2004
90.	G.Srinivasan	Professor	Humanities	12.01.2004
91.	S.Jayachandran	Professor	Humanities	12.01.2004
92.	Elizabeth N. Kurian	Professor	Humanities	12.01.2004
93.	M.Thamban Nair	Professor	Mathematics	12.01.2004
94.	P.Veeramani	Professor	Mathematics	12.01.2004
95.	Raju Sethuraman	Professor	Mechanical	12.01.2004
96.	Sarit Kumar Das	Professor	Mechanical	12.01.2004

97.	L.Vijayaraghavan	Professor	Mechanical	12.01.2004
98.	A.Ramesh	Professor	Mechanical	12.01.2004
99.	M.Prakash Maiya	Professor	Mechanical	12.01.2004
100.	A.Mani	Professor	Mechanical	12.01.2004
101.	G.Venkatarathnam	Professor	Mechanical	12.01.2004
102.	Bimalendu Guha	Professor	Metallurgy	12.01.2004
103.	Neelima Madukar Gupte	Professor	Physics	12.01.2004
104.	S.Ramaprabhu	Professor	Physics	12.01.2004
105.	R.I.Sujith	Asso. Professor	Aerospace	12.01.2004
106.	Satyanarayanan R. Chakravarthy	Asso. Professor	Aerospace	12.01.2004
107.	P.Chandramouli	Asso. Professor	Applied Mechanics	12.01.2004
108.	C.Lakshmana Rao	Asso. Professor	Applied Mechanics	12.01.2004
109.	M.S.Sivakumar	Asso. Professor	Applied Mechanics	12.01.2004
110.	N.R.Panchapakesan	Asso. Professor	Applied Mechanics	12.01.2004
111.	Anju Chadha	Asso. Professor	Biotechnology	12.01.2004
112.	K. Mangala Sunder	Asso. Professor	Chemistry,	12.01.2004
113.	S.Baskaran	Asso. Professor	Chemistry	12.01.2004
114.	Ligy Philip	Asso. Professor	Civil	12.01.2004
115.	Deepak Khemani	Asso. Professor	Computer Science	12.01.2004
116.	K.Sridharan	Asso. Professor	Electrical	12.01.2004
117.	G.Ramasubramanian	Asso. Professor	Humanities	12.01.2004
118.	Arindama Singh	Asso. Professor	Mathematics	12.01.2004
119.	R.Rama	Asso. Professor	Mathematics	12.01.2004
120.	Satyajit Roy	Asso. Professor	Mathematics	12.01.2004
121.	C.Balaji	Asso. Professor	Mechanical	12.01.2004
122.	R.Gnanamoorthy	Asso. Professor	Mechanical	12.01.2004
123.	K.C.Harikumar	Asso. Professor	Metallurgy	12.01.2004
124.	S.S. Bhattacharya	Asso. Professor	Metallurgy	12.01.2004
125.	S. Surendran	Asso. Professor	Ocean	29.01.2004
126.	Prem Ballabh Bisht	Asso. Professor	Physics	12.01.2004
127.	M.Venkata Satyanarayana	Asso. Professor	Physics	12.01.2004
128.	K.Sethupathi	Asso. Professor	Physics	12.01.2004
129.	S.Kasiviswanathan	Asso. Professor	Physics	12.01.2004
130.	P.B.Sunil Kumar	Asso. Professor	Physics	12.01.2004
131.	Suresh Govindarajan	Asso. Professor	Physics	12.01.2004
132.	Shankar Krishnapillai	Asst. Professor	Mechanical	12.01.2004
133.	Arunn Narasimhan	Asst. Professor	Mechanical	12.01.2004

134.	Sukhendu Das	Asso. Professor	Computer Science	14.01.2004
135.	C.Chandra Sekhar	Asso. Professor	Computer Science	14.01.2004
136.	Jayanti Sreenivas	Asso. Professor	Chemical	19.01.2004
137.	Nitin Chandrachoodan	Asst. Professor	Elec. Engg.	28.01.2004
138.	B. Ravindran	Asst. Professor	Computer Science	01.02.2004
139.	S. Balaji	Asst. Professor	Electrical Engg.	16.02.2004
140.	R. Nagarajan	Professor	Chemical Engg.	23.02.2004
141.	R. Baskar	Asst. Professor	Biotechnology	23.02.2004
142.	Indira Chaturvedi	Consultant Pediatrician	Instt. Hospital	23.02.2004
143.	R. G. Robinson	Asst. Professor	Civil Engg.	25.02.2004
144.	C.R. Harish	Sr. Exe. Engr. (on deputation)	Engg. Unit	17.03.2004

### 2.3.2 Faculty / Staff retired from 01.04.2003 to 31.03.2004:

S.No	Name	Designation	Department	Date of Retirement
1.	Uthirapathy, G	Senior Mech.SG	Mech. Engg.	30.04.2003
2.	Thangaiah, S	Senior Mechanic	Central Workshop	30.04.2003
3.	Selvaraj, P	Driver	Transport Cell	30.04.2003
4.	Krishnamurthy, M	Assistant Professor	Elec. Engg	30.04.2003
5.	Bhattacharyya, P. (Dr)	Professor	Mathematics	30.04.2003
6.	Sankaran Nair, K	Assistant, SG	ADMN.I	31.05.2003
7.	Perumal, K	Supervisor	Central Workshop	31.05.2003
8.	Subramanian, V	Daftry Gr.I SG	Academic Section	31.05.2003
9.	Rakkappan, K	Senior Helper	Civil Engg.	31.05.2003
10.	Raju, P	Senior Helper	Institute Hospital	31.05.2003
11.	Arumugam, G	Head Sec.Guard	Security Section	31.05.2003
12.	Narayanan, S	Assistant, SG	Registrar's Office	30.06.2003
13.	Durairaju, G	Supervisor, SG	Mech. Engg.	30.06.2003
14.	Adaiah, K	Oprn.Theat.Asst	Inst. Hospital	30.06.2003
15.	Kuppan, M	Asst.Registrar	Inst. Hospital	30.06.2003
16.	Sathyanarayana, K	Supevisor, SG	Central Workshop	30.06.2003
17.	Vanaja, S	Office Attdt.	Hum. & Soc. Sci.	30.06.2003
18.	Thulukkanam, M	Sr.Mali (SG)	Engineering Unit	30.06.2003
19.	Saroja Subramanian	Sr.Peof.Asst.	Central Library	30.06.2003
20.	Kesavan, P	Senior Mechanic	Engg. Unit	30.06.2003

21.	Sundararajan, V	Junior Mechanic	Engg. Unit	30.06.2003
22.	Stalin, N	Senior Mechanic	Appl. Mech.	30.06.2003
23.	Sambasivam S	Junior Mechanic SG	Chemistry	31.07.2003
24.	Chandran M	Senior Mechanic SG	Engg. Unit	31.07.2003
25.	Annaswamy R	Senior Mechanic.Mason	Engg. Un8it	31.07.2003
26.	Nagalingam, B. (Dr.)	Professor	Mechanical Engg.	31.07.2003
27.	Raghunatha Rao ,B. (Dr)	Assistant Professor	Met. & Matls. Engg.	31.07.2003
28.	Krishnan, K	Secretry	Elec.Engg	31.08.2003
29.	Ramaswamy	Junior Mechanic	Met. & Matls Engg.	31.08.2003
30.	Devaki, E	Helper Gr.I SG	Admn.II	31.08.2003
31.	Seshadri T	Superintendent	Accounts	30.09.2003
32.	Balakrishnan R	Store Attdt. Gr.I SG	CGSU	30.09.2003
33.	Vijay R Raghavan (Dr)	Professor	Mechanical Engg.	30.09.2003
34.	Narasimha Rao .S (Dr)	Professor	Ocean Engg.	30.09.2003
35.	Viswanathan, B.(Dr)	Professor	Chemistry	30.09.2003
36.	Manohar, G.T	Assistant Professor	Elec Engg.	30.09.2003
37.	Vimala, T.M (Dr)	Assistant Professor	Physics	30.09.2003
38.	Kalendar Saheb S.D.	Sr.Design Engr	Mech Engg	31.10.2003
39.	Sridhara Rao.G (Dr)	Professor	Elec Engg.	31.10.2003
40.	Ramalingeswara D.V.(Dr)	Assistant Professor	Mech Engg.	31.10.2003
41.	Khairunisa.K	Sr.Pharmacist	Inst Hospital	30.11.2003
42.	Pattnaik S.B (Dr)	Professor	Civil Engg	30.11.2003
43.	Narasimha M.S. (Dr)	Professor	Elec Engg.	30.11.2003
44.	Jagadiswaran.C	Supervisor SG	Mech Engg	30.11.2003
45.	Venu.K	Sr.Helper	Engg Unit	30.11.2003
46.	Rita Theresa	Office Attdt	Accounts	30.11.2003
47.	Pattabiraman	Deputy Registrar	Trang. & Place,Public Rela	31.12.2003
48.	Durai S.	S.A.Gr.I(SG)	Elec.Engg.	31-01-2004
49.	Dr. Venkata Rao, V.	Professor	Elec. Engg.	31-01-2004
50.	Chandrasekaran S.	C.S.K.(SG)	Elec.Engg.	29-02-2004
51.	Marimuthu V.	Off.Attdt.(SG)	Elec.Engg.	29-02-2004
52.	Ramachandran P.	Sr.Lab.Asst.	Chemical Engg.	29-02-2004
53.	Saramma Varghese	Sr.Nursing Sister	Hospital	31-03-2004
54.	Ramamurthy, T.	Supervisor	F.R.P.R.C.	31-03-2004.



## 2.3.2.1 Voluntary Retirement:

Sl. No.	Name	Designation	Department	Date
1.	Kiruba Rajagopalan	Helper Gr.I	Computer Centre	01.02.2004
2.	Dr.K.A.Padmanabhan	Professor	Metallurgical	04.07.2002 *

\* Deemed to have been relieved on 04.07.2002 vide letter dated 10.10.2003.

## 2.3.2.2 List of staff members retired under Special Voluntary Retirement Scheme on 1.1.2004 F.N

The Board of Governors in its 182<sup>nd</sup> meeting held on 25.7.2003 approved the implementation of the Special Voluntary Retirement Scheme for the Group B, C & D employees of this Institute as envisaged by the Government of India, Ministry of Personnel, Public Grievances and Pension vide O.M. No.25013/6/2001 – Esst(A) dt. 28.2.2002 and referred by MHRD in their letter No.8-28/2001-TS-1 dt. 9.7.2003. Accordingly, the Scheme was floated on 15.9.2003 and closed on 30.11.2003. The options of 151 staff members, as detailed below, have been accepted and all of them were relieved on 1.1.2004 FN.

Sl.No.	Name of the Employee	Designation	Department
1.	Sundararaman N.K.	Superintendent	Academic
2.	Marimuthu P.	Superintendent	Accounts
3.	Raghunathan R	Superintendent	Hospital
4.	Narasimhalu K..	Superintendent	ICSR
5.	Shanmugam G	Assistant	Academic
6.	Narayanan S.	Assistant	Admn.
7.	Kuppuswamy M	Assistant	Audit
8.	Ammini Cherian	Assistant	Engg. Unit
9.	Balachandran P	Sr. Steno SG	Dean (AR) Office
10.	Ramanathan S.	Sr. Steno SG	Appl. Mech.
11.	Sridharan P.S.	Sr. Steno SG	Director's Off.
12.	Prabha Balasubramanian	Sr. Steno SG	ICSR
13.	Jayakumar M.	Sr. Steno SG	ICSR
14.	Pushpam Sampath	Steno	Civil Engg.
15.	Savithri Balasubramanian	UDC SG	Academic
16.	Sankari Devi Seshasayee G.	UDC SG	Accounts
17.	Sathyavageswaran S.V.	UDC SG	Admn.
18.	Swarnalatha Guhan	UDC SG	Admn.
19.	Gopalakrishnan P	UDC SG	Audit
20.	Amsa Bai N	UDC SG	Elect. Engg.
21.	Ratha V.	UDC SG	Hospital
22.	Mythily S.K.	UDC SG	ICSR
23.	Elsy Das	UDC SG	Library
24.	Essakiammal E.	UDC SG	Mech. Engg.
25.	Swaminathan B.	UDC SG	Metallurgy
26.	Gowri Bai B.	UDC SG	Physics
27.	Padmavathy S.	UDC	Accounts
28.	Shanbagavalli S	UDC	Accounts

29.	Chokkalingam Gandhi M.	UDC	NCC
30.	Ramalingam E.	Typist Gr.,I SG	Engg. Unit
31.	Natarajan K.	Driver SG	Transport Cell
32.	Sambandam A.	Driver Gr.I	Transport Cell
33.	Ramadoss A.	Driver Gr.I	Transport Cell
34.	Brenda D'Monte	Tele. Oper. Gr.I SG	Engg. Unit
35.	Palani V.	Sr. Mech. SG	Engg. Unit
36.	Sundaram K	Sr. Mech. SG	Engg. Unit
37.	Chakrapani A.P.	Sr. Mech. SG	Engg. Unit
38.	Kannan V.	Sr. Mech. SG	Engg. Unit
39.	Bhuhari A .	Sr. Mech. SG	Engg. Unit
40.	Balasundaram K .	Sr. Mech. SG	Engg. Unit
41.	Kandasamy C.	Sr. Mech. SG	Engg. Unit
42.	Mani P.	Sr. Mech. SG	Engg. Unit
43.	Palani T.	Sr. Mech. SG	Engg. Unit
44.	Arumugam K.	Sr. Mech. SG	Engg. Unit
45.	Srinivasan M.	Sr. Mech. SG	Ocean Engg
46.	Balakrishnan G.	Sr. Mech. SG	Workshop
47.	Srinivasan M.S.	Sr. Mech.	Chemical Engg.
48.	Balu K.	Sr. Mech.	Engg. Unit
49.	Selvaraj M.K.	Sr. Mech.	Engg. Unit
50.	Ramalingam E.	Sr.Mech (SG)	AC Unit
51.	Kanniappan G	Sr.Mech (SG)	Civil Engg.
52.	Barnendes J.	Sr.Mech (SG)	Workshop
53.	Ranganathan P.	Jr. Mech.	Appl. Mech.
54.	Muthukrishnan P.	Jr. Mech.	Mech. Engg.
55.	Seetharaman P.	Supervisor SG	Aerospace
56.	Bhalgunan K.K.	Supervisor SG	Chemistry
57.	Govindan K.N.	Supervisor SG	Civil Engg.
58.	Chandrasekaran V.	Supervisor SG	Mech. Engg.
59.	Sivaraman T.A.	Supervisor SG	Mech. Engg.
60.	Nagamani S.	Supervisor SG	Mech. Engg.
61.	Munuswamy A.K.	Supervisor SG	Mech. Engg.
62.	Ramalingam N.	Supervisor SG	Mech. Engg.
63.	Krishnan D.	Supervisor SG	Metallurgy
64.	Appadurai R.	Supervisor SG	Workshop
65.	Raghavan S.	Supervisor SG	Workshop
66.	Vedantham C.	Supervisor SG	Workshop
67.	Lakshmi Venkatesan	Sr. Data Processor SG	Computer Centre
68.	Kannan S.N.	Chief D'man (SG)	Engg. Unit
69.	Balasubramanian C.	Chief D'man (SG)	Metallurgy
70.	Rajeswari J	STA	Elect. Engg.
71.	Srinivasan M.V.	STA (SG)	CEC
72.	Ramanujam S.	Draughtsman Gr.I SG	Appl. Mech.
73.	Venkatanarayanan K C	Draughtsman Gr.I SG	Mech. Engg.
74.	Dasarathan T	Lab Assistant	Elect. Engg.
75.	Krishnan M.	Wireman Gr.I (SG)	Engg. Unit

76.	Sharada Raman	Sr. Prof. Asst.	Library
77.	Zahida Basha	Sr. Prof. Asst.	Library
78.	Rangan T.S.	Library Attdt.	Library
79.	Jagadeesan N.	Sr. Library Attdt.	Library
80.	Mohanasundaram V	Library Attdt.II	AC Unit
81.	Srinivasan V.	Plumber SG	Engg. Unit
82.	Periakaruppan K.	Plumber SG	Engg. Unit
83.	Varadan A.	Plumber SG	Engg. Unit
84.	Chokalingam C.	Plumber Gr.I	Engg. Unit
85.	Sridharan M.	Meter Reader SG	Engg. Unit
86.	Munuswamy B.	Maistry (Hort.)	Engg. Unit
87.	Govindaswamy E.	Sr. Mali SG	Engg. Unit
88.	Veeramuthu E.	Sr. Mali SG	Engg. Unit
89.	Dakshinamurthy P.	Sr. Mali SG	Engg. Unit
90.	Arumugam M.	Sr. Mali SG	Engg. Unit
91.	Veeraraghavan C	Sr. Mali SG	Engg. Unit
92.	Krishnan C.	Sr. Mali SG	Engg. Unit
93.	Velu M.	Sr. Mali	Engg. Unit
94.	Adhikesavan P	Sr. Mali	Engg. Unit
95.	Madhavan V.	Sr. Mali	Engg. Unit
96.	Ravindran R	Sr. Lab. Asst.	Civil Engg.
97.	Mayakanan D.	Sr. Lab. Asst.	Physics
98.	Shanmugam M.	Sr. Lab. Asst.	Workshop
99.	Natarajan P.	Sr. Attdt.	Chemistry
100.	Jayaraman S.	Sr. Helper	AC Unit
101.	Rajagopal S.	Sr. Helper	Audit
102.	Ramani P.	Sr. Helper	Chemical Engg.
103.	Govindan M.	Sr. Helper	Chemical Engg.
104.	Ramaiah P	Sr. Helper	Engg. Unit
105.	Ramaiah G.	Sr. Helper	Engg. Unit
106.	Esakiel J.	Sr. Helper	Engg. Unit
107.	Radhakrishnan V.	Sr. Helper	Engg. Unit
108.	Chengalvarayan L.	Sr. Helper	Engg. Unit
109.	Kanniappan S.	Sr. Helper	Engg. Unit
110.	Nagaiah S.	Sr. Helper	Engg. Unit
111.	Daveedu N	Sr. Helper	Engg. Unit
112.	Charles G.	Sr. Helper	Engg. Unit
113.	Rahuman S.	Sr. Helper	Engg. Unit
114.	Chittibabu C.	Sr. Helper	Hospital
115.	Kothandaraman N.	Sr. Helper	Library
116.	Syed Azeem Mohidin	Sr. Helper	Mech. Engg.
117.	Devendran D.	Attdt. Gr.I SG	Civil Engg.
118.	Deenadayalan V.	Attdt. Gr.I SG	Mech. Engg.
119.	Ramachandran Pillai R.	Attdt. Gr.I SG	Workshop
120.	Lakshmana Doss T	Office Attdt. (SG)	Civil Engg.
121.	Sriram K.	Office Attdt. SG	Academic
122.	Mohan R	Office Attdt	Academic
123.	Ruckmani Lakshmanan	Office Attdt	Library

124.	Dhanam M.	Office Attdt.	Engg. Unit
125.	Ganesan V	Helper Gr I (SG)	Computer Centre
126.	Natarajan B.	Helper Gr.I SG	JEE
127.	Eswaran K.P.	Helper	Engg. Unit
128.	Md. Abdullah S	HSG (SG)	CEC
129.	Ramaswamy V.	HSG (SG)	Security
130.	Soman P.R.	HSG (SG)	Security
131.	Adinarayanan C.N.	Security Guard Gr.I SG	Security
132.	Satheya P.	Sr.Daftry	Library
133.	Joseph T.	Sweeper Gr.I (SG)	Engg. Unit
134.	Vengamma S.	Sweeper Gr.I SG	Engg. Unit
135.	Kottaiah B.	Sr. Sweeper	Engg. Unit
136.	Balaiah Y	Sr. Sweeper	Engg. Unit
137.	Shanmugam G.	Sr. Sweeper	Engg. Unit
138.	Subbaiah C.	Sr. Sweeper	Engg. Unit
139.	Ravanaiah N.	Sr. Sweeper	Engg. Unit
140.	Saravanan S.	Sr. Sweeper	Engg. Unit
141.	Malakondaiah C.	Sr. Sweeper	Engg. Unit
142.	Paramasivam S.	Sr. Sweeper	Engg. Unit
143.	Nagamma S.	Sr. Sweeper	Engg. Unit
144.	Parthasarathy D.	Sr. Sweeper	Engg. Unit
145.	Pullaiah G.	Sr. Sweeper	Engg. Unit
146.	Obaiah C.	Sr. Sweeper	Engg. Unit
147.	Chandran T.	Sr. Sweeper	Engg. Unit
148.	Ramaiah A.	Sr. Sweeper	Engg. Unit
149.	Chellamma K.	Sweeper Gr.I	Engg. Unit
150.	Ademma A.	Sweeper Gr.I	Engg. Unit
151.	Kuppammal A.	Sweeper	Engg. Unit

The total expenditure towards settlement of terminal benefits are as follows:

S.No.	Terminal Benefits	Amount in Rs.
1.	Exgratia	443.30
2.	Commuted value of pension	247.61
3.	Gratuity	244.84
4.	Leave encashment (approx.)	110.00
<b>Total</b>		<b>1045.75</b>

#### 2.3.2.3 Expired:

Sl. No.	Name	Designation	Department	Date
1.	Sappani R.	Tech . Officer Gr.I	Chemical Engg.	24.04.2003
2.	Thanasu .K	HSG (SG)	Security Section	27.05.2003
3.	Devasagayam .S	HSG (SG)	Security Section	16.11.2003

## 2.3.3 Faculty/ Officers/ Staff on long leave:

Sl. No.	Name & Department	Duration	Nature of Leave
1.	Dr.P.Bhattacharyya, Professor, Mathematics	14.06.1999 to 30.04.2003	EOL
2.	Dr.R.S.Sirohi, Professor, Physics	13.12.2000 to 30.04.2005	EOL
3.	Dr.P.Sesha Talpa Sai,,Professor Chem. Engg.	01.06.2001 to 30.05.2003	EOL
4.	Dr.D.R.G.Achar, Professor, Metl. & Matls. Engg.	01.08.2001 to 31.07.2003	EOL
5.	Dr.Sukhendu Das, Assoc. Professor, Comp. Sci. & Engg.	3.12.2001 to 30.05.2003	EOL
6.	C.Baby, Tech. Asst. RSIC	28.05.2001 to 16.05.2003	EOL
7.	Dr.S.Ponnusamy, Assoc. Prof. Mathematics	19.08.2002 to 27.05.2003	EOL
8.	Dr.M.S. Sivakumar, Assoc. Prof. Applied Mechanics	27.08.2002 to 31.12.2003	EOL
9.	V.Ramkumar, Tech.Asst. Chemistry.	06.01.2003 to 05.07.2003	EOL
10.	P.M.Kumaraswamy, Sr.Gest.Operator, CCE	03.02.2003 to 11.07.2003	HPL
11.	Dr.P.R.Vaya. Professor, Electrical Engg.	03.02.2003 to 02.02.2005	EOL
12.	Dr.P.R. Parthasarathy, Professor, Mathematics	01.05.2003 to 31.12.2003	EOL
13.	Dr. S. Neelamani, Assoc. Professor, Ocean Engg	05.05.2003 to 04.2.2005	EOL
14.	Dr. P. Kesavan Nair Professor Metl & Matls. Engg.	18.6.2003 to 19.6.2005	EOL
15.	Dr. N. Siva Prasad Professor Mechanical Engg.	7.6.2003 to 8.6.2005	EOL
16.	Dr. Pramod s. Mehta Professor, Mechanical Engg.	14.6.2003 to 15.6.2008	EOL
17.	Dr. S.S. Gokhale Professor Aerospace Engg.	28.6.2003 to 30.06.2008	EOL
18.	Dr. C.R. Muthukrishnan Professor Computer Sci. & Engg.	01.9.2003 to 31.8.2005	EOL
19.	Dr. K.M.M. Prabhu Professor Electrical Engg.	5.11.2003 to 30.6.2004	EOL
20.	Dr. M.S. Ramachandra Rao Assistant Professor Physics	18.9.2003 to 19.9.2004	EOL
21.	Dr. M.S. Mathews Professor Civil Engg.	20.12.2003 to 10.1.2005	EOL
22.	Dr. K. Radhakrishna Rao Professor Electrical Engg.	1.1.2004 to 31.12.2005	EOL
23.	Dr. Maha Seshasayee Professor, Physics	6.1.2004 to 30.6.2004	EOL
24.	J.Rajeswari, S.T.A., Elec. Engg.	10.03.2003 to 05.12.2003	EL.HPL.EOL
25.	Dr.Shankar Narasimhan, professor, Chem. Engg.	07.06.2002 to 01.08.2003	Sab.Leave/EL
26.	Dr.Koshy Verghese, Professor, Civil Engg.	16.05.2002 to 21.07.2003	Sab.Leave
27.	Dr.A.K.Mishra, Professor, Chemistry	17.06.2002 to 18.04.2003	Sab. Leave

28.	Dr.G.Ranga Rao, Asst. Professor, Chemistry	30.07.2002 to 03.08.2003	Sab. Leave
29.	Dr.(Mrs.) Archita Patnaik, Assoc. Professor, Chemistry	19.08.2002 to 18.06.2003	Sab. Leave
30.	Dr.C.Pandurangan, Professor, Computer Sci. & Engg.	20.01.2003 to 19.01.2004	Sab. Leave
31.	Dr. Sreenivas Jayanti Assoc. Professor Chemical Engg.	27.01.2003 to 26.01.2004	Sab. Leave
32.	Dr.S.K.Bhattacharyya, Professor, Ocean Engg.	30.01.2003 to 28.05.2004	Sab. Leave/EL
33.	Dr. N. Narasimha Murthy Assistant Professor Chemistry	26.08.2003 to 27.08.2004	Sab. Leave
34.	Dr. Indrapal Singh Aidhen Assistant Professor Chemistry	01.10.2003 to 01.08.2004	Sab. Leave
35.	Ms. Ramadevi N.S. LDC Academic	11.8.2003 to 29.1.2004	EOL

## 2.4 Staff Welfare:

### 2.4.1 Human Resource Development:

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

The Ministry of Human Resources Development, Government of India constituted a Task Force in 2002 to review the administrative practices at the various IITs, National Institutes of Technology (erstwhile RECs) and other National Institutes of Higher Learning. One of the key components here was seen to be higher efficiency and Computerization of all Administrative processes. The inputs from HRD at each Institution were seen to be central to the Efficiency Improvement and Computerization activities. IIT Madras has been commended for the early start it has taken in this direction.

In the past, the major thrust of the HRD activities at the Institute had been aimed at the non-teaching staff. In this year, courses have been organized for faculty, for students of the Institute and for the children of employees. Classes were held for interested employees, including special sessions for women employees, to upgrade their skills in computer use. As for hardware, employees were deputed for training and skills enhancement in a variety of areas such as CNC Machining, PLC Electro hydraulic of pneumatics, use of computers for secretaries, Training in supervision in machining, milling and shaping as well as in NDT and Advanced Evaluation of Concrete structures. Other than these, fighting fire hazards and yoga. Meditations have also received attention.

Pre-Retirement counseling was done by professionals in the areas of health, yoga, meditation, accounting, auditing, managing finance, investing, socializing etc.

For children of employees in different age groups special programs were conducted on communication skills, memory skills, speed-reading, teamwork, career guidance etc. For younger children, programs were conducted for 5+ and under 5 years.

The HRD activities were initiated at the Institute in 1997 under the charge of a professor in the period of reporting, the total number of program days were 167. The total numbers of participants were about 808.

The impact of the various programs, as seen from the feedback at the end of each program, appears to be advantageous to the Institute as the employees were able to upgrade their knowledge through these programs as the programs were designed on need based.

## HRD Programmes Conducted:

Sl. No.	Name of the Training Programme	Period	No. of Participants
1.	Atma Gnana Yoga	24.3.2003 to 02.4.2003	10
2.	New Faculty HRD	10.4.2003 & 11.4.2003	25
3.	Administrative efficiency – Retraining	25.4.2003 & 26.4.2003	25
4.	Children's programme	21.4.2003 to 25.5.2003	60
5.	Fun with Computers	28.4.2003 to 02.5.2003	40
6.	Children's programme	28.4.2003 to 02.5.2003	60
7.	Children's programme	05.5.2003 to 09.5.2003	60
8.	Fun with computers	2.5.2003 to 09.5.2003	40
9.	Atma Gnana Yoga	16.6.2003 to 25.6.2003	15
10.	Autocad	30.6.2003 to 18.7.2003	30
11.	HRD in IT	23.7.2003	30
12.	New Faculty in HRD	24.7.2003 & 25.7.2003	20
13.	Atma Gnana Yoga	18.7.2003 to 6.8.2003	20
14.	Machine tool maintenance, Industrial Tribology & Bearing maintenance	6.10.2003 to 17.10.2003	2
15.	SCADA & PLC programming at CPT	3.10.2003 – 100 Hrs.	1
16.	Intensive training programme for young faculty by Stella Matutina college of education, Ashok Nagar, was organised under HRD IITM at civil engineering seminar hall. Theories of learning Micro Teaching Setting course objectives and values	17.10.2003 31.10.2003 10.10.2003	
17.	Electro hydraulics PLC and Electropneumatics PLC respectively at T.S. Srinivasan Centre, Vanagaram, Chennai 95	8 days in Oct. & Nov.	2
18.	Atma Gnana Yoga Training Program	3.10.2003 to 12.11.2003	18
19.	Personality Development for the Superintendents & Accountants	7.11.2003 & 08.11.2003	20
20.	"Sharpening Store Keeping Skills" for 20 storekeepers	7.11.2003 & 08.11.2003	20
21.	One day training programme for the store attendants of our Institute	28.11.2003	30
22.	Computer Training Programme for the Technical Assistants, Sr. Technical Assistants and Scientific Officers of Chemistry Department & SAIF (Computer Centre of IITM)	15.11.2003 to 22.11.2003	20
23.	"Electro Pneumatics Course" by M.s. T.S. Srinivasan Centre for Vocational & Advanced Training, Chennai	10.11.2003 to 14.11.2003	1
24.	PLC SCADA Programming and Practice conducted by Central Polytechnic, Chennai – 113	100 Hrs.	1
25.	Two technical assistants and two mechanics of the Central Electronic Centre were sent for training to ETDC, Bangalore	13.11.2003 & 14.11.2003 12.11.2003 to 14.11.2003	4
26.	Office Efficiency Programme for the Secretaries . Assistants	19.12.2003 & 20.12.2003	20
27.	Pre-retirement Counselling for Group D employees	21.12.2003	50
28.	Pre-retirement Counselling for Group B & C employees	22.12.2003	80

29.	Secretaries . Assistants Computer Centre IITM Electronics Class Room	19.12.2003 to 20.12.2003	20
30.	Atma Gnana Yoga Classes	27.1.2004 to 4.2.2004	37
31.	Training Programme for Group D employees	29.1.2004	45
32.	Good Auditing Practics, connected with ISO 9000-2000 conducted by Qualify Council of India	4.2.2004	1
33.	Diploma course in Refrigeration and Airconditioning at SISI	One year	1

#### 2.4.2 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. In 2003-2004 , 20 staff members were offered this course. As on 31.03.2004, 952 staff members were offered this course .

#### 2.4.3 School Fee Concession :

Institute reimbursed fees paid by staff members for their childrens' education as per Government of India norms . During the period under report 91 staff members were benefited.

#### 2.4.4 Transport Facilities to Children of the Staff:

Institute provides concessional fare to the children of the staff members to attend schools on the Campus. In the year 2003-2004, 468 children were benefitted.

#### 2.4.5 Advances:

During the period under-report a sum of Rs. 63.56 lakhs was sanctioned for the following:

S.No.	Advance	No. of Employees	Amount sanctioned (in Rs.)
1.	House Building Advance	5	32,93,750
2.	Car Advance	2	2,78,200
3.	Two Wheeler Advance	37	8,51,346
4.	Personal Computer Advance	28	12,76,154
5.	Cycle Advance	3	4,500
6.	Festival Advance	435	6,52,500
<b>Total</b>			<b>63,56,450</b>

#### 2.4.6 Meetings of the Authorities:

Board of Governors	Four meetings were held on, 21.05.2003, 25.07.2003, 17.11.2003 and 07.02.2004
Finance Committee	One meeting was held on 07.2.2004
Buildings & Works Committee	Three meetings were held on 22.4.2003, 02.7.2003 and 3.2.2004
Senate	Six meetings were held on , 09.06.2003, 21.07.2003, 22.10.2003, 21.01.2004 and 25.02.2004.

#### 2.5 List of faculty members and officers in the academic and general administration:

##### (i) Academic Administration:

DIRECTOR

Prof. M.S. Ananth

Deans:

Academic Courses : Dr. K. Elango

Academic Research : Dr. S. Narayanan



Administration	:	Dr. G. Subramanian (upto 21.1.2004) Dr. S.K. Seshadri (from 22.1.2004)
Industrial Consultancy & Sponsored Research	:	Dr. V. Kalayaraman
Students	:	Dr. S.S. Gokhale (upto 26.6.2003) Dr. V. Kalyanaraman (upto 24.7.2003) Dr. V.G. Idichandy (from 25.7.2003)
Planning	:	Dr. S.V. Raghavan
<b>Heads of Departments:</b>		
Aerospace Engg.	:	Dr. S.Santhakumar (upto 25.2.2004) Dr. Job Kurian (from 26.2.2004)
Applied Mechanics	:	Dr. J.Raamachandran (upto 30.3.2004) Dr. S. Radhakrishnan (from 31.3.2004)
Chemical Engg.	:	Dr. M.Chidambaram (upto 9.10.2003) Dr. A.R. Balakrishnan (from 10.10.2003)
Chemistry	:	Dr. B.Viswanathan (upto 31.8.2003) Dr. S. Vancheesan (from 1.9.2003)
Civil Engg.	:	Dr. M.S.Mathews (upto 31.10.2003) Dr. B.S. Thandaveswara (from 1.11.2003)
Computer Sci.& Engg.	:	Dr. S.Raman
Electrical Engg.	:	Dr. C.Venkateshaiah
Humanities & Soc.Sci.	:	: R Dr. R.N. Anantharaman
Mathematics	:	Dr. S. Kalpakam
Mechanical Engg.	:	Dr. V. Ganesan (upto 5.10.2003) Dr. S. Srinivasa Murthy (from 6.10.2003)
Metallurgical & Materials Engg.	:	Dr. K. Prasad Rao
Ocean Engg.	:	Dr. V.G. Idichandy (upto 31.8.2003) Dr. V. Sundar (from 1.9.2003)
Physics	:	Dr.A. Subrahmanyam
Bio-Technology	:	Dr. Guhan Jayaraman (from 25.2.2004)

**Heads of Research Centres:**

Composite Technology Centre	:	Dr. S.K. Malhotra
Materials Sciences Research Centre	:	Dr. S. Vancheesan
Regional Sophisticated Instrumentation Centre	:	Dr. S. Sankararaman

**Head of Special Facilities for interaction with Other Institutions:**

Centre for Industrial Consultancy & Sponsored Research	:	Dr.V. Kalyanaraman
Centre for Continuing Education	:	Dr. K.Krishnaiah
Central Electronics Centre	:	Dr. M. Kumaravel
Computer Centre Chairman	:	Dr. S.Srinivasan (upto 05.01.2004) Dr. K.Srinivasan (from 06.01.2004)
Vice-Chairman	:	Dr. K. Srinivasan (upto 05.01.2004) Dr. Ravinder David Koil Pillai (from 6.1.2004)

**(ii) Central Administration**

Director	:	Prof. M.S. Ananth
Officer on Special Duty	:	Dr. A. Swamidurai (upto 31.5.2003 FN)
Registrar	:	Dr. Usha Titus, IAS (from 31.5.2003 AN)

**Deputy Registrars**

Academic	:	Dr. T. Suryakumar
Administration	:	Dr. K. Panchalan
Finance & Accounts	:	J. Rammohan
Stores & Purchase	:	A. Thirunavukkarasu
Training & Placement	:	A.K. Pattabiraman (upto 31.12.2003)
Internal Audit Officer	:	R. Esakkimuthu

**Assistant Registrar**

Stores & Purchase	:	A.V. Sudarsanam S. Sugavanam (from 1.12.2003)
Finance & Accounts	:	S. Mahalingam

Administration	:	S. Sundaravinayagam (from 1.12.2003) D. Ravi (from 1.12.2003)
IC & SR	:	B. Ramasamy G. Ravichandran
Hostels	:	U.J Suresh
Academic	:	B. Nagarajan
Hospital	:	M. Kuppan (upto 30.6.2003) K. Unnikrishnan (from 15.10.2003)
Training & Placement	:	Prema Chakrapani (from 1.12.2003)
Chief Security Officer	:	K. Rajendran
Security Officer (SS)	:	G. Selvamani
Secretary (SG) to Director	:	G. Natarajan
<b>Head of Central Services, Facilities and Section</b>		
Central Library	:	Dr. Harish Chandra
Chairman, Council of Wardens	:	Dr. SP. Subramanian
Chief Medical Officer (Incharge)	:	Dr. N.A. Jayavelan
Air-conditioning Unit	:	Dr. G. Venkatratnam
Central Gas Supplies Unit	:	Dr. R.P. Viswanath
Central Glass Blowing Section	:	Dr. S. Sankararaman (upto 10.2.2004) Dr. R.P. Viswanath (from 11.2.2004)
Central Photographic Section	:	Dr. B. Ramamoorthy
Central Workshop	:	N.L.N.N. Kumar
National Service Scheme	:	Dr. Susy Varughese (upto 20.5.2003) Dr. B. Subramanian (from 21.5.2003)
Advisor, Sports	:	Dr. T.K. Varadarajan
Advisor, Cultural	:	Dr. L. Vijayaraghavan
Foreign & Weaker Section Students	:	Dr. S. Mohan
Vigilance	:	Dr. V.G. Idichandy (upto 26.8.2003) Dr. M. Govardhan (from 27.8.2003)

Placement & Training	:	Dr. S. Narasimha Rao (upto 30.9.2003) Dr. T.T. Narendran (from 1.10.2003)
Guidance & Counselling Unit	:	Dr. A. Mani
President (Alumini Association)	:	Dr. G. Sundararajan
<b>Engineering Unit</b>		
Chairman , Estate & Works Committee	:	Dr. C.P. Vendhan (upto 24.4.2003) Dr. R. Sundaravadivelu (from 25.4.2003)
Superintending Engineer	:	C. Ganesan
Sr, Executive Engineers	:	Sasank Sekar Sarma (from 8.12.2003) C.R. Harish (from 17.3.2004)
Assistant Executive Engineers	:	F. John De Britto V. Seenivasan K. Dharmaraj M. Ramachandran K. Viswanath L. Venkatarakan T. Radhakrishnan M. Murali Prakash
Public Health Officer	:	V. Veerasamy

### 3. ACADEMIC PROGRAMMES AND AWARD OF DEGREES

The Institute offered Ph.D. programme in 13 departments including one Integrated Ph.D. programme in Chemistry department, M.S. programme in 10 departments, M.Tech programme in 30 streams/ specialisations, M.Sc. programme in 3 branches, B.Tech programme in 10 branches, Dual degree (B.Tech and M.Tech) programme in 13 branches and M.B.A. programme besides a preparatory course for SC/ST students during the year under report.

#### 3.1 Admissions 2003-04:

Candidates for admission to B.Tech., Dual Degree and M.Tech. programmes were selected through JEE and based on GATE score respectively. Quite a few candidates were also selected for M.Tech. programme under Sponsored, Q.I.P. and User Oriented programme schemes through interview and/or written test. Selection for Ph.D. and M.S. programmes was done through test/interview. For M.Sc. branches of Mathematics and Physics, selection was made through a written test. For M.Sc. Chemistry branch, selection was made through a common test conducted jointly by IITB, IITK and IITG. This Institute was the nodal Institute for this test. For M.B.A. programme selection was made through JMET and interview.

The number of students and scholars admitted to various programmes both in July 2003 and in January 2004 are given below:

TABLE 1 – Fresh Admission

Sl. No.	Department	B.Tech	Dual Degree	M.Sc.	M.Tech	M.B.A.	M.S.	Ph.D.	Total
1.	Aerospace Engg.	25	6	-	15	-	6	4	56
2.	Applied Mechanics	-	-	-	33	-	23	14	70
3.	Chemical Engg.	44 37*	12 8*	-	33	-	5	11	150
4.	Chemistry	-	-	23	-	-	-	33	56
5.	Civil Engg.	48	11	-	77	-	18	19	173
6.	Comp. Sc. & Engg.	27	8	-	55	-	25	7	122
7.	Electrical Engg.	72	32	-	94	-	35	20	253
8.	Hum. & Soc. Sci.	-	-	-	-	38	5	24	67
9.	Mathematics	-	-	29	8	-	-	12	49
10.	Mechanical Engg.	82	25	-	109	-	20	54	290
11.	Met. & Mat. Engg.	34	6	-	17	-	12	14	83
12.	Ocean Engg.	20	5	-	12	-	13	10	60
13.	Physics	9*	-	32	5	-	-	18	64
	<b>Total</b>	<b>398</b>	<b>113</b>	<b>84</b>	<b>458</b>	<b>38</b>	<b>162</b>	<b>240</b>	<b>1493</b>

\* Biotechnology; \*Engineering Physics

Total no. of students admitted during the year includes the following :

Foreign Nationals	8	Q.I.P.	M.Tech	35	56
			Ph.D.	21	
Scheduled Castes	138	Sponsored	M.Tech.	31	32
			M.S.	1	
Scheduled Tribes	49	Project	M.S.	17	41
			Ph.D.	24	
Physically Handicapped	9	External Registration	M.S.	11	40
Women Students	217		Ph.D.	29	
Defence Officers (M.Tech)	30	User-oriented Programme (M.Tech)			56

In addition to the above, 38 SC and 13 ST students joined Preparatory Course.

#### 3.2 Students/Scholars Enrolment:

The total numbers of students on roll in various programmes of the Institute in the academic year 2003-04 are given below:

TABLE 2 - Students on roll

Sl. No.	Department	B.Tech	Dual Degree	M.Sc.	M.Tech.	M.B.A.	M.S.	Ph.D.	Total
1.	Aerospace Engg.	100	29	-	24	-	20	12	185
2.	Applied Mechanics	-	-	-	66	-	46	50	162
3.	Chemical Engg.	164 72*	54 15*	-	56	-	12	41	327 87
4.	Chemistry	0	0	44	0	-	-	126	170
5.	Civil Engg.	168	48	-	155	-	45	71	487

Sl. No.	Department	B.Tech	Dual Degree	M.Sc.	M.Tech.	M.B.A.	M.S.	Ph.D.	Total
6.	Comp. Sc.& Engg.	121	36	-	124	-	86	38	405
7.	Electrical Engg.	339	133	-	151	-	83	45	751
8.	Hum. & Soc. Sc.	-	-	-	-	77	15	59	151
9.	Mathematics	-	-	56	15	-	-	43	114
10.	Mechanical Engg.	335	107	-	189	-	64	139	834
11.	Met. & Mat. Engg.	107	26	-	30	-	28	54	245
12.	Ocean Engg.	77	22	-	18	-	35	32	184
13.	Physics	22+	0	67	12	-	-	71	172
<b>Total</b>		<b>1505</b>	<b>470</b>	<b>167</b>	<b>840</b>	<b>77</b>	<b>434</b>	<b>781</b>	<b>4274</b>

\* Biotechnology; \* Engineering Physics

The above total includes the following:

Foreign Nationals	14	QIP	M.Tech	58	144
			Ph.D.	86	
DASA (Indian origin)	49	Sponsored	M.Tech	59	66
			M.S.	7	
Scheduled Castes	351	Project	M.S.	67	161
			Ph.D.	94	
Scheduled Tribes	98	External Registration	M.S.	15	90
			Ph.D.	75	
Physically Handicapped	16	Registration Kept Alive	M.S.	53	68
			Ph.D.	15	
Women students	457	User-oriented Programme (M.Tech)			127
Defence Officers (M.Tech)	66	Part Time Programme (M.Tech)			15

SC/ST Students on roll as on 31.3.2004

Sl.No	Programme	SC	ST
1.	B.Tech	167	42
2.	Dual Degree	34	9
3.	M.Sc.	6	-
4.	M.Tech	11	6
5.	M.B.A	87	41
6.	M.S	9	-
7.	Ph.D	37	-
<b>Total</b>		<b>351</b>	<b>98</b>

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

TABLE 3 - B.Tech students on roll

Sl. No.	Branch	2003	2002	2001	2000 & Others	Total
1.	Aerospace Engineering	23	26	26	25	100
2.	Biotechnology	38	34	-	-	72
3.	Chemical Engineering	40	46	41	37	164
4.	Civil Engineering	44	37	45	42	168
5.	Computer Sc. & Engg.	30	33	29	29	121
6.	Electrical Engineering	76	80	92	91	339
7.	Engineering Physics	12	10	-	-	22
8.	Mechanical Engineering	85	87	88	75	335
9.	Met. & Mat. Engineering	31	25	25	26	107
10.	Naval Architecture	18	19	20	20	77
<b>Total</b>		<b>397</b>	<b>397</b>	<b>366</b>	<b>345</b>	<b>1505</b>

TABLE 4 - Dual Degree (B.Tech & M.Tech) students on roll

Sl. No.	Branch	2003	2002	2001	2000	1999 & others	Total
1.	Aerospace Engineering	6	6	6	5	6	29
2.	Biotechnology	9	6	-	-	-	15
3.	Chemical Engineering	10	10	10	10	14	54
4.	Infrastructural Civil Engg.	10	8	10	10	10	48
5.	Computer Science & Engg.	9	7	7	6	7	36
6.	Micro Elec. & VLSI Design	12	10	10	11	11	54

Sl. No.	Branch	2003	2002	2001	2000	1999 & others	Total
7.	Communication Engg.	13	11	10	12	14	60
8.	Power Sys. & Power Electronics	9	10	-	-	-	19
9.	Energy Technology	8	7	6	9	5	35
10.	Intelligent Manufacturing	9	9	7	5	8	38
11.	Product Design	8	9	6	5	6	34
12.	Metallurgical & Materials Engg.	5	7	5	4	5	26
13.	Naval Arch. & Ocean Engg.	4	4	6	4	4	22
<b>Total</b>		<b>112</b>	<b>104</b>	<b>83</b>	<b>81</b>	<b>90</b>	<b>470</b>

TABLE 5 - M.Sc students on roll

Sl. No.	Branch	2003	2002 & others	Total
1.	Chemistry	23	21	44
2.	Mathematics	29	27	56
3.	Physics	32	35	67
<b>Total</b>		<b>84</b>	<b>83</b>	<b>167</b>

TABLE 6 - M.Tech students on roll

Sl. No.	Department \ Discipline \ Batch	2003	2002 & others	Total
1.	Aerospace Engineering	13	11	24
2.	Applied Mechanics:			
	AM 1 - Engineering Mechanics	7	7	14
	AM 2 - Industrial Tribology	7	6	13
	AM 3 - Maintenance Engg & Management	7	5	12
	AM 4 - Bio-medical Engineering	12	15	27
3.	CH 1 - Chemical Engineering	33	23	56
4.	Civil Engineering:			
	CE 1 - Building Technology	8	13	21
	CE 2 - Environmental Engineering	6	2	8
	CE 3 - Geotechnical Engineering	4	6	10
	CE 4 - Hydraulic & Water Resource Engg.	2	5	7
	CE 5 - Structural Engineering	13	17	30
	CE 6 - Transportation Engineering	8	10	18
5.	CE 7 - Construction Technology & Mgmt.	20	18	38
6.	CE 8 - Computational Engineering	12	11	23
7.	CS 1 - Computer Science & Engineering	49	48	97
8.	CS 2 - Information Technology	-	9	9
9.	CS 3 - Software Engineering	6	12	18
10.	Electrical Engineering:			
	EE 1 - Communication Systems	24	14	38
	EE 2 - Energy Systems Engineering	10	10	20
	EE 3 - Micro Electronics	28	17	45
	EE 4 - Control & Instrumentation Systems	18	14	32
11.	EE 5 - Digital Signal Processing	7	9	16
12.	Mathematics:			
	Industrial Maths & Scientific Computing	8	7	15
13.	Mechanical Engineering:			
	ME 1 - Thermal Engineering	40	30	70
	ME 2 - Design	33	26	59
	ME 3 - Manufacturing Engineering	20	17	37
14.	ME 4 - Automotive Engine Technology	11	12	23
15.	MM - Metallurgical & Materials Engg.	15	15	30
16.	OE - Ocean Engineering	12	6	18
17.	Physics:			
	PH - Solid State Technology	5	7	12
<b>Total</b>		<b>438</b>	<b>402</b>	<b>840</b>

TABLE 7 - M.B.A. students on roll

Sl. No.	Branch	2003	2002 & others	Total
1.	M.B.A	38	39	77

In addition to the above, CSIR Research Associates and 51 Preparatory Course students were on the rolls.

### 3.3 Courses Offered:

In the academic year 2003-04, 1182 courses were offered of which 570 courses in July–Nov. 2003 and 612 courses in Jan–May 2004. The Department-wise details of the courses offered are given below:

TABLE 8 – No. of Courses offered

Sl. No.	Department	No. of courses offered in July – Nov 2003				No. of courses offered in Jan – May 2004			
		Core	Elect.	Lab.	Total	Core	Elect.	Lab	Total
1	Aerospace Engineering	16	7	4	27	15	6	4	25
2	Applied Mechanics	24	11	6	41	15	14	1	30
3	Chemical Engineering	19	12	3	34	25	20	4	49
4	Chemistry	18	-	2	20	14	9	3	26
5	Civil Engineering	41	28	7	76	44	31	9	84
6	Computer Sc. & Engg.	19	11	9	39	18	17	4	39
7	Electrical Engineering	45	21	11	77	31	33	9	73
8	Hum. & Soc. Science	12	10	3	25	13	18	-	31
9	Mathematics	18	28	1	47	15	31	1	47
10	Mechanical Engineering	59	23	6	88	51	34	8	93
11	Met. & Mat. Engineering	15	16	7	38	14	13	7	34
12	Ocean Engineering	20	8	3	31	24	12	2	38
13	Physics	14	7	3	24	17	16	5	38
14	COMPTECH	1	1	1	3	-	4	1	5
	<b>Total</b>	<b>321</b>	<b>183</b>	<b>66</b>	<b>570</b>	<b>296</b>	<b>258</b>	<b>58</b>	<b>612</b>

### 3.4 Convocation:

The 40<sup>th</sup> Convocation was held on 09.08.2003. Prof. Dr. Murlī Manohar Joshi, Hon'ble Union Minister for Human Resource Development delivered the Convocation address. 1146 candidates were awarded various degrees. 822 candidates received degrees in person. The department-wise details of degrees awarded are given below:

TABLE 9 – Degrees awarded

Sl. No.	Department	B.Tech.	Dual Degree	M.B.A.	M.Sc.	M.Tech.	M.S.	Ph.D.	Total
1.	Aerospace Engineering	22	3	-	-	13	10	2	50
2.	Applied Mechanics	-	-	-	-	27	14	4	45
3.	Chemical Engineering	46	10	-	-	23	6	6	91
4.	Chemistry	-	-	-	24	-	-	19	43
5.	Civil Engineering	38	9	-	-	95	11	5	158
6.	Computer Sc. & Engg.	30	6	-	-	44	13	3	96
7.	Electrical Engineering	81	16	-	-	71	19	5	192
8.	Humanities & Soc. Sc.	-	-	40	-	-	5	3	48
9.	Mathematics	-	-	-	32	9	-	5	46
10.	Mechanical Engineering	95	14	-	-	107	13	10	239
11.	Metallurgical & Materials Engg	26	4	-	-	14	6	2	52
12.	Ocean Engineering	17	4	-	-	9	12	2	44
13.	Physics	-	-	-	30	5	-	7	42
	<b>Total</b>	<b>355</b>	<b>66</b>	<b>40</b>	<b>86</b>	<b>417</b>	<b>109</b>	<b>73</b>	<b>1146</b>

With this Convocation, the total number of degrees awarded so far by the Institute is 26,107, the details of which are given below:

S.No.	Programme	No.
1	Ph.D.	2426
2	M.S.	1700
3	M.Tech	8754
4	M.Sc.	1960
5	M.B.A.	40
6	Dual Degree	66
7	B.Tech	10896
8	B.Sc(Tech)	20
9	DIIT	245



### 3.5 Award of Prizes to the students:

#### 3.5.1 Convocation Prizes:

The following are the details of Prizes awarded to the students at the 40<sup>th</sup> Convocation:

- President of India Prize .. Vyas Sekar, B.Tech Computer Science & Engg.
- Governor's Prize .. S. Sriram, B.Tech Civil Engineering

#### Other Prizes:

Sl.No.	Donor	Department	Name of student
<b>Doctor of Philosophy – Ph.D.</b>			
1.	Sudharshan-Bhat-Memorial Prize	Metallurgical Engg.	M Sireesha
2.	Prof. C N Pillai Prize	Chemistry	N Sathyamurthy
3.	Prof Langmuir Prize	Chemistry	Raghuveer Vadari
4.	Prof A L Lashkar Prize	Physics	M Pattabiraman
<b>Master of Technology – M.Tech.</b>			
1.	Air India Prize	Aerospace Engineering	Laxmikant Merchant
2.	Indira Sivasailam Merit Prize	Engg. Mechanics	Ramji M
3.	Prof B V A Rao Endowment Prize	Engg. Mechanics	Ramji M
4.	Usha Kothandaraman Memorial Prize	Engg. Mechanics	Ramji M
5.	Institute Merit Prize	Industrial Tribology	Jasvir Singh
6.	Institute Merit Prize	Maintenance Engg. & Management	S Ganesan
7.	Institute Merit Prize	Biomedical Engineering	Shah Saurin Rameshchandra
8.	Dr.K.Subba Raju Memorial Prize	Chemical Engineering	Modi Prashanth Pravinchandra
9.	Mico-Bosch Prize	Chemical Engineering	Amit Patel
10.	Valli Anantharamakrishnan Merit Prize	Civil Engineering	Praveen Nagarajan
11.	K Devarajan Memorial Prize	Civil Engineering	Anantha Naga Sekhar B
12.	L & T Endowment Prize	Construction Tech. & Management	Amit Giriraj Sharma
13.	Institute Merit Prize	Computational Engg.	Jyotis K Sardar
14.	CMC Prize	Computer Sc. & Engg.	V R Devanathan
15.	Prof. H.N.Mahabala Endowment Prize	Computer Sc. & Engg.	Pola Sudhir Shankar
16.	Siemens Prize	Electrical Engineering	A M Subhash Guptha Balabhadra
17.	Prof. Achim Bopp Endowment Prize	Electrical Engineering	Saritha B
18.	Prof. Helmut Neunzert Endowment Prize	Industrial Mathematics & Scientific Computing	Suresh Kumar Nadupuri
19.	Prof. B. Sengupto Prize	Mechanical Engineering	Shaik Ismail
20.	Dr. S.Vaidyanathan Memorial Prize	Mechanical Engineering	Lopamudra Mishra
21.	Giri Brothers Prize	Mechanical Engineering	Govindan P
22.	S. Anantharamakrishnan Merit Prize	Mechanical Engineering	Lopamudra Mishra Ravindra Shrinivas Ravva (Joint winners)
23.	Prof Ramamohana Rao Memorial Prize	Mechanical Engineering	Shaik Ismail
24.	Delphi-TVS Diesel Systems Ltd. Prize	Automotive Engine Technology	Amol Arun Relkar
25.	Sudarshan Bhat Memorial Prize	Metallurgical Engg.	Akurati Kranthi Kumar
26.	American Bureau of Shipping Prize	Ocean Engineering	Gangadhara Tilak Dulam
27.	Institute Merit Prize	Solid State Technology	Dibakar Roy Chowdhury

Sl.No.	Donor	Department	Name of student
<b>Master of Science – M.Sc.</b>			
1.	Dr. S R Ramadas 60th Birthday Commemoration Award	Chemistry	Nandini Ananth
2.	Ratna Rao Memorial Prize	Chemistry	Nandini Ananth
3.	Mira Paul Memorial Prize	Mathematics	Gibin George P
4.	Prof. Chilukury Ramasastry Memorial Prize	Physics	Harini B
<b>Master of Business Administration - M.B.A.</b>			
1.	Coka Parthasarathy Prize	Humanities & Social Sciences	Ramaswami Mukund
2.	K.V. Arunkumar Memorial Prize	Humanities & Social Sciences	Rohit
<b>Dual Degree - B.Tech. &amp; M.Tech.</b>			
1.	Institute Merit Prize	Aerospace Engineering	Balasubrahmanyam Pesala
2.	Institute Merit Prize	} Chemical Engineering	Lakshman Pernenkil
3.	C A Sastry Endowment Prize		
4.	B Ravichandran Memorial Prize		
5.	Institute Merit Prize		
6.	Alumni Association Prize	Civil Engineering	Siddharth Savadatti
		Computer Sc. & Engg.	N Srinivas
7.	Philips India Prize	Electrical Engineering	R Sharadh
8.	Prof G V N Rayudu Memorial Prize	Mechanical Engineering	Senthil-Kumar.Eswaran
9.	S Anantharamakrishnan Memorial Prize	Metallurgical Engg.	S Parasuraman
<b>Bachelor of Technology - B.Tech.</b>			
1.	President of India Prize	} Computer Sc. & Engg.	Vyas Sekar
2.	Bharat Ratna M.Visveswaraya Memorial Prize		
3.	B.Ravichandran Memorial Prize		
4.	Governor's Prize	Civil Engineering	S Sriram
5.	Dr.Shanker Dayal Sharma (Former President of India) Prize	Naval Architecture & Ocean Engineering	Akshay Jain
6.	HAL Prize	Aerospace Engineering	Tiyyagura Sundeep
7.	Reliance Heat Transfer (P) Ltd. Prize	Chemical Engineering	Sreeja Gopal
8.	Larsen & Toubro ECC Endowment Medal	Civil Engineering	Ashish Gupta
9.	Motorola Prize	Electrical Engineering	Ajit Narayanan
10.	Siemens Prize	Electrical Engineering	Jay Kumar Sundararajan
11.	Prof. Achim Bopp Endowment Prize	Electrical Engineering	Ankush Goel Anoop V (Joint winners)
12.	Dr. Ing. Dieter Kind Prize	Electrical Engineering	V Vijay Bhaskar
13.	Banco Foundation Prize	Mechanical Engineering	Pavithra Harsha
14.	Sivasailam Merit Prize	Mechanical Engineering	V Krishna Abhijit Murigeppa Hullatti (Joint winners)
15.	Vaidy Krishnan Memorial Prize	Mechanical Engineering	Sanketi Pannag Raghunath
16.	Bhagyalakshmi and Krishna Ayengar Award	Mechanical Engineering	Siddharth Shastri Y Vamsee Krishna (Joint Winners)
17.	Dr. Dhandapani Memorial Prize	Mechanical Engineering	Bhavani Shankar S
18.	American Bureau of Shipping Prize	Naval Architecture & Ocean Engineering	C Karthick

### 3.5.2 Institute Day Prizes:

On the basis of performance during the academic year 2003-04, the following students were awarded Merit Prizes on the Institute day held on 21.03.2003:

Sl.No.	Donor	Roll No.	Name of student
<b>I. Institute Merit Prizes:</b>			
<b>B.Tech. (1<sup>st</sup> &amp; 2<sup>nd</sup> Semesters)</b> (with a Silver Medal)			
1.	First Prize	CS01B012	John P John
2.	Second Prize	CS01B006	Arvind Thiagarajan
<b>B.Tech / Dual Degree (3<sup>rd</sup> &amp; 4<sup>th</sup> Semesters)</b> (with a Silver Medal)			
3.	Aerospace Engineering	AE00015	Sachin Premasuthan
4.	Chemical Engineering	CH00076	Ravikanth A V N
5.	Civil Engineering	CE00083	Anita Rao
6.	Sri Biswajit Sain Endowment Prize (Cash prize of Rs.2000/- with a Silver Medal)	CS00152	V Mythili Ranganath
7.	Electrical Engineering	EE00203	Krishna Prasanna J
8.	Mechanical Engineering	ME00299	Hemanth P
9.	Metallurgical Engineering	MT00377	R Arvind Subramaniam
10.	Naval Architecture & Ocean Engg.	NA00428	Bhagatwala Ankit Vijay
<b>B.Tech/Dual Degree (5<sup>th</sup> &amp; 6<sup>th</sup> Semesters)</b> (with a Silver Medal)			
11.	Aerospace Engineering	AE99037	Sridharan D
12.	Chemical Engineering	CH99095	Sreeja Gopal
13.	Civil Engineering	CE99115	Ashish Gupta
14.	Computer Science & Engineering	CS99212	Archana S
15.	Sri Ramasarma V Kolluri Memorial Prize	EE99252	Jay Kumar S
16.	Mechanical Engineering	ME99425	G Vikram
		ME99426	M Vikram [Tie]
17.	Metallurgical Engineering	MT99460	Bhavani Shankar S
18.	Naval Architecture & Ocean Engg.	NA99505	C Karthick
<b>II. Donors Prizes:</b>			
<b>B.Tech (First Four Semesters)</b> (with a Silver Medal)			
19.	Sri Raghavendra Memorial Prize	ME00349	Venkata Siva Prasad
<b>B.Tech (First Six Semesters)</b>			
20.	Dr. S. Chandrasekharan Memorial Prize (Cash prize of Rs.1000/- with a Silver Medal)	ME99383	Pavithra Harsha
<b>B.Tech (3<sup>rd</sup> &amp; 4<sup>th</sup> Semesters)</b> (with a Silver Medal)			
21.	Rajalakshmi Krishnamurthy English Prize	CS00160	Shivaram K
		ME00283	Apurva G

Sl.No.	Donor	Roll No.	Name of student
<b>B.Tech (Best Project)</b>			
22.	Class NK-100 Prize First Prize (Cash prize of Rs.2000/- with a Silver Medal)	NA95336	Srihari R
23.	Class NK-100 Prize Second Prize (each) (Cash prize of Rs.1000/- with a Silver Medal)	NA95331 NA95328	M Raghavendran Nishu V Kurup [Joint winners]
24.	Class NK-100 Prize First Prize (Cash prize of Rs.2000/- with a Silver Medal)	NA96343	K R Rajiv Srivatsa
25.	Class NK-100 Prize Second Prize (Cash prize of Rs.1000/- with a Silver Medal)	NA96334	Jayanth Krishnan
26.	Class NK-100 Prize First Prize (Cash prize of Rs.2000/- with a Silver Medal)	NA97472	G Arathi Kamath
27.	Class NK-100 Prize Second Prize (each) (Cash prize of Rs.1000/- with a Silver Medal)	NA97479 NA97476	Manoj Pandey Harigovind G [Joint winners]
28.	Class NK-100 Prize First Prize (Cash prize of Rs.2000/- with a Silver Medal)	NA98466	V Balachandran
29.	Class NK-100 Prize Second Prize (Cash prize of Rs.1000/- with a Silver Medal)	NA98468	Harish M
<b>Dual Degree (7<sup>th</sup> &amp; 8<sup>th</sup> Semesters)</b> (with a Silver Medal)			
30.	Aerospace Engineering	AE98029	Balasubrahmanyam Pesala
31.	Civil Engineering	CE98150	Siddharth Savadatti
32.	Chemical Engineering	CH98084	Lakshman Pernenkil
33.	Computer Science & Engineering	CS98184	N Srinivas
34.	Communication Engineering	EE98205	Ajit Narayanan
35.	Microelectronics & VLSI Design	EE98300	Shashank Dabral
36.	Intelligent Manufacturing	ME98415	Veera Raghavan S
37.	Product Design	ME98411	K Nagarajan
38.	Energy Technology	ME98414	Tarun Kumar Khurana
39.	-Metallurgical Engineering	MT98449	S Parasuraman
40.	Naval Architecture & Ocean Engg.	NA98482	Patrick Joy
<b>M.Sc (1<sup>st</sup> &amp; 2<sup>nd</sup> Semesters)</b>			
41.	Chilukuri Ramasastry Memorial -Prize (Cash prize of Rs.1500/-)	PH01C007	Jegannath K R
42.	R Padmanabhan Memorial Prize (Cash prize of Rs.1,500/-)	CY01C006	O Divya
<b>M.Tech (1<sup>st</sup> &amp; 2<sup>nd</sup> Semesters)</b>			
43.	Prof. N. Venkatarayulu Memorial Prize (Cash prize of Rs.1000/- with a Silver Medal)	ME01M017	Naik Pradeep Suresh
44.	48 <sup>th</sup> Pharmaceutical Congress Prize (with a Silver Medal)	CH01M016	Ravindrabharathi N
<b>M.Tech (Best Project)</b>			
45.	Prof C.S. Krishnamoorthy Endowment Prize (with a Certificate and a Silver medal)	CE00609	Bharath Reddy D

## 4.1 DEPARTMENT OF AEROSPACE ENGINEERING

### 4.1.1 Introduction:

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

### 4.1.2 Academic Programmes: B.Tech. / M.Tech. / M.S. & Ph.D.

#### Students on Roll:

Programme	I Year	II Year	III Year	IV Year	V Year & others	Total
B.Tech.	23	26	26	21	4	100
Dual Degree	6	6	6	5	6	29
M.Tech.	13	11	-	-	-	24
M.Sc.	-	-	-	-	-	-
M.S.	6	2	4	5	2	19
Ph.D.	4	3	-	1	4	12
<b>Total</b>	<b>52</b>	<b>48</b>	<b>36</b>	<b>32</b>	<b>16</b>	<b>184</b>

#### 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
<b>Conference:</b>				
1.	K. Karthikeyan	M.S.	National Seminar on Nanocomposites (NSNC-2004)	Feb 19-20, 2004 IATES, Bhubaneswar, India
2.	T.P. Mohan	Ph.D.	Proceedings of the 2003 Conference on Nanotechnology ICON-2003	
3.	S. Bindu	Ph.D.	IASAMPE National Conference on Composites and National Seminar on Aerospace Structures (INCCOM-2&XII NASAS)	Sep 5-6, 2003 Bangalore
4.	V. Manikandan	Ph.D.	IASAMPE National Conference on Composites and National Seminar on Aerospace Structures (INCCOM-2&XII NASAS)	Sep. 5-6, 2003 Bangalore
5.	M. Shanmugam	M.Tech.	IASAMPE National Conference on Composites and National Seminar on Aerospace Structures (INCCOM-2&XII NASAS)	Sep 5-6, 2003 Bangalore
<b>Seminar:</b>				
6.	Prabhu Ramachandran	Ph.D.	Talk on Python for Scientific Computing Workshop	Sep 11 <sup>th</sup> and 12 <sup>th</sup> 2003 California Institute of Technology, USA

### 4.1.3. Faculty and their Activities:

#### Faculty:

##### Name and Qualification

##### Major Area of Specialization

#### Professors :

Gokhale S. S., Ph.D. (Univ. of Illinois, USA)  
 Director, NIT Kozhikode  
 Job Kurian, Ph.D., (IIT Madras)  
 Santhakumar S., Ph.D., (IIT Madras)  
 Subramanian G., Ph.D., (IIT Madras)

Tulapurkara E.G., Ph.D., (IIT Madras)  
 Ramakrishna M., Ph.D.,  
 (Univ. of Texas at Arlington)

Aircraft and missile propulsion, computational methods, simulation and optimization, computer aided instructions  
 Gas Dynamics, Combustion, Shock tube flows and measurements  
 Aerodynamics, flight mechanics, instrumentation  
 Structural analysis, finite element and finite difference techniques, experimental moiré interferometry  
 Aerodynamics, Fluid mechanics, turbulent flows, CFD  
 Fluid Mechanics, numerical methods, computer solutions

Name and Qualification	Major Area of Specialization
Sriram P., Ph.D. (Georgia Inst. of Technology)	Structural mechanics, fatigue & fracture, Parallel computing
Bhaskar K., Ph.D., (IIT Madras)	Structural mechanics, Plants & Shells, composite structures
Sujith R.I., Ph.D., (Georgia Inst. of Technology)	Acoustics and combustion Instability Optical Flow Diagnostics
Chakravarthy., S.R. Ph.D., (Georgia Inst. of Technology)	Propulsion, Combustion & Fluid Mechanics
Rajan S.C, M.Tech. (IIT Madras)	Aerodynamics, Theory and Computation of Vortex Dominated Flows
R. Velmurugan., Ph.D. , (IIT Delhi)	Composite Structures Analysis and Design, Impact Mechanics, 3-D Composites

**Short-term Courses/Workshops/Seminar/Symposia/Conferences organized by the faculty members:**

S. No.	Co-ordinators	Title	Period
<b>Symposia:</b>			
1.	Prof. E.G. Tulapurkara Chairman Organizing Committee and other faculty of Department as members	Symposium on current status and future prospects in Aerospace sciences and Aviation	Dec. 4&5, 2003 IIT Madras
<b>Workshop:</b>			
1.	M. Ramakrishna(AE), R. Krishna kumar (ME)	Fourth International Workshop of the Engineering Science group – Mechanics	January 11-15, 2004
<b>Short term Course:</b>			
1.	Prof. S. Santhakumar and Prof. M. S. Shanmugam	HAL Management Training (Technical) Programme	July-Dec.2003
2.	Prof. E.G. Tulapurkara along with Dr. Y.V.S.S. Sanyasi Raju , Mathematics Dept.	CFD and Some other Applications	Feb. 23-28, 2004

**Short-Term Courses /Workshops /Seminars /Symposia /Conferences/ Training attended by the faculty members in Academic Institutions and Public Sector Undertakings:**

Sl. No.	Name of faculty	Title	Period
<b>Symposia</b>			
1.	Prof. E.G. Tulapurkara	Symposium on Advances in Fluid Mechanics, Bangalore	July 24&25, 2003
2.	Prof. E.G. Tulapurkara	30 <sup>th</sup> National conference on Fluid Mechanics & Fluid Power, Surathkal	Dec. 11-13, 2003
3.	Prof. E.G. Tulapurkara	6 <sup>th</sup> CFD symposium on Advances in Applied Aerodynamics & design of Aerospace vehicles	Dec. 15 & 16,2003
4.	Prof. E.G. Tulapurkara	55 <sup>th</sup> AGM of Aero Soc. Of India, Bangalore	Dec. 17 & 18, 2003
5.	Prof. E.G. Tulapurkara	2 <sup>nd</sup> BSME/ASME-conference on Thermal Engineering, Dhaka, Bangladesh	Jan. 2-4, 2004
<b>Training:</b>			
1.	M. Ramakrishna	40 <sup>th</sup> Design Automation conference, Anaheim, USA	June 2 – June 6, 2003

**Special Lectures delivered by the faculty in other Institutions:**

Sl. No.	Name of Faculty	Topic of Lecture	Venue & Date
1.	Prof. S. Santhakumar	Aircraft Technology Fundamentals and Design – 20 Lecturers	VSSC Thiruvananthapuram 23.6.03 to 27.6.03

Sl. No.	Name of Faculty	Topic of Lecture	Venue & Date
2.	Prof. S. Santhakumar	Grid Fins	DRDL-CEP on Aerodynamics Design 27.10.03
3.	Prof. S. Santhakumar	Current Status of Experimental Techniques in Aerodynamics	IIT Madras, AeSI Symposium 5.12.03
4.	Prof. S. Santhakumar	Wave Energy conversion by oscillating water column	SCSVM, Enathur, AICTE-ISTE short term training program 24.1.03
5.	Dr. R. Velmurugan	Composites Technology in Aerospace Applications	Honeywell India Pvt. Ltd., TCE Campus, Madurai Jan 4, 2004
6.	Prof. E.G. Tulapurkara	Introduction of Aircraft Design	VSSC Trivandrum, July 14-18 2003

**Visits Abroad by faculty:**

Sl. No.	Name of Faculty	Country Visited	Date	Purpose of visit
1.	Prof. S. Santhakumar	Japan	4 <sup>th</sup> Oct. 03 to 11 Oct. 03	Presented Conference paper
2.	Prof. E.G. Tulapurkara	Bangladesh	Dec. 30-Jan.05 2004	To attend BSME-ASME International Conference on Thermal Engineering
3.	Dr. S. R. Chakravarthy	Germany	1.12.2003-12.12.2003	To deliver guest lectures on Combustion Acoustics at the Technische Universitat Darmstadt

**Honours and Awards obtained:**

Sl. No.	Name of Faculty	Name of Award	Awarded by	Award for	Date
1.	Prof. S. Santhakumar	Kalpna Chawla Award 2003	Hindustan Group of Institution, Chennai	Excellence in Aerospace Engg.	12.11.03
2.	Dr. S. R. Chakravarthy	Young Engineer Award 2003	Indian National Academy of Engineering	Research	13.12.03

**Books / Monographs authored / co-authored:**

Sl. No.	Name of faculty	Title	Publisher	Author/ Co-author
<b>Books:</b>				
1.	S. R. Chakravarthy	"Current Status and Future Prospects of Aerospace Sciences and Aviation"	Aeronautical Society of India, Chennai Branch	E. G. Tulapurkara (first author)

**Fellowships of Academies and Professional Societies:**

Sl. No.	Name of Faculty	Level	Year of Admission
1.	Prof. S. Santhakumar	Fellow of the Aeronautical Society of India	
2.	Prof. E..G. Tulapurkara	Fellow of the Aeronautical Society of India	1996

#### 4.1.4 Design and Development Activities:

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

Software for the Aerodynamic Analysis for Air breathing Missiles. Finite Element Analysis software has been developed for the analysis of Composite Shells subjected to thermal and mechanical Loads. The software has the provision to estimate the interlaminar stress for the above loading conditions.

#### 4.1.5. Research and Consultancy:

Sponsored Research Projects:

Sl. No.	Title	Period	Funding Agency	Amount (Rs. in lakhs)	Co-ordinators
1.	Vibration control of Nanocomposites, MHRD	2 years	MHRD	17.00	Dr. R. Velmurugan
2.	Low and Medium Velocity Impact & Projectiles on Laminated Plates ARMREB	3 years	ARMREB	14.83	Dr. R. Velmurugan
3.	Numerical Study of Particulate Suspension Flow Through Wavy-walled Channels		CSIR	4.83	Prof. E.G. Tulapurkara & Prof. R. Usha
4.	Large Eddy simulations of flow in channel with built in winglet pair		ARDB	9.23	Prof. E.G. Tulapurkara / Prof. G. Biswas, IIT Kanpur
5.	A Fundamental Approach to Combustor Dynamics: Focus on Flame-Acoustic-Vortex Interactions	2001 June-2003 June	DRDO (ER&IPR)	24.98	Dr. S. R. Chakravarthy (PI)
6.	Laser Induced Fluorescence for Spray Diagnostics	Feb 2002-Jan 2004	ISRO IITM Cell	4.60	Dr. Raghuram N Govardhan
7.	Nonlinear Steepening of Acoustic Waves into Shock Waves in Variable Area Ducts in the Presence of Entropy Gradients	Sep. 2002-Sep. 2004	ISRO IITM Cell	4.85	Dr. S. R. Chakravarthy
8.	Enhancement of Mass Transfer Rates in Chemical Engineering Processes using Acoustic Oscillations	April 2003-March 2005	MHRD	14.00	Dr. S. R. Chakravarthy
9.	Preparation of Status Report on Combustion Research in India	Dec. 2002 – Dec. 2003	DRDO (ER&IPR)	2.24	Dr. S. R. Chakravarthy
10.	Investigation of the Onset of Acoustic Instability in Turbulent Combustion System	April 2003-Sept. 2006	MHRD	10.00	Dr. S. R. Chakravarthy (PI)
11.	A Fundamental Approach to Combustor Dynamics Focus on Flame-Acoustic Vortex Interactions	July 2001-August 2003	DRDO	24.98	S.R. Chakravarthy R.I. Sujith
12.	Formulation of Ammonium Perchlorate Propellants with Plateau/Bi-plateau Burning Rate Trends	Feb 2001-Feb 2004	ARMREB	9.80	S.R. Chakravarthy R.I. Sujith
13.	Investigation of the Onset of Acoustic Instability in Turbulent Combustion Systems	Apr 2003-Sep 2006	MHRD	10.00	S.R. Chakravarthy R.I. Sujith
14.	Characterization of Nano-Aluminium Powder for Combustion in Solid Propellants	Jan 2004-Jan 2006	DRDO	9.48	S.R. Chakravarthy R. Sarathi C. Venkateseshiah



Sl. No.	Title	Period	Funding Agency	Amount (Rs. in lakhs)	Co-ordinators
15.	Investigation of the Onset of Acoustic Instability in Turbulent Combustion Systems	Mar 2004- Mar 2006	DFG	32.80	S.R. Chakravarthy R.I. Sujith
16.	Facilities for Advanced Optical Diagnostics and Digital Image Processing of Fluid Flow and Combustion	Mar 2004- Mar 2006	MHRD	17.00	S.R. Chakravarthy

**Industrial Consultancy Projects:**

S. No.	Name of the Faculty	Title	Industry	Amount (Rs. In lakhs)
1.	Dr. R. Velmurugan	Analysis of Sample pots made of Sawdust and Stach	Progreen Products Pvt. Ltd.	0.6
2.	Prof. E.G. Tulapurkara / Prof. T. Sundararajan	Modelling of flow through annular diffuser and volute exhaust	GTRE Bangalore	4.96

**RBIC Projects:**

Sl. No.	Name of Faculty	Title	Industry	Amount (Rs.in lakhs)
1.	Prof.S. Santhakumar Sri. S.C. Rajan	Aerodynamic Analysis and Design of Grid fins	DRDL Hyderabad	14.76
2.	Prof.S. Santhakumar Sri S.C. Rajan	Development of software for Aerodynamic Analysis of Air breathing missiles	DRDL Hyderabad	6.29
3.	Dr. R. Velmurugan	Characterization of Nonmetallic Materials	DRDL Hyderabad	5.75
4.	DR. R.I. Sujith / Dr. S.R. Chakravarthy	Experimental Investigation of Stand-Alone Swirler Flow Characteristics	GTRE	2.46
5.	DR. R.I. Sujith / Dr. S.R. Chakravarthy	Evaluation of Kaveri Atomiser for Particle Size and Velocity	GTRE	4.10
6.	S. R. Chakravarthy	Experimental Supersonic Cold Flow Mixing Studies with Strut Based Cavity and Ramp Mixers	VSSC, Thiruvananthapuram	4.62
7.	S..R. Chakravarthy	Evaluation of Kaveri Atomiser for Particle Size and Velocity	GTRE, Bangalore	4.10
8.	Job Kurian	Heat Transfer Measurements on SRE module	ISRO	9.30

**Research Publications:**

Total No. of papers published in Refereed National Journals	..	3
Total No. of papers published in Refereed International Journals	..	14
Total No. of papers presented in National Conference	..	13
Total No. of papers presented in International Conferences	..	22

### In Refereed National Journals:

1. R. Velmurugan and N.K. Gupta "Energy absorption characteristics of Metallic and Composite shells" , Defence Science Journal, 53(2), 127-138 (2003)
2. Tulapurkara E.G., Gowda B.H.L., Roy choudhury R.L., Biswas S.P. and Elangivan. M, "Tests on models of sails in a wind tunnel" Accepted for publication in journal of Institution of Engineers (India) – Marine Engineering Division, Vol. 84, pp 7-11, 2003
3. Prabhu Ramachandran, S.C. Rajan and M. Ramakrishna " A fast, two dimensional panel method", S.I.A.M Journal on Scientific Computing, 24(6): 1864-1878, 2003.

### In Refereed International Journals:

1. K. Bhaskar & B. Kaushik, simple & exact series solutions for Flexure of Orthotropic Rectangular Plates with any combination of clamped & simply supported edges, composite structures, 63 (2004), 63-68.
2. R. Sarathy, Supriya Das, C. Venkateshesaiya and Dr. R. Velmurugan, "Analysis of failure of XLDE polyethylene cables due to electrical treeing, J of Applied Polymer Science, 93, 2169-2178 (2004).
3. A new multigrid algorithm for non-linear equations in conjunction with time marching procedures INT J NONLINEAR MECH 39(2): 233-245 MAR 2004.
4. Ramachandran P, Rajan SC, Ramakrishna M, A fast, two-dimensional panel method SIAM J SCI COMPUT 24(6): 1864-1878 2003
5. Subrahmanyam PB, Sujith RI, Ramakrishna M, Determination of unsteady heat release distribution from acoustic pressure measurements. A reformulation of the inverse problem, A ACOUST SOC AM 114(92): 686-696 aug 2003
6. B. KARTHIK, S. R. CHAKRAVARTHY and R. I. SUJITH, "Jet Forcing Driven by Pipe Tone", *Journal of Acoustical Society of America*, Vol. 113, pp. 3091-3094, 2003.
7. P. BALA SUBRAHMANYAM and R. I. SUJITH, "Propagation of Sound in Inhomogeneous Media: Exact Transient Solutions in Curvilinear Coordinates", *ASME Journal of Vibration and Acoustics*, Vol. 125, pp. 133-136, 2003.
8. P. BALA SUBRAHMANYAM, R. I. SUJITH and M. RAMAKRISHNA "Determination of unsteady heat release distribution from acoustic pressure measurements: A reformulation of the inverse problem" *Journal of Acoustical Society of America*. Vol. 113, pp.686-696, 2003
9. M. TYAGI and R. I. SUJITH, "Nonlinear Distortion of Traveling waves in Variable Area Ducts with Entropy Gradients", *Journal of Fluid Mechanics*. Vol. 491, pp. 1-22, 2003.
10. Karthik, B. Chakravarthy, S. R., and Sujith, R. I., "Jet Forcing Driven by Pipe Tone," *Journal of Acoustical Society of America*, Vol. 113, No. 6, June 2003, pp. 2091-2094.
11. Chakravarthy, S. R., "Multi-Dimensionality of Combustion of Condensed Phase Energetic Mixtures with Fine Particles," *Rocket Propulsion: Present and Future*, Proceedings of the 8<sup>th</sup> International Workshop on Combustion and Propulsion, Pozzuoli, Naples, Italy, June 16-21, 2002, L. T. DeLuca (ed.), Grafiche GSS, Bergamo, Italy, 2003, pp. 19:1-19:14
12. Sabari Giri, V., Sarathi, R., Chakravarthy, S. R., and Venkateshaiah, C., "Studies on Production and Characterisation of Nano- $Al_2O_3$  Powder Using Wire Explosion Technique," *Materials Letters*, Vol. 58, No. 6, 2003, pp. 1047-1050.
13. Chakravarthy, S. R., Seitzman, J. M., Price, E. W., and Sigman, R. K., "Intermittent Burning of Ammonium Perchlorate – Hydrocarbon Binder Monomodal Matrixes, Sandwiches, and Propellants," *Journal of Propulsion and Power*, Vol. 20, No. 1, Jan-Feb 2004, pp. 101-109.
14. Panyam, R. R., Price, E. W., and Chakravarthy, S. R., "Combustion at the Interface of a Laminate System of Solid Oxidizer and Solid Fuel," *Combustion and Flame*, Vol. 136, 2004, pp. 1-15.

### In Proceedings of National Conferences:

1. Prabhu Ramachandran, Rajan S.C., Santhakumar S, "obtaining Engineering Estimates of Aerodynamic forces on air breathing slender bodies ", 6<sup>th</sup> Annual CFD symposium, 11-13 Aug. 2003, Bangalore

2. K. Bindu, R. Palaninathan and R. Velmurugan, "Thermo Structural analysis of Laminated shells", ISAMPE National conference, IISc, Bangalore, 1<sup>st</sup> Sep. 2003 (148-158)
3. V. Manikandan, R. Velmurugan and S.G. Ponnambalam, "Experimental investigation of palmyra epoxy laminated composites", ISAMPE National Conference, IISc Bangalore, 1<sup>st</sup> Sep. 2003 (235-243)
4. R. Velmurugan and T.P. Mohan, "Influence of Nano layered silicates in Epoxy matrix", INEA. National Conference on Nano Composites, Dec 2003, Central Instruments Lab, Chandigarh (577-585)
5. R. Velmurugan, V. Manikandan and S.G. Ponnambalam, " Characterisation of polymer Nanocomposites", National Seminar on Nanocomposites (NSNC-2004), Bhubaneswar, INDIA 11-17, Feb 20, 2004
6. TULAPURKARA E.G, BISWAS.G AND SRIKANTH.J "LES of flow past a cube" Proc. 6<sup>th</sup> Annual CFD symposium, Bangalore Aug.11-13, 2003 pp.CP 9.1 – 9.4
7. USHA R., SENTHIL KUMAR.S AND TULAPURKARA.E.G., "Numerical study of particulate suspension flow through wavy-walled channels" Proc. 6<sup>th</sup> Annual CFD Symposium, Bangalore, Aug 11-13, 2003, pp.CP 13.1-13.4
8. ARUN.M. TULAPURKARA.E.G. "Evaluation of models of turbulence for computation of flow in an enclosure" Proc. 30<sup>th</sup> National conference on Fluid Mech. & Fluid Power, Suratkal, Dec. 11-13, 2003 pp.325-332
9. Tulapurkara E.G " A brief overview of the current status of computation of flow past airplanes" Proc. Symposium on current status and future prospects in aerospace sciences and engineering, IIT Madras, Chennai, December 4 and 5, 2003.
10. H. SANTOSH and R. I. SUJITH – Trivandrum Coherent Acoustic Scattering from Premixed Wrinkled Flame Fronts, XVIII National Conference on IC Engines and Combustion, Suratkal, December18-19, 2003.
11. Kartheekyan, S. and Chakravarthy, S. R., "Oscillatory Combustion Response of a Lean Laminar Premixed Flame," XVIII National Conference on IC Engines and Combustion, Thiruvananthapuram, India, Dec. 2003.
12. Chakravarthy, S. R., "Future Prospects in Aerospace Propulsion," Symposium on Current Trends and Future Prospects in Aerospace Engineering and Aviation, Chennai, Dec. 2003.
13. Chakravarthy, S. R., "Solid Propellant Combustion Instability and Acoustics," in *Combustion in Aerospace Propulsion Systems*, V. Ramanujachari (ed.), The Combustion Institute (Indian Section), Hyderabad, 2003.

#### In Proceedings of International Conference

1. Vijaya Kumar K, Santhakumar. S, "Experimental Investigation of Oscillating Flow in a circular duct for high Reynolds number". The 7<sup>th</sup> Asian international conference on Fluid Machinery, Fukuoka Japan, 7-10 October 2003, P 86
2. N. Mohammed Sheriff, R. Harish, R. Velmurugan and N.K. Gupta, "Numerical and experimental studies of fold formation in thin walled shells under dynamic loading condition", INCARF 2003, IIT Delhi, Aug 2003 (Proceedings in CD).
3. I. Krishnan, M. Ramakrishna, and S.C. Rajan Study of the unsteady pressure oscillations induced by rectangular cavities in a supersonic flow field, Proceeding of the Fifth Asian CFD Conference, Busan Korea, Oct. 27-30, 2003
4. V. Vasudevan and M. Ramakrishna, Computation of noise spectral density in switched capacitor circuits Proceedings of the 40<sup>th</sup> design automation conference, pages 538-541. ACM, IEEE, 2003.
5. Subrahmanyam P.B, Sujith R.I. and Ramakrishna, Determining Unsteady Heat Release Distribution from Acoustic Pressure Measurements, AIAA 2003-4494, 39<sup>th</sup> AIAA/ASME/SAE/ASEE Joint Propulsion Conference, July 2003.
6. MANAV TYAGI and R. I. SUJITH "Resonant Standing Waves in Oscillating Closed Horns", AIAA Paper Number 2003-3146, AIAA/CEAS Aeroacoustics Conference and Exhibit, Hilton Head, South Carolina, USA, May 12-14, 2003.
7. MANAV TYAGI and R. I. SUJITH "Nonlinear Distortion of Traveling Waves in Variable Area Ducts with Entropy Gradients", AIAA Paper Number 2003-3223, AIAA/CEAS Aeroacoustics Conference, Hilton Head, South Carolina, U S A, May 12-14, 2003.

8. S. R. CHAKRAVARTHY, S. KARTHEEKEYAN, R. I. SUJITH, A. SADIKI, M. DUSING and J. JANIKA "Experimental and Numerical Investigation of Noise Generation by Turbulent Combustion in a Combustor", 3<sup>rd</sup> International Workshop on Turbulent Shear Flow Phenomena, Sendai, Japan, June 2003.
9. P. BALA SUBRAHMANYAM, R. I. SUJITH and M. RAMAKRISHNA, "Determination of Unsteady Heat Release Distribution from Acoustic Pressure Measurements", *AIAA Paper Number 2003-4494*, AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Huntsville, Alabama, USA, July 21-23, 2003.
10. H. SANTOSH and R. I. SUJITH, "Acoustic Near Field Characteristics of a Two-Dimensional Wrinkled Premixed Flame, *AIAA Paper Number 2003-5093*, AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Huntsville, Alabama, USA, July 21-23, 2003.
11. S. J. SHANBOGUE, R. I. SUJITH and S. R. CHAKRAVARTHY Aeroacoustic Instability in a Solid Rocket Motor with Finocyl Grain, *AIAA Paper Number 2003-4632*, AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Huntsville, Alabama, USA, July 21-23, 2003.
12. M. TYAGI and R. I. SUJITH "Shock Formation in Convergent Divergent Nozzles", poster presentation, Symposium on Advanced in Fluid Mechanics, July 24-25, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore.
13. P. SINGH and R. I. SUJITH "On the Success of Particle Image Velocimetry in Measuring Polydisperse Spray velocity Fields", International Conference on Laser Applications and Optical Metrology, December 1-4, 2003.
14. M. TYAGI and R. I. SUJITH "Nonlinear Distortion of Finite Amplitude Waves Propagating in Convergent Divergent Nozzles", 42<sup>nd</sup> Aerospace Sciences Meeting and Exhibit, Reno, Nevada, USA, January 7-10, 2004.
15. S. TIYYAGURA & R. I. SUJITH "Analytical Solution to Two Dimensional Acoustic Fields with Two Dimensional Temperature Gradients," 42<sup>nd</sup> Aerospace Sciences Meeting and Exhibit, Reno, Nevada, USA, January 7-10, 2004.
16. K. K. DURGA, M. TYAGI and R. I. SUJITH "Nonlinear Standing Waves in Ducts with an Axial Temperature Gradient" International Conference on Nonlinear Phenomena to be held from January 5<sup>th</sup> to 10<sup>th</sup>, 2004, Indian Institute of Science, Bangalore.
17. Sarathi, R., Venkateshaiah, C., and Chakravarthy, S. R., "Generation of Nano-Aluminium Powder Using Wire Explosion Technique," International Conference on Materials for Advanced Technologies, Singapore, Dec. 2003.
18. Banerjee, S. and Chakravarthy, S. R., "Ammonium Perchlorate-Based Composite Propellant Formulations with Plateau Burning Rate Trends," 4<sup>th</sup> International High Energy Materials Conference and Exhibit, Pune, India, Nov. 2003.
19. Shanbogue, S. J., Sujith, R. I., and Chakravarthy, S. R., "Aeroacoustics of Rocket Motors with Finocyl Grain," AIAA Paper No. 2003-4632, 39<sup>th</sup> AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Huntsville, AL, July 2003.
20. Chakravarthy, S. R.; Kartheekeyan, S., Sujith, R. I., Sadiki, A., Dusing, M., and Janicka, J., "Experimental and Numerical Investigation of Noise Generation by Turbulent Combustion in a Combustor," 3<sup>rd</sup> International Workshop on Turbulent Shear Flow Phenomena, Sendai, Japan, June 2003.
21. Preetham and Chakravarthy, S. R., "Effect of Heterogeneity of Solid Propellants on their Intrinsic Stability of Pyrolysis," AIAA Paper No. 2004-0240, 42<sup>nd</sup> Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan. 2004.
22. Preetham and Chakravarthy, S. R., "Response of One-Dimensional Laminar Premixed Propagation to Traveling Pressure Oscillations," AIAA Paper No. 2004-0462, 42<sup>nd</sup> Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan. 2004.

#### Distinguished Visitors to the Department:

S. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1.	Prof. S. Sivasegaram, University of Peradeniya, Sri Lanka	14.05.2003	Seminar Talk
2.	Dr. Kanna Rajan, Senior Research Scientist, NASA, Ames Research Center, USA	06.12.2003	Seminar Talk
3.	Prof. M.R.Ananthasayanam, Department of Aerospace Engineering, IISc Bangalore	24.12.2003	Seminar Talk
4.	Venkateswarlu Narra, Department of Aerospace Engineering, Georgia institute of Tech., Georgia, USA	07.01.04	Seminar Talk

S. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
5.	Dr. Manivannane Pourouchottamane, Saint Gobain Recherche, France	12.01.04	Seminar Talk
6.	Dr. R. Balasubramaniam, Professor, NAL Bangalore	05.02.04	Industry Lecture
7.	Dr. R. Balasubramaniam, Professor, NAL Bangalore	06.02.04	Industry Lecture
8.	Mr. K. Hari	12.02.04	Industry Lecture
9.	Dr. Krish K. Ahuja, Regents Researcher & Professor of Aerospace Engg, Georgia Institute of Technology, Atlanta	11.02.04	Seminar Talk
10.	Capt. Mohan Ranganathan	27.02.04	Industry Lecture
11.	Prof. A. Krothapalli, Department of Mechanical Engineering, Florida State University,	15.03.04	Seminar Talk
12.	Sri. S.K. Saraswati, Regional Executive Director, Airport Authority of India (NADO, Southern Region, Chennai	12.04.04	Industry Lecture
13.	Sri. J. Karunanithi, Manager Engineering Projects, Jet Airways (India) Ltd., Chennai	16.04.04	Industry Lecture
14.	Sri. K.A. Balakrishnan, Manager (Air Traffic Control), Airport Authority of India (NADO, Southern Region, Chennai	19.04.04	Industry Lecture

## 4.2 DEPARTMENT OF APPLIED MECHANICS

### 4.2.1 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 is 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, Experimental Mechanics, Digital photoelasticity, Computer assisted experimentation, Natural Fiber composites, granular flow, continuum Mechanics, Smart Materials and structures.

The Fluid Mechanics Division is doing research in Industrial Aerodynamics, Automobile Aerodynamics, Helicopter Aerodynamics, 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 modeling.

The Machine Dynamics Division is engaged in research in the area of Structural Dynamics, Vibration and Stress analysis using FE Techniques, Acoustics and Noise Control, Vehicular Vibration, Tribology, Maintenance Engineering and Chaotic/Non-linear Vibrations.

### 4.2.2. Academic Programmes:

Students on roll:

Programme	I Year	II Year	III Year	IV Year	V Year	Total
M.Tech.	33	32	-	-	-	65
M.S.	20	6	9	2	-	37
Ph.D.	10	11	10	5	4	40
Total	63	49	19	7	4	142

Names of student/scholar attended conference/seminar and symposia Abroad/India:

S.No.	Name of the student	Programme	Name of the conference/ seminar/ symposia	Date and venue
<b>(i) Conference:</b>				
1.	Jayasankar S A.N.S. Prasad V.V. Phanikiran	Symposium	N S A 2003	Oct 31 – Nov.1 2003, Pune
2.	Mallikarjun S.Holi	Intl. Conf	First Joint Meeting of IBMS-JSBMr 2003	Osaka, Japan June 2003
3.	K. Prahlad Rao	Intl. Conf.	World Congress on Medical Physics and Biomed. Engg (WC 2003_	Sydney, Australia August 2003
4.	V.Jacob Thomas	Intl. Conf.	IEEE Asia-Pacific Regional Conference, TENCON 2003	Bangalore Oct 14-18, 2003
5.	Mallikarjun S.Holi	Intl. Conf.	IEEE Asia-Pacific Regional Conference, TENCON 2003	Bangalore Oct 14-18, 2003
6.	K. Prahlad Rao	Intl. Conf.	Intl. Conf on Laser Applications and Optical Metrology (ICLAOM-3)	IIT Delhi December 2003
7.	V. Jacob Thomas	National Conf.	Ind Diabetic Foot Society of India's conference	Pune Sept. 20-21, 2003
8.	Mallikarjun S.Holi	Nat. Symp.	National Symp. On Ultrasonics (XII- NSU)	Amritsar, Nov. 2003
9.	A. Satya Devi	National Symp.	Research Scholars on Metals & Materials	IITM Chennai 27-28 Sept. 2003

S.No.	Name of the student	Programme	Name of the conference/ seminar/ symposia	Date and venue
10	A. Satya Devi	National Conf.	Material Processing and Failure Analysis (MPFA 2003)	NIT, Tiruchy 19-20, July 2003
11	A Satya Devi	Intl. Conf.	Low Cycle Fatigue (LCF5)	BAM, Berlin, Germany 9-11, Sept. 2003
12	A. Satya Devi	Natl. Conf.	Creep, Fatigue and Creep-Fatigue Interaction	IGCAR, Kalpakkam 8-10, October 2003

#### 4.2.3. Faculty and their activities:

##### Faculty:

Name and Qualifications		Major area of specialization (only 3 areas)
Dr.N.Ganesan	Ph.D	Vibration, Acoustics, Stress Analysis, Finite Element Techniques, Fluid-Structure Interaction.
Dr.S.Narayanan	Ph.D	Nonlinear Dynamics; SEA; Acoustics.
Dr.S.Swarnamani	Ph.D	Condition Monitoring; Neural Networks.
Dr.C.Sujatha	Ph.D	Vehicle Dynamics, Machinery Diagnostics; Signal Analysis.
Dr.G.Santhanakrishnan	Ph.D	Tribology and Wear.
Dr.P.Chandramouli	Ph.D	Noise and Vibration Control, Non-linear dynamics & Fluid-Structure-Acoustic Interactions.
Dr.S.Radhakrishnan,	Ph.D	Biomechanics, Rehabilitation Engineering, Bio-signal analysis
Dr.K.M.Patil,	D.Sc	Biomechanics, Rehabilitation Engineering
Dr.MeghaSingh,	Ph.D	Biomedical engineering
Dr.M.RamasubbaReddy	Ph.D	Biomedical Instrumentation, Medical Imaging, Speech Signal Processing
Dr.VenkateshBalasubramaniam	Ph.D	Ergonomics, Sports Biomechanics Biomaterials, Biomedical Instrumentation
Dr.R.Palaninathan,	Ph.D	Structural Mechanics, Composite Materials, Finite Element Methods.
Dr.J.Raamachandran,	Ph.D	Solid Mechanics, Boundary Element Method, Plates and Shells, FEM, Biomechanics
Dr.K.Ramesh,	Ph.D	Solid Mechanics, Photo Mechanics, Fracture Mechanic
Dr.C.LakshmanaRao,	Ph.D	Constitutive Modelling, Smart Materials and Structures, Fracture Mechanics
Dr.M.S.Sivakumar,	Ph.D	Solid Mechanics, Constitutive modeling, Plasticity
Dr.J.Lakshminarasimhan	Ph.D	Incompressible Aerodynamics, CFD, Wind effects on structures
Dr.V.Ramjee	Ph.D	Fluid Mechanics - Jets - WAKES
Dr.B.H.L.Gowda	Ph.D	Fluid Mechanics - Flow Induced Vibrations - Wall Jets
Dr.N.R.Panchapakesan	Ph.D	
Dr. S. Vengadesan	Ph.D	Fluid Mechanics, CFD, Turbulence Modelling, LES

##### Short-term course/Workshops/Seminars/Symposia/Conferences organized by the faculty members:

S. No.	Name of Faculty	Title	Institution	Period/ Duration
1.	Dr. Venkatesh Balasubramanian	National Seminar on Emerging Technologies in Defence Preparedness	MCEME, Secunderabad	September 12-13, 2003.
2.	Dr. Venkatesh Balasubramanian	2 <sup>nd</sup> SMF Knee Course on Total Knee Replacement	Taj Coromandel, Chennai	July 10, 2003.

##### Short-term courses/Workshops/Seminars/Symposia/Conferences/ Training attended by the faculty members in Academic institutions and public sector undertakings:

S.No.	Name of faculty	Title	Institution	Period
Symposia:				
1.	Dr. S.Narayanan	Workshop on computational mathematics	Anna University Madras	March 2003
2.	Dr. S.Narayanan	Workshop	RCI IMARAT ENTEST	Nov-21, 2003

S.No.	Name of faculty	Title	Institution	Period
3.	Dr. S.Narayanan	CEP course	NSTL, Visakhapatnam	Nov 24-25, 2003
4.	Dr.S. Narayanan Dr. C. Sujatha Dr.P.ChandraMouli	National Symposium on Acoustics	ARAI, PUNE	Oct/Nov 2003
5.	Dr.S.Narayanan and Dr.Venkatesh Balasubramaniam	GMR & D Symposium	Bangalore	Nov. 10 <sup>th</sup> 03
<b>Conference:</b>				
1.	Dr.J. Lakshminarasimhan	II National Conference on Wind Engineering	VNIT Nagpur	Feb.12 to 14, 2004
2.	Dr.C.Lakshmana Rao	ISAMPE National Conference on Composites	IISc, Bangalore	September 5-6, 2003
3.	Dr. K.Ramesh	Digital Photoelasticity	GTRE, Bangalore	Feb. 2004

**Special Lectures delivered by the faculty in other Institutions:**

S.No.	Name of faculty	Topic of lecture	Venue and Date
1.	Dr. Venkatesh Balasubramanian	Biomechanics of Total Knee Replacement	Vellore Institute of Technology, Vellore July 24, 2003.
2.	Dr. Venkatesh Balasubramanian	Sports Biomechanics	Army Sports Institute, Ghorpuri, Pune
3.	Dr.M. Ramasubba Reddy	Seminar cum product presentation on Biomedical Instrumentation products and related software by TMI systems	ICSR, IIT Madras August 2, 2003.
4.	Dr. M.Ramasubba Reddy	Keynote address at a National Level Symposium	Muthukumaran Institute of Technology, September 3, 2003.
5.	Dr. P.Chandra Mouli	FEA in Dynamic analysis	CVRDE, Aug 2003
6.	Dr. P.Chandra Mouli	Experimental Modal Analysis	CVRDE, Sept, 2003
7.	Dr. S. Narayanan Dr.C. Sujatha Dr. P.Chandra Mouli	Vehicle Dynamics	CVRDE, Nov.2003
8.	Dr. P.Chandra Mouli	Engine Vibration	HVF, Oct 2003.
9.	Dr. P.Chandra Mouli	Engine Vibration	HVF, Oct 2003.
10.	Dr. C.Sujatha	Diagnostic Maintenance	Honey well, Madurai, Feb 2003
11.	Dr. S. Narayanan	Workshop on Vibration isolators in Missile/Aerospace Applications at RCI IMARAT, ENTEST.	Hyderabad on 21.11.2003
12.	Dr. S.Narayanan	CEP course on Machinery Noise Control at NSTL.	Vizhakapatnam on 24.11.03 to 25.11.03.

**Visits abroad by faculty:**

S.No.	Name of faculty	Country visited	Date	Purpose of visit
1.	Dr. M.S.Sivakumar	USA	Jan-Dec 2003	Visiting Faculty
2.	Dr. Megha Singh	Germany	January-June 2003	Research
3.	Dr. P.Chandra Mouli	U.K	Aug. 2003	Project mtg, ROLLS ROYCE
4.	Dr. S.Swarnamani	NewJersy, USA	June 12-2003	Lecture on "Experiences in Active Vibration Control and Machinery Fault Classification" at Mechanical Engineering Department Stephens Institute of Technology
5.	Dr.S.Narayanan	Asian University presidents, Bangkok.	7.11.03 to 9.11.03	



**Honours and Awards obtained:**

S.No.	Name of Faculty	Name of Award	Awarded by	Awarded for	Date
1.	Dr.Venkatesh Balasubramanian	Distinguished Alumni Award	Vellore Institute of Technology	Academic Development	March 17, 2004.
2.	Prof.S.Narayanan	Dr. S. Bhagavantam	Acoustical Society of India	Best Acoustician	Nov 2003

**Books, Monographs authored / co-authored:**

S.No.	Name of faculty	Title	Publisher	Author/co-author
(i) Books:				
1.	Dr. J. Lakshminarasimhan	Engineering Mechanics Statics & Dynamics	Prentice Hall	Dr.C. Lakshmana Rao Dr. Rajusethuraman Dr.M.S.Sivakumar

**4.2.4. Design and Development Activities:**

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

**Optical Tomography System**

In contrast to X-ray tomographic system, the present optical tomography system employs near-infrared laser. The transmission of this radiation through tissue-equivalent phantoms is detected by photodiode array. The tomogram reconstructed by this are very sensitive to tissue compositional changes.

**Tissue – equivalent phantoms**

Due to increasing demand of laser based medical diagnostic technique, the tissue-equivalent phantoms for their testing, standardization and calibration are required. Such phantoms have successfully developed which exhibits their reflectance characteristics similar to tissues.

**Design and Fabrication of Reverberation Chamber**

A small reverberation chamber was designed in the form of twin parallelepiped pentagons with a cut of frequency of 315 Hz. The walls and ceiling was made of multiple layers with a one side teak finish on the inner side. This chamber has potential application for determination of transmission loss of small panels.

**Design and Fabrication of Impedance tube**

Two Perspex impedance tubes, one using the two microphone method and the other using the three microphone method have been fabricated for the measurement of the absorption and reflection coefficients of acoustic materials.

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

S.No.	Name of Equipment	Value ( Rs. in lakhs)
1.	Sonic Anemometer	3.43
2.	30 m Meteorological Tower	6.08
3.	Duba Logger (Multichannel for weather station)	1.57
4.	PSPSION HCDOS Hand held Data handling device compatible with PC	1.09
5.	8 Channel surface EMG acquisition system, Dr. Venkatesh Balasubramaniam	3.34
6.	Optical Tomography System – Dr. Megha Singh	
7.	4 channel DAQ 01dB-stell	6.00
8.	Data acquisition system	2.00

**Patents Filed:**

An Indian patent application, on a newly developed product known as "PEDOPOWERGRAPH" for measuring foot power for early detection of foot at risk of foot sole ulcers in diabetic neuropathy, was made in the name of Prof. K. Mothiram Patil of Applied Mechanics Department, IIT Madras and Dr. V.B.Narayana Murthy and Dr. R. Parivalavan of Sundaram Medical Foundation, Annanagar, Chennai on 6.11.2003

#### 4.2.5. Research and Consultancy

##### Sponsored Research Projects:

Sl. No.	Title	Period	Funding Agency	Amount (in lakhs)	Co-ordinators
1.	Coastal Atmospheric Dispersion. Hybrid Models	4 yrs. 7 months	A.E.R.B.	24.29	Dr.P.A.Aswatha Narayana Dr. J. Lakshminarasimhan Dr.R.Venkatesan (IGCAR)
2.	Digital photoelasticity using single shot data acquisition	March 2003 -March2005	ISRO-IITM Cell	14.4	Prof.K.Ramesh
3.	Constitutive Modelling of Smart Materials	March 2001 -Sept. 2004	NPSM	27.0	Dr. M.S.Sivakumar
4.	Experimental measurement of SEA parameters	2001-2004	ISRO	20.0	Prof.S.Narayanan Dr.P.Chandramouli Prof.S.Swarnamani
5.	Fluid Structure Interaction in Sodium Pipelines	2001-2004	IGCAR	4.6	Dr.P.Chandramouli Prof.N.Ganesan
6.	Smart Structures for Vibration Control	2002-2004	MHRD	12.0	Prof.S.swarnamani Prof.C.Sujatha Dr.P.ChandraMouli Prof.S.Narayanan Prof.N.Ganesan
7.	Vibration Control using piezoelectric sensors and actuators.	On going	AR & DB	8.16	Prof.S.Narayanan Prof. S. Swarnamani
8.	Scattering, Radiation and Transmission of Acoustic Signals in Composite Panels for Acoustic Attenuation.	On going	NRB	20.0	Prof. S.narayanan Dr. P. Chandramouli Prof. S. Swarnamani Prof. C. Sujatha
9.	Active Vibration Control of plates		RCI, Hyderabad	4.95	Prof. C. Sujatha Prof. S. Swarnamani

##### Industrial Consultancy:

Sl.No.	Name of Faculty	Title	Industry	Amount (in Lakhs)
1.	Dr.J.Lakshminarasimhan	Calibration of Cup-type (anemometers) Wind sensors – 2 nos.	NIOT, Pallikaranai	Rs.25,920/
2.	Dr. P. Chandramouli Dr. N. Ganesan	Vibration test on 25 kV VCB	M/S Autometers Alliance Ltd., Noida 201 307	Rs.60,480
3.	Dr. C. Sujatha Dr. P. Chandramouli	Seismic test on 390 kV lightning arresters	M/S Elpro International Ltd, Pune 411 039	Rs. 44,280
4.	Dr.P. Chandramouli Dr. C. Sujatha	Seismic test on 36 kV vacuum circuit breaker	M/S ALSTOM Limited, Naini Works, Naini Allahabad, 211 008	Rs 49,680
5.	Dr. P. Chandramouli Dr. S. Narayanan	Vibration and shock test on battery charger	M/S Auotometers alliance Ltd., Noida 201 307	Rs 60,480
6.	Dr. P. Chandramouli Dr. S. Narayanan	Seismic test on 400 kV current transformer	M/S ALSTOM Instrument Transformer Pvt.-Ltd., Bangalore 562157	Rs 49,680
7.	Dr. C. Sujatha Dr. S. Swarnamani	Vibration measurement on passenger vehicle	M/S Visteon India, Chennai	Rs. 16,200
8.	Dr. J. Raamachandran Dr. C. Sujatha	Testing of vibration mount	M/S Vignesh Marine Technical services Pvt. Ltd., Chennai	Rs 12,960
9.	Dr. C. Sujatha Dr. N. Ganesan	Seismic test on 258 kV lightning arresters	M/S Crompton Greaves Ltd., Nashik, 420 010	Rs 49,680
10.	Dr. C. Sujatha Dr. N. Ganesan	Seismic test on 245 KV capacitor voltage transformer	M/S Crompton Greaves Ltd., Nashik, 420 010	Rs 49,680
11.	Dr. P. Chandramouli Dr. S. Narayanan	Seismic test on 245 kV capacitor voltage transformer	M/S Crompton Greaves Ltd., Nashik, 420 010	Rs 49,680

Sl.No.	Name of Faculty	Title	Industry	Amount (in Lakhs)
12.	Dr. S. Swarnamani Dr. C. Sujatha	Seismic test on 245 kV current transformer	M/S Crompton Greaves Ltd., Nashik, 420 010	Rs 49,680
13.	Dr. S. Swarnamani Dr. C. Sujatha	Seismic test on 12 kV outdoor vacuum circuit breaker	M/S Crompton Greaves Ltd., Nashik, 420 010	Rs 49,680
14.	Dr.S. Swarnamani	Determination of damping of tubes	M/S Tube Investments of India Ltd., Chennai-54	Rs 43,200
15.	Dr.P. Chandramouli Dr. S. Narayanan	Testing of Torsional Vibration Damper pulley for natural frequency and Damping characteristics	M/S TVS Autolec Ltd, Chennai	Rs.5400
16.	Dr.S. Swarnamani Dr. S. Narayanan	Seismic Test on 420 kV Disconnecter with Isolator	M/S ABB Ltd., Vadodara, 390 013	Rs.60,480
17.	Dr. S. Swarnamani Dr. Meher Prasad	Seismic Test on 420 kV Bushing	M/S BHEL, Bhopal 462 022	Rs.49,680
18.	Dr.C. Sujatha	Vibration Problem in Crusher plant	M/S TECPRO SYSTEMS (P) Ltd., Chennai 600 020	Rs.1,00,000
19.	Dr.P. Chandramouli	Vibration Durability Testing	M/S Rane NASTECH, Guduvanchery, Chennai 603 202	Rs.16,200
20.	Dr.S. Swarnamani	Modal Testing of PTO shaft	CVRDE, Avadi, Chennai 54	Rs.33,810
21.	Dr.C. Sujatha Dr.S. Narayanan Dr.N. Ganesan	Dynamics Measurement of Torque on the starter Motor Drive on the Diesel Engine during cranking	M/S LUCAS TVS Ltd., Padi, Chennai 600 050	Rs.35,000
22.	Dr.C. Sujatha	Seismic Test on 145 kV SF6 Circuit Breaker	M/s ABB Ltd., Vadodara, 390 013	Rs.99,360
23.	Dr. S. Swarnamani Dr.N. Ganesan	Determination of loss factor	M/S ANABOND ESSEX India (P) Ltd., Pondicherry, 605 107	Rs. 16,200
24.	Dr.S. Swarnamani Dr.P. Chandramouli	Seismic Test on the 12 kV 1250, 40 kA, Indoor VCB Panel	M/S Crompton Greaves Ltd., Nashik, 420 010	Rs.49,800
25.	Dr.S. Swarnamani Dr.N. Ganesan	Seismic withstand test on the high voltage circuit breaker	ALSTOM Ltd., Chennai 96	Rs.1,08,000
26.	Dr.C. Sujatha	Seismic Test on 420 kV HCB Isolator	M/S HIVELM Industries , Chennai 600 032	Rs. 60,480
27.	Dr.C. Sujatha Dr.P. Chandramouli	Determination of loss factor	M/S ANABOND Ltd., Chennai 96	Rs.2700
28.	Dr. C. Sujatha Dr. P. Chandramouli	Seismic Test on Explosion-proof lighting fixtures	M/s Baliga Lighting Equipment Pvt. Ltd., Kovilambakkam, Chennai 600 117	Rs.32,400
29.	Dr.C. Sujatha	Shock and Vibration test	Ms. Bombardier Transportation India. Ltd.,Vadodara 390013	Rs.1,42,560
30.	Dr.C. Sujatha	Vibration Resistance test	M/S ANABOND Essex India Pvt. Ltd., Chennai 20	Rs. 6480
31.	Dr. S. Swarnamani Dr. P. Chandramouli	Vibration test on torsional vibration damper	TVS Autolec Industries Pvt. Ltd.,Chennai 58	Rs. 5400
32.	Dr. C. Sujatha Dr.S. Swarnamani	Seismic Test on 400 kV CT and 400 kV CVT	M/s ABB Ltd., Vadodara	Rs.99,360
33.	Dr. C. Sujatha Dr.S. Swarnamani	Burst strength measurement of tubes	M/s Tube Investments of India Ltd., Chennai 54.	Rs.54,000
34.	Dr.S. Swarnamani	Noise and vibration testing on chains	M/s Tube Investments of India Ltd., Chennai 54.	Rs.54,000
35.	Dr.S. Swarnamani DR. C. Sujatha	Dynamic torque measurements on a starter	Lucas TVS Ltd., Padi, Chennai	Rs. 48,600
36.	Dr. S Swarnamani Dr.S Sujata	Seismic test on 12 kV and 36 kV VCB	Crompton Greaves Ltd., Aurangabad	Rs.1,10,160

## RBIC Projects:

S.No.	Name of Faculty	Title	Industry	Amount (Rs. In Lakhs)
1.	Dr. R. Palaninathan	Erosion modeling of HSTDV nose tip	DRDL, Hyderabad	13.74
2.	Dr. R. Palaninathan	5200 motor case stress analysis	VSSC, Trivandrum	6.02
3.	Dr. Megha Singh		Medusa Services, Madras	1.04
5.	Dr. P.Chandra Mouli	Semi-active suspension feasibility study	CVRDE	12 lakhs
6.	Dr. C. Sujatha	Theoretical modeling and evaluation of vibration levels in a multi-stationed tracked vehicle installed with hydro-gas suspension system	CVRDE	1.72 lakhs

## Journal Editorial Boards:

S.No.	Name of faculty	Chairman/Member	Amount (Rs.in lacs)
1.	Dr. Megha Singh	International	Clinical Hemorheology & Microcirculation

## Research Publications:

Total No. of papers published in Refereed National Journals	..	10
Total No. of papers published in International Journals	..	24
Total No. of papers presented in National Conference	..	14
Total No. of papers presented in International Conferences	..	26

## In Refereed National Journals:

- M.S. Sarma, T. Sundararajan and V. Ramjee, "Study of incompressible jets from various orifices, J. of Aerospace Sciences, vol.55, pp 97-111.
- P. Jamima & J. Lakshminarasimhan, "Numerical simulation of sea breeze characteristics observed at tropical coastal site, Kalpakkam", Proc. Of Indian Acad, of Sci., Earth & Planetary Sciences to be published in March 2004.
- E.G.Tulapurkara, B.H.L. Gowda, R.L.Roy Choudary, S.P.Biswas and M.Elangovan, "Tests on Models of Sails in a Wind Tunnel", Institute of Engineers(India) – Journal of Marine Division, Vol.84, July 2003, pp.7-11.
- Chacko, S., Kumar, D and Singh, M. Image reconstruction of optical attenuation coefficient variation in biological tissues, Indian J. Exptl. Biol. 41; 2003, 26-32.
- Singh M and Liepsch, D. Localization of bypass-induced changes in flow in coronary artery models. Indian J. Exptl. Biol. 41, 2003, 1249-1252.
- K. Bommanna Raja, M. Madheswaran, K. Thyagarajah, M. Ramasubba Reddy and S. Swarnamani, *Efficient Information System for Health Care – Study and Implementation Methodology*, IETE, Vol. 20, No. 4, pp:387-394, July-Aug., 2003.
- K.Bommanna Raja, M. Ramasubba Reddy, S. Swarnamani and S. Suresh *Efficient Information System for Health Care - Study and Implementation Methodology* accepted for publication in IETE Technical Review IETE / J-207/ Vol. 20, No 4, July-August 2003, pp 283-289
- Ratnaji Rao M.L C.Sujatha S.Swarnamani and Suryanarayan A.N.Prasad, Active Vibration Control of Isotropic Plate using Piezoelectric Actuators, J.Acoustical Society of India, vol. 31(CD only) paper 20
- Shet U.S.P, C.Sudhir Babu, E.Sudheer Kumar and S.Swarnamani, Noise emission from premixed laminar flames stabilized on a 3-petal-orifice in a Nozzle Burner, J.Acoustical Society of India, vol. 31(CD only) paper 20
- N.Kuruppaiah, C.Sujatha, V.Ramamurthi and P.S.Deshpande. vibration analysis in a light passenger vehicle by rigid body/ finite element modeling. 2(2) 2003, Journal of Advances in Vibration Engineering, Universities Press (India) private Limited.

## In Refereed International Journals:

1. C.H.I. Manohar, T. Sundararajan, V. Ramjee and S. Sasikumar, "A Numerical and experimental investigation of the interactions between a non-uniform planar array of incompressible free jets", *International journal for Numerical Methods in fluids*, vol. 44, pp 431-446, Feb. 2004.
2. B.H.L.Gowda and S.Mizuki, "On Secondary flows", *Journals of Turbomachinery, Japan*, Vol.31, No.6, 2003, pp.1-10
3. S.Mizuki, B.H.L.Gowda and T.Uchibaba, "Visualization studies using PIV in a cylindrical tank with and without suppressor", *Journal of Visualization, Japan*, Vol.6, No.4, 2003, pp.337-342
4. Dr. V. Ramjee, A paper published in international journal for Numerical method in fluids Volume 44, No.4, 2004 Feb, pp 451-446 - "A Numerical and experimental investigation of the interaction of the interaction between a non-uniform planar array of incompressible free jets. By 1. Manohar, T. Sundararajan and V.Ramjee
5. J.Kumar, Lakshmana Rao C. and Mehrdad Massoudi, "Coutte Flow of Granular Materials", *Int. J. of Nonlinear Mechanics*, 38, pp 11-20, 2003.
6. A. Raajagopal, M.Ravichandran, G. Muralidharan and M.S. Ssivakumar, "Distributed Computations"
7. Manjunatha, M, Singh, S.S and Singh, M. Blood flow analysis in mesenteric microvascular network by image velocimetry and axial tomography. *Microvas. Res.* 65, 2003, 49-55.
8. Anand, N.S., Kumar, D., Srinivasan, R and Singh, M. Laser reflectance imaging of human forearms and their tissue-equivalent phantoms. *Med. Biol. Eng. Comput.* 41, 2003, 28-32.
9. Srinivasan, R. and Singh, M. Laser backscattering and transillumination imaging of human tissues and their equivalent phantoms, *IEEE Trans. Biomed. Eng.* 50, 2003, 724-730.
10. Kumar, D and Singh, M. Non-invasive imaging of optical parameters of biological tissues, *Med. Biol. Eng. Comput.* 41, 2003, 310-316.
11. Kumar, D and Singh M. Characterization and imaging of compositional variation in biological tissues, *IEEE Trans. Biomed. Eng.* 50, 2003, 1012-1019.  
Jayavanth, S. and Singh M. Artificial neural network analysis of malaria severity through aggregation and deformability parameters of erythrocytes. *Clin. Hemorheol. Microcir.* 29, 2004, 457 – 468.
12. V. Jacob Thomas, K. Mothiram Patil, S. Radhakrishnan, V.B. Narayanamurthy and R. Parivalavan (2003) The role of skin hardness, thickness and sensory loss on standing foot power in the development of plantar ulcers in patients with diabetes mellitus, *International Journal of Lower Extremity Wounds*, 2 (3), 132-139.
13. V. Jacob Thomas, K. Mothiram Patil and S. Radhakrishnan (2004) Three dimensional stress analysis for the mechanics of plantar ulcers in diabetic neuropathy, *Medical and Biological Engineering and Computing*, Vol.42, March, 2004.
14. G. Charanya, K. Mothiram Patil, V. Jacob Thomas, V.B. Narayanamurthy, R. Parialavan and K. Visvanath (2004) Standing foot pressure image analysis for variation on foot sole soft tissue properties and levels of diabetic neuropathy, *Innovation and Technology in Biology and Medicine*. (In Press)
15. K. Jayaraj, N. Ganesan and C. Padmanabhan, 2004, "Efficient Computation of Parametric Instability Regimes In Systems with Large Degrees-Of-Freedom," *Finite Elements in Engineering Analysis Journal*, vol 40, pp. 1123-1138.
16. Sreejith, K. Jayaraj, N. Ganesan, C. Padmanabhan, P. Chellapandi and P. Selvaraj, 2004, "Fluid-Structure Interaction in Liquid Sodium Pipeline Systems," *Nuclear Engineering and Design*, vol. 227, pp. 313-322.
17. K. Jayaraj, N. Ganesan and C. Padmanabhan, 2003, "Model Reduction for Parametric Instability Analysis of Shells Conveying Fluid," vol 262, pp. 633-649
18. J. Kumar, N. Ganesan, S. Swarnamani and C. Padmanabhan, 2003, "Active Control of Cylindrical Shell with Magnetostrictive Layer," *Journal of Sound and Vibration*, vol 262, pp. 577-589.
19. J. Kumar, N. Ganesan, S. Swarnamani and C. Padmanabhan, 2003, "Active Control of beam with a Magnetostrictive Layer," *Computers and Structures*, vol. 81, pp.1375-1382.
20. Ganesan,n. and ravikiran Kadoli(2003) Buckling and dynamic analysis on piezo thermo elastic composite cylindrical shell, *Composite Structures*,59(1),45-60.
21. Ravikiran kadoli and N.ganesan(2003) Free vibration and buckling studies on composite shells conveying hot fluid composite studies, 60(1) 19-32.

22. Journal Publications J. S. Kumar, N. Ganesan, S. Swamamani and Chandramouli Padmanabhan Active vibration control of cylindrical shell with magnetostrictive layer, Journal of Sound and Vibration, Issue 3 Pages 577-589 Volume 262, 1 May 2003.
23. Kumar J S, N Ganesan, S.Swamamani, C Padmanaban - Active control of beam with magnetostrictive layer, Computers and structures 81 (2003) pp1375-1382
24. Narayanan S, Balamurugan V "Finite element modelling of piezolaminated smart structures for active vibration control with distributed sensors and actuators" J SOUND VIB 262 (3): 529-562 MAY 1 2003

**In Proceedings of National Conferences:**

1. Dr. V. Ramjee, Five Papers presented at 30<sup>th</sup> National conference of Fluid Mechanics and Fluid Power at NIT Surathkal, Dec. 2003
  - a. A study of five incompressible jets
  - b. Effect of Tabs on spreading features of supersonic jets
  - c. Interaction between multiple jets in incompressible and supersonic jets flows
  - d. Spreading characteristics of an incompressible jet and a supersonic jet
  - e. Experimental study of a single supersonic jets.
2. J. Lakshminarasimhan, B.H. Lakshmana Gowda and Ch. Sivannarayana, "Mutual Interference effects on prismatic bodies in side-by-side arrangement", Proc. Of 2<sup>nd</sup> Natl. Conf. on Wind Engg., held in VNIT, Nagpur, India in Feb. 12-14, 2004, pp.325-334.
3. D.Nachiappan, T.Sundararajan and B.H.L.Gowda, "Numerical solution for laminar flow past a stationary and oscillating square cylinder in uniform flow", Accepted for the 2<sup>nd</sup> National Conference on Wind Engineering, VNIT Nagpur, February 12-14, 2004
4. Dr. V. Ramjee Video lectures on jets flows Dr. V. Ramjee, 30<sup>th</sup> National Conference on Fluid Mechanics and Fluid Power, "Interaction between five supersonic jets with and without canting peripheral jets in external flow.
5. Prof. V.RAMJEE Invited Lecture at 30<sup>th</sup> National Conference of Fluid Mechanics and Fluid Power NIT, Surathkal, Dec 11, 2003." Interaction between supersonic jets with and without canting peripheral jets in external flow – a comparison.
6. K. Athiannan and R. Palaninathan, "Experimental investigations on buckling of cylindrical shells under axial compression and transverse shear", SADHANA, Vol. 29, Part 1, Feb. 2004, pp 93-115.
7. J.Raamachanran and K.Sakthivel, "Optimal locations for piezo electric actuator using simulated annealing technique", Proc. National Conference on Materials and Structures, pp 209-24, Jan. 2004.
8. Singh, M., Jayavanth S., Abraham, C. and Jagadeesan, K. Influences of malaria parasite P-vivax on erythrocyte aggregation and deformability. In Proc. International Med. Sci. Academy Conf. Cochin, 2003, p. 83.
9. V. Balasubramanian, "Armored Combat Decision Support System", Proceedings of National Seminar on Emerging Technologies in Defense Preparedness, 7-9, India, 2003.
10. Mallikarjun. S. Holi, S. Radhakrishnan, S. Swaranamani and N. A. Jayavelan. Quantitative Ultrasound in the Assessment of Osteoporosis and Prediction of Fracture Risk. Presented and Published in the Proceedings of National Symposium on Ultrasonics (XII-NSU), Gurunanak Dev University, Amritsar, November 2003, pp. 42.
11. S. B. Nayak and C. Padmanabhan, 2003; "Packeted Steam Turbine Bladed Disc Dynamic Analysis," *Proceedings of National Symposium on Rotordynamics (NSRD-2003)*, IIT Guwahati, December 2003.
12. K. Ramesh and C. Padmanabhan, 2003, "Dynamic Analysis of Turbine Bladed-Disk using Cyclic Symmetry," *Proceedings of National Symposium on Rotordynamics (NSRD-2003)*, IIT Guwahati, December 2003
13. S. Jayasankar, S. Narayanan and C. Padmanabhan, 2003, "Acoustic Radiation from Composite Shells," *National Symposium on Acoustics, Pune, October 31-November 1, 2003*. Paper NSA 2003-009.
14. V. V. Phani Kiran, S. Narayanan and C. Padmanabhan, 2003, "Experimental Determination of SEA parameters of Spacecraft Structural Components," *National Symposium on Acoustics, Pune, October 31-November 1, 2003*. Paper NSA 2003-003.

### In Proceedings of International Conferences:

1. B.H.L.Gowda, S.Mizuki, T.Uchibaba and H.Tsujita, "Influence of cross sectional shape on vortexing during draining from cylindrical tanks: a PIV study", Accepted for the 10<sup>th</sup> ACFM, Peradeniya, Sri Lanka, May 17-21, 2004.
2. D.Nachiappan, T.Sundararajan and B.H.L.Gowda, "Numerical simulation of flow past single and two square cylinders in cross flow" Accepted for the 10<sup>th</sup> ACFM, Peradeniya, Sri Lanka, May 17-21, 2004.
3. V. Jacob Thomas, K.M. Patil, S. Radhakrishnan, V.B. Narayanamurthy and R. Parivalavan (2003), "Diabetic feet at risk of plantar ulcers : A new method of analysis of standing foot pressure images with changes in foot sole properties" American Society of Biomechanics Annual Conference, University of Toledo, Toledo, USA, Sept. 25-27, 2003.
4. V. Jacob Thomas, K.M. Patil, S. Radhakrishnan, V.B. Narayanamurthy and R. Parivalavan, (2003), "Diabetic feet at risk of plantar ulcers : A new method of analysis of standing foot pressure images with changes in foot sole properties" Proceedings of IEEE Asia-Pacific Regional Conference, TENCON 2003 Bangalore, Vol.4, pp 1320-24, Oct. 14-18, 2003.
5. V. Jacob Thomas, K.M. Patil and S. Radhakrishnan (2004). The effect of therapeutic footwear on diabetic foot models. A finite element stress analysis, International conference on modeling and simulation, "MS 2004", IASTED, California, USA, March 1-3, 2004.
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15. K. Prahlad Rao, S. Radhakrishnan and M. Ramasubba Reddy, *Development of Tissue Equivalent Phantoms for Analysis of Tissue Composition Variation*, Proc. of Intl. Conf. on Laser applications and Optical Metrology, New Delhi, India, pp:620-623, Dec. 1-4, 2003 .

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19. Mallikarjun. S. Holi, S. Radhakrishnan and K. S. Rajagopal. Bone mineral loss in early and postmenopausal Indian women. Presented and published at the *First Joint Meeting of IBMS-JSBMR 2003*, Osaka, Japan, June, 2003.
20. Mallikarjun.S.Holi and S.Radhakrishnan. Finite element analysis of lumbar spine in osteoporosis. In the proceedings of *World Congress on Medical Physics and Biomedical Engineering (WC2003)*, August, 2003, Sydney, Australia. (CD-ROM).
21. Mallikarjun.S.Holi and S.Radhakrishnan. *In vivo* assessment of osteoporosis in women by impulse response technique. Presented and published in the Proceedings of *IEEE TENCON*, IISc, Bangalore, October, 2003.
22. R. Venkateswaran, S. Radhakrishnan and Nitin. S. Shetty. Classification of central retinal vein occlusion and foveal schisis by Electroretinogram signal analysis. In the proceedings of *IEEE TENCON*, IISc, Bangalore, October, 2003.
23. J. Judith, S. Radhakrishnan, Y. G. Srinivasa and S. Thanickachalam. Echocardiographic volume Estimation of the left ventricle by Image Processing, in the proceedings of the *World Congress on Medical Physics and Biomedical Engineering (WC2003)*, August, 2003, Sydney, Australia. (CD-ROM).
24. Naresh Juluri, S.Swarnamani, Improved accuracy of Fault Diagnosis of Rotating Machinery using Wavelet De-noising and Feature Selection, ASME TURBO EXPO 2003,Atlanta, Georgia, Atlanta, 16-19<sup>th</sup> June 2003 Session 10.8 Paper1(only CD supplied)
25. Naresh Juluri, S.Swarnamani, Genetic Optimization of Multi Layer Feed forward Neural Network for Fault Diagnosis of Rotating Machinery, Apr 28,2003,Annual Meeting STLE ,NY,USA
26. K.Bommanna Raja, M. Ramasubba Reddy, S. Swarnamani and S. Suresh, Study on Ultrasound Kidney Images for Implementing Content Based Image Retrieval System using Regional Gray-Level Distribution, Proc. of Intl. Conference, Italy, pp1-4, 2003

#### 4.2.6 Other Activities:

1. Dr. S.Narayanan, Professor attended the AICTE Committee meeting on National Doctoral Fellowship on 17.6.2003.
2. Dr. S. Narayanan, Professor attended the Academic Council meeting of the Biju Patnaik University of Tech. At Bhubaneswar on 5.6.2003.
3. Dr. S.Narayanan, Professor attended the council meeting of INAE for the Selection of Fellows and Foreign Fellows of INAE, Delhi on 29.10.2003 to 31.10.2003 and attended to present paper in NSA 2003 Pune on 1.11.2003.
4. Dr. S. Narayanan, Professor attended the AICTE meeting on National Doctoral Fellowship programme at New Delhi on 13.11.2003
5. Dr. S. Narayanan, Professor attended Selection Committee for facility at IIT Kanpur on 5.11.03.
6. Dr. S. Narayanan, Professor attended the expert committee meeting of AICTE at Delhi on 19.12.03.
7. Dr. S. Narayanan, Professor attended Accreditation work of the BE (Mechanical) Programme at Sinhgad College of Engineering
8. Dr. S.Narayanan, Professor, attended the 12<sup>th</sup> meeting of the National Committee on Noise Pollution Control at Delhi (CPCB) on 30.1.2004.
9. Dr. C. Sujatha, Professor was expert review member for the Project on finite Element analysis of bus body funded by association of State Road Transport Undertakeup, New Delhi.



### 4.3 DEPARTMENT OF CHEMICAL ENGINEERING

#### 4.3.1. Introduction:

The Department of Chemical Engineering was established in 1959. The department is organized into seven research groups with supporting laboratory facilities. The Transfer operations laboratory, Research Engineering Laboratory, Process Dynamics and Control Laboratory, Mechanical Operations Laboratory, High Engineering Laboratory, Biochemical Engineering Laboratory and Environmental Engineering Laboratory.

#### 4.3.2. Academic Programmes:

##### New courses introduced:

S.No.	Course No.	Title
1.	CH 324	Introduction to Semiconductor Manufacturing Processes
2.	CH 544*	Quality Optimization Via Robust Design and Statistical Process Control
3.	CH 545*	Applications of Particle Science in High Technology Industries

\* Subject to approval of the Board

##### Students on roll:

Programme	I Year	II Year	III Year	IV Year	V Year	Total
B.Tech.	44	46	41	37	2	170
M.Tech.	32	23	-	-	-	55
M.S.	3	1	3	1	-	8
Ph.D.	12	9	6	6	4	37
Total	91	79	50	44	6	270

##### Names of student / scholar attended conference / seminar and symposia abroad/ India:

S.No.	Name of the student	Programme	Name of the conference/ seminar/symposia	Date and venue
<b>Conference:</b>				
1.	Jagannathan K	Ph.D.	Workshop on "An Integrated Regional Air Quality Management Plan"	14 June 2003 VIT, Vellore
2.	Eldon R Rene	Ph.D.	National Conference on Biological Treatment of Waste Water and Waste Air, BTWWA-2003	28-29 Aug.2003 RRL, Trivandrum
3.	Pakshi Rajan K	Ph.D.	National Conference on Biological Treatment of Waste Water and Waste Air, BTWWA-2003	28-29 Aug.2003 RRL, Trivandrum
4.	Pakshi Rajan K	Ph.D.	First International Symposium on Southeast Asian Water Environment,	21-27 Oct.2003 Bangkok, Thailand
5.	Balasubramanian P	Ph.D.	Indian Chemical Engineering Congress – 2003 (CHEMCON)	18-23 Dec.2003 RRL, Bhubaneswar
6.	Krishnamoorthy C P	Ph.D.	Indian Chemical Engineering Congress – 2003 (CHEMCON)	18-23 Dec.2003 RRL, Bhubaneswar
7.	Sriram S	Ph.D.	Indian Chemical Engineering Congress – 2003 (CHEMCON)	18-23 Dec.2003 RRL, Bhubaneswar

S.No.	Name of the student	Programme	Name of the conference/ seminar/symposia	Date and venue
8.	Anil Ballea	Ph.D.	Indian Chemical Engineering Congress – 2003 (CHEMCON)	18-23 Dec.2003 RRL, Bhubaneswar
9.	Kalpana S	Ph.D.	Indian Chemical Engineering Congress – 2003 (CHEMCON)	18-23 Dec.2003 RRL, Bhubaneswar
10.	Krishna Bandaru SVSR	Ph.D.	Indian Chemical Engineering Congress – 2003 (CHEMCON)	18-23 Dec.2003 RRL, Bhubaneswar
11.	Dhinakar R	Ph.D.	Indian Chemical Engineering Congress – 2003 (CHEMCON)	18-23 Dec.2003 RRL, Bhubaneswar
12.	Velu M	Ph.D.	Indian Chemical Engineering Congress – 2003 (CHEMCON)	18-23 Dec.2003 RRL, Bhubaneswar
13.	Balaji B	Ph.D.	Indian Chemical Engineering Congress – 2003 (CHEMCON)	18-23 Dec.2003 RRL, Bhubaneswar
14.	Prasad Babu	Ph.D.	Indian Chemical Engineering Congress – 2003 (CHEMCON)	18-23 Dec.2003 RRL, Bhubaneswar
15.	Eswaraiah C	Ph.D.	Indian Chemical Engineering Congress – 2003 (CHEMCON)	18-23 Dec.2003 RRL, Bhubaneswar
16.	Sreeramulu B	M.S.	Indian Chemical Engineering Congress – 2003 (CHEMCON)	18-23 Dec.2003 RRL, Bhubaneswar
17.	Ashish Kapoor	Dual Degree	Indian Chemical Engineering Congress – 2003 (CHEMCON)	18-23 Dec.2003 RRL, Bhubaneswar
18.	Manthana Vamsi Krishna	Dual Degree	Indian Chemical Engineering Congress – 2003 (CHEMCON)	18-23 Dec.2003 RRL, Bhubaneswar
19.	S. Maharudrayya	Ph.D.	Indian Chemical Engineering Congress – 2003 (CHEMCON)	18-23 Dec.2003 RRL, Bhubaneswar
20.	S. Maharudrayya	Ph.D.	National Seminar on Fuel Cell – Materials, Systems & Accessories	Dec.2003 Ambarnath
21.	Sathe Vivek	Ph.D.	Instrumentation and Control Engineering Conference – ICECON 2003	4-6 Dec.2003 REC, Tiruchirappalli
22.	Sadasiva Rao M V1	M.Tech.	Instrumentation and Control Engineering Conference – ICECON 2003	4-6 Dec.2003 REC, Tiruchirappalli
23.	Lakshmi Narasimha Sarma K	M.Tech.	Instrumentation and Control Engineering Conference – ICECON 2003	4-6 Dec.2003 REC, Tiruchirappalli
24.	Seema Manuja	Ph.D.	International Conference on Intelligent Sensing and Information Processing – ICISIP 2004	4-7 Jan.2004 Le Royal Meridian Chennai

S.No.	Name of the student	Programme	Name of the conference/ seminar/symposia	Date and venue
25.	Vetri Murugan R	M.Tech.	International Seminar on Advances in Polymer Technology	16-17 Jan.2004 CUSAT, Cochin
<b>Symposia:</b>				
26.	Sucheta Kumaran	M.Tech.	National Symposium on Mathematical Methods and Applications – NSMMA 2003	22 Dec. 2003 IIT Madras
27.	Shanthi Priya A	M.Tech.	National Symposium on Mathematical Methods and Applications – NSMMA 2003	22 Dec.2003 IIT Madras
28.	Vijai S Sai	M.Tech.	Novel and Innovative Approaches in Chemical and Biotechnology	4 <sup>th</sup> & 5 <sup>th</sup> February 2004
29.	Ramlinga Reddy G	M.Tech.	Symposium on INTERFACE 2004	26 <sup>th</sup> Feb. – 2 <sup>nd</sup> March 2004
30.	Sruthi Kalpana	M.Tech.	Symposium on INTERFACE 2004	26 <sup>th</sup> Feb. – 2 <sup>nd</sup> March 2004

#### 4.3.3. Faculty and their activities:

##### Faculty:

Name and Qualifications	Major area of specialization (only 3 areas)
<b>Professors</b>	
M.S.Ananth, Ph.D. (Florida)	<b>[Head]</b> Thermodynamics, Mathematical Modeling Transport Processes, Energy Conservation Process Control Chemical Reactor Analysis and Design, Fluidization Particle Technology, Environmental Engineering, mineral processing Particle Science, Chemical Vapor-Deposition Multicomponent Mass Transfer Polymer Processing, Rheology Process Analysis and Design of Biological Systems, Bioreactors Modelling and Simulation, Non-linear Dynamics, Flow Visualization Advanced Process Control, Artificial Neural networks Fuzzy Modeling & Control Particle Technology, Biomass Fuel Preparation, Material Recycling from Electronic Scrap Data mining, Fault Diagnosis, Process design Chemical Reactor Analysis and Design, Rotary Kilns Environmental Engineering, Membrane Technology, Bio-technology
A.R.Balakrishnan, Ph.D. (Waterloo)	
M.Chidambaram, Ph.D. (IISc) (Head)	
K.Krishnaiah, Ph.D. (IIT Madras)	
D.V.S.Murthy, Ph.D. (IIT Madras)	
R. Nagarajan, Ph.D. (Yale University)	
N.R.Neelakantan, Ph.D. (Swansea)	
T.Panda, Ph.D. (IIT Delhi)	
S. Pushpavanam, Ph.D. (Florida)	
V.S.Ramachandra Rao, Ph.D. (IIT Madras)	
S.Sankara Narayanan, Ph.D. (Queens Land)	
Shankar Narasimhan, Ph.D. (North Western)	
P. Sessa Talpa Sai, Ph.D. (IIT Madras)	
T.Swaminathan, Ph.D. (IIT Kanpur)	
<b>Associate Professors</b>	
R.Ravi, Ph.D. (Purdue University)	Statistical Thermodynamics, Process Control of Integrated Systems, Property Estimation of Liquid Metals Computational Fluid Dynamics, Multiphase Flow
Sreenivas Jayanti, Ph.D. (Imperial College), London	
<b>Assistant Professors</b>	
Abhijit P Deshpande, Ph.D. (Washington)	Polymers and composites processing, Rheology, Natural fiber composites, Microscopic Flow visualization Separation Processes, Computer Aided Design Surface Reactions, Chemical Mechanical Polishing Polymers and Elastomeric Materials Microwave Heating, Computational Electro Magnetics, Finite Elements
A.Kannan, Ph.D. (Mc Master University, Canada)	
S. Ramanathan,	
Susy Varughese, Ph.D. (IIT Kharagpur)	
Tanmay Basak, Ph.D. (IISc Bangalore)	

**Short-term courses / Workshops / Seminars / Symposia / Conferences organized by the faculty members:**

S.No.	Co-ordinator(s)	Title	Period
<b>Workshop:</b>			
1	Prof.D.V.S. Murthy & Prof.T. Swaminathan	Policies and Strategies for Fine Particulates in Ambient Air	22 <sup>nd</sup> march 2004
<b>Short Term Course:</b>			
1	Dr. S. Pushpavanam	SERC School on "Analytical and Numerical Methods used in Modelling and Simulation in Engineering Systems"	12-16 January 2004
<b>Symposia:</b>			
1	Dept.of Chemical Engg.	One Day Symposium on "Transport Processes and Interfacial Phenomena in Multiphase Systems"	8 <sup>th</sup> Jan.2004

**Short-term courses / Workshops / Seminars / Symposia / Conferences / Training attended by the faculty members in Academic institutions and public sector undertakings:**

S.No.	Name of the faculty	Title	Period
<b>Conference:</b>			
1	Prof.Shanakr Narasimhan	Gordon Research Conference on Application of Statistics in Chemistry and Chemical Engineering,	July 27-Aug 1, 2003, Boston, USA
2	Prof.Shanakr Narasimhan	IFAC Conference on Advanced Control of Chemical Processes 2003	Jan 11-14, 2004 Hong Kong

**Special Lectures delivered by the faculty in other Institutions:**

S.No.	Name of the faculty	Topic of Lecture	Venue and Date
1	Prof.M. Chidambaram	Plenary Lecture on "Technical Post Graduate Symposium 2003"	17 <sup>th</sup> December 2003 University of Malaysia, Kuala Lumpur
2	Prof.K. Krishnaiah	Optimizatin of Chemical Reactions	19 <sup>th</sup> December 2003 NIT, Warangal
3	Prof.K. Krishnaiah	Air Pollution Control, Philosophy & Basic Issues	11 <sup>th</sup> February 2004 Sai Ram Engineering College
4	Prof.K. Krishnaiah	CRE in ChE	14 <sup>th</sup> February 2004 Satyabhama Deemed University
5	Prof.K. Krishnaiah	ChECK 2004	4 <sup>th</sup> March 2004 RVR & JC College of Engineering, Guntur
6	Prof.D.V.S. Murthy	Particulate Monitoring – SIDA Project	6 <sup>th</sup> May 2004 Hakeem College of Engineering, Melvisharam
7	Prof.R. Nagarajan	Practical Applications of Particle Science	Feb.2004. A.C. Tech.
8	Prof.T. Panda	Trends in Pectolytic Enzymes Research	1 <sup>st</sup> Dec. 2003 Andhra Univ.,
9	Prof.T. Panda	Drug Intermediates through Biochemical and Chemical Routes	19 <sup>th</sup> Nov.2003 MGR Engineering College
10	Prof.V.S. Ramachandra Rao	Instrumentation for Safe Operation of Chemical Plants	17 <sup>th</sup> Feb. 2004 Regional Labour Institute, Adyar
11	Prof.Shankar Narasimhan	--	29 <sup>th</sup> Oct.2003 Bharat Petroleum R&D Centre, Noida, New Delhi
12	Prof.Shankar Narasimhan	--	30 <sup>th</sup> Oct.2003 Indian Institute of Technology, Kanpur
13	Prof.Shankar Narasimhan	--	1-2 Jan.2004 Honeywell Technology Solutions Laboratory, Bangalore
14	Prof.Shankar Narasimhan	--	Jan.15-16, 2004 National University of Singapore, Singapore

S.No.	Name of the faculty	Topic of Lecture	Venue and Date
15	Prof.P.S.T. Sai	Mathematical Modeling of Pneumatic Char Injection in a Direct Reduction Rotary Kiln	16 <sup>th</sup> September 2003 Sriram Engineering College, Perumalpattu
16	Prof.P.S.T. Sai	Is it an Alternative to Blast Furnace? – Plenary lecture at the National Conference on “Novel and Innovative Approaches in Chemical Engineering and Biotechnology”	4 <sup>th</sup> Feb. 2004 St.Joseph's College of Engineering, Chennai
17	Prof.P.S.T. Sai	An efficient Air Pollution Control Equipment – Plenary Lecture at All India seminar on 'Advances in Fluidization Engineering'	26 <sup>th</sup> February 2004 S.V. University, Tirupati
18	Dr.A. Kannan	Energy Efficiencies of Process Through Entropy Balances	16 <sup>th</sup> December 2003 Sri Chandrasekharendra Saraswathi Viswa Maha Vidyalaya, Kanchipuram-631561
19	Dr.A. Kannan	Research Proposal Preparation	19 <sup>th</sup> December 2003 Civil Engg.Dept., IIT Madras

#### Visits abroad by faculty:

S.No.	Name of the faculty	Country visited	Date	Purpose of visit
1	Prof.M. Chidambaram	Germany	June 2003	Visit to Universitat Kaiserslautern, Germany under the Joint Indo-German Project (IIT_BMBF)
2	Prof.K. Krishnaiah	Germany	May – July 2003	Visiting Faculty at max-Plank Institute, Magdeburg, Germany
3	Prof. D.V. S. Murthy	Germany	May – July 2003	DAAD Re-invitation for Research Work at University of Karlsruhe, Germany
4	Prof. D.V.S. Murthy	Vietnam	8-10 January 2004	Third AIRPET Workshop of SIDA Project in Hanoi, Vietnam
5	Prof. T. Swaminathan	Vietnam	8-10 January 2004	Third AIRPET Workshop of SIDA Project in Hanoi, Vietnam
6	Prof. Shankar Narasimhan	USA	June 2002-July 2003	Visiting Faculty at University of Alberta
7	Prof.P.S.T. Sai	Malaysia	June 2001 – May 2003	Associate Professor (Contract) in the School of Chemical Engineering at Universiti Sains, Malaysia
8	Dr.Sreenivas Jayanti	C.E.A. Grenoble, France	One year from Jan.2003	Sabbatical Leave
9	Prof.N.R. Neelakantan	University of Tours, France	Dec.2003 to September 2004	Research Work at University of Tours, France

#### Fellowships of Academies and Professional Societies:

S.No.	Name of the faculty	Title	Period
<b>INAE:</b>			
1	Prof. A.R. Balakrishnan	Fellow of Indian National Academy of Engineering	2003
2	Prof. A.R. Balakrishnan	Member of the Forum International Scientific Committee	2004
<b>ISTE/CSI and others:</b>			
1	Prof. A.R. Balakrishnan	Member, International Advisory Board, Engineering Science and Technology	
2	Prof. A.R. Balakrishnan	Member, International Scientific Committee, International Heat transfer Conference, 2002	1996
3	Prof. A.R. Balakrishnan	Member, AIChE	1974

#### 4.3.4. Design and Development Activities:

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

- Prof.Shankar Narasimhan - In collaboration with Prof. B.S. Murty, Professor, Civil Engg. Dept., IIT Madras we have developed reliable and computationally efficient software for detecting and isolating leaks in gas pipeline networks. The method makes use of a mathematical model of gas pipeline networks along with routine online pressure and flow measurements to continuously monitor the state and health of gas pipeline networks. It is an online method, which makes use of novel techniques developed as part of research work done by the coordinators during the past ten years. The software provides online diagnostic information regarding the time at which a leak occurs, the pipe branch and position where it has occurred and an estimate of its magnitude. The software has been tested through extensive simulation studies and is in the process of being implemented in one of the pipelines operated by GAIL India Ltd.
- Dr. S. Sankaranarayana n - Variable speed rotating wheel classifier setup.
- Dr. A. Kannan – frIND: Multicomponent Mass Transfer Software (Internet Compatible)

#### 4.3.5. Research and Consultancy:

##### Sponsored Research Projects:

S.No.	Title	Period	Funding Agency	Amount (in lakhs)	Co-ordinators
1.	Advanced Control and Monitoring of a CSTR using a Control Network	2001-2004	DST	15.97	Prof. Shankar Narasimhan & Sachin C. Patwardan (now at IIT Bombay)
2.	Boiling & Two Phase Flow Studies of Cryogenic Fluids	Feb.1999 – July 2004	BRNS & ISRO- IITM Cell	24.07	Dr.Sreenivas Jayanti & Prof.A.R. Balakrishnan
3.	Surface Tension Driven Gas-Liquid Flow under Micro Gravity Conditions: Measurements and CFD Predictions	2000-03	ISRO	12.74	Dr.Sreenivas Jayanti & Dr.Usha, MA
4.	Optimization of Proton Exchange Membrane (PEM) Cell Stack Design using Advanced Computational Techniques	April 2002 – June 2004	MNES	7.51	Dr.Sreenivas Jayanti & Dr.Abhijit P Deshpande
5.	Modelling Propellant Slurry Flow during the Casting of a Solid Rocket Motors	March 2002 – March 2004	ISRO-IITM Cell	7.42	Dr.Sreenivas Jayantii & Dr.Sundararajan, ME
6.	Boiling and Two-phase Flow Studies of Cyogenic Fluids	1999-2004	ISRO	22.02	Prof. A.R. Balakrishnan & Dr.Sreenivas Jayanti
7.	Flow Boiling Heat Transfer inside Narrow Tubes	2003-2006	ISRO-IITM	21.3	Prof.A.R.Balakrishnan & Prof.S.K. Das
8.	Multiple Steady State in Homogeneous Azeotropic Distillation	2002-2005	MHRD	12	Dr.A. Kannan & Dr.R. Ravi
9.	Development of a Laboratory for Polymer Engineering	2 Years 2003-2005	MHRD	15	Prof.N.R. Neelakantan
10.	Microscopic Observation of Wetting Dynamics over Porous and Particulate Solids	3 ½ Years 2003-2006	MHRD	10	Dr.Abhijit P Deshpande
11.	Particulate & VOC Monitoring in Chennai City	2001-2004	SIDA	39	Prof.D.V.S. Murthy & Prof.T. Swaminathan

##### Industrial Consultancy Projects:

S.No.	Name of the faculty	Title	Industry	Amount (in lakhs)
1	Prof.S. Sankaranarayanan	Studies in milling of Rice Husk	BHEL, R&D, Trichy	6.46

## RBIC Projects:

S.No.	Name of the faculty	Title	Industry	Amount (in lakhs)
1	Prof. Shankar Narasimhan	Development of methods for leak detection and isolation in gas pipeline networks.	GAIL R&D Centre 2002-2004	17.5

## Journal Editorial Boards:

S.No.	Name of the faculty	Chairman / Member	Journal
1.	Prof. A.R. Balakrishnan	Associate Editor	International Journal of Heat & Mass Transfer
2.	Prof. A.R. Balakrishnan	Associate Editor	International Communications in Heat & Mass Transfer
3.	Prof. A.R. Balakrishnan	Editor	Journal of Energy, Heat & Mass Transfer
4.	Prof. T. Panda	Editorial Board Member	Indian Journal of Chemical Technology
5.			
6.	Prof N. R. Neelakantan	Member	International Journal of Plastics Technology, CIPET, Chennai
7.	Prof N. R. Neelakantan	Member	International Journal of Plastics Technology, CIPET, Chennai
8.	Prof N. R. Neelakantan	Member	Applied Science Periodical
9.	Prof. T. Swaminathan	Editorial Board Member	Journal of Environmental Management
10.	Prof. D.V.S Murthy	Editorial Board Member	Indian Journal of Environment and Pollution.

## 5.7 Research Publications:

Total No. of papers published in Refereed National Journals	..	03
Total No. of papers published in Refereed International Journals	..	21
Total No. of papers presented in National Conference	..	18
Total No. of papers presented in International Conference	..	15

## In Refereed National Journals:

1. R.Padma Sree & M.Chidambaram, Identification of unstable transfer function model with a zero by optimization method, JI.Indian Institute of Science, 82 (2002) 219-225.
2. S.N. Jyothi & M.Chidambaram, Identification of Hammerstein model for reactors with input multiplicities, Indian Chemical Engineer, V45 (2003) 152-156.
3. R. Padma Sree & M.Chidambaram, Set point weighting parameter of PI/PID controllers for systems with unstable pole and zero by minimizing ISE, Indian Chemical Engr., 45(2003) 3-6.
4. R. Padma Sree & M.Chidambaram, Simple method of tuning PI controllers for stable inverse response systems, J.Indian Institute of Science., May-Aug.2003, 83, 73-85.

## In Refereed International Journals:

1. G. Vinayak Rao and A.R. Balakrishnan, Nucleate Pool Boiling and Heat Transfer of Multicomponent Mixtures, Chemical Engineering Research and Design, Vol.82, 43-52 (2004).
2. K. Srinivasan and M. Chidambaram, Modified relay feedback method for improved system identification, Computers & Chemical Engg, 27 (2003) 727-732.
3. V. Ramakrishnan and M. Chidambaram, Estimation of SOPTD transfer function model using a single asymmetrical relay feedback test, Computers & Chemical Engg.27 (2003) 1779-1784.
4. M. Chidambaram and R. Padma Sree, A Simple method of tuning PID controllers for integrator/dead time processes, Computers & Chemical Engg., 27 (2003) 211-215.
5. R. Padma Sree and M. Chidambaram, A Simple method of tuning controllers for unstable systems with a zero, Chemical & Biochemical Engg. JI., 17 (2003) 207-212.

6. R. Padma Sree and M.Chidambaram, Control of unstable bioreactor with dominant unstable zero, *Chemical & Biochemical Engg. Jl.*, 17 (2003) 139-145.
7. D.S. Rana, K.Theodore, G.S.N. Naidu & T. Panda, Stability and kinetics of  $\beta$ -1, 3-glucanase from *Trichoderma Harzianum*, *Process Biochemistry*, 39, 149-155, 2003 (IF-0.0869)
8. V.V. Dasu, T. Panda\* & M. Chidambaram, Determination of significant parameters for improved griseofulvin production in a batch bioreactor by Taguchi's method, *Process Biochemistry*, 38, 877-880, 2003 (IF-0.0869)
9. GSN Naidu & T.Panda\*, Studies on pH and thermal deactivation of pectolytic enzymes from *Aspergillus niger*, *Biochemical Eng. J.*, 16, 57-67, 2003 (IF-0.76)
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12. G.S.N. Naidu & T.Panda, Purification and biochemical properties of microbial pectinases: a review, *Process Biochemistry*, 38, 987-996, 2003. (IF-0.869).
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13. Shankar Narasimhan, Vijayabaskar, "Fault Tolerant Control of a CSTR using Nonlinear State Estimation," *Proceedings of International Symposium on Process Systems Engineering and Control*, pp. 346-352, Mumbai, India, Jan 3-4, 2003.
14. Shankar Narasimhan, Sirish L.Shah, University of Alberta, Edmonton, Canada, "Model Identification and Error Covariance Matrix Estimation from Noisy Data using PCA," *Proceedings of 7<sup>th</sup> International Symposium on Advanced Control of Chemical Processes*, Hong Kong, pp. 567-572, Jan 11-14, 2004.
15. Shankar Narasimhan, "Fault tolerant Control with Identified Models : An Experimental Study," *Proceedings of International Conference on Intelligent Sensing and Information Processing*," pp. 460-465, Chennai, Jan, 2004.
16. H. Sindhu & P.S.T. sai, "A Model of Pressure Drop and Liquid Saturation in Gas-Liquid Cocurrent Upflow through Packed Beds", *Chem.Engg.J.*93, 135-142, 2003.
17. A.E.R. Bruce, P.S.T. Sai, & K.Krishnaiah, "Liquid Phase Mixing of Turbulent Bed Contactor", *Chem.Eng.Scie.*, 58, 3453-3463, 2003.
18. S.M. Shekhar & S.Jayanti, "Mixing of power-law fluids using anchor impellers: Metzner-Otto concept revisited", *AIChE J.*, 49, 30-40, 2003.
19. S.M. Shekhar & S. Jayanti, "Mixing of pseudoplastic fluids using helical ribbon impellers", *AIChE J.*, 49, 2768-2772, 2003.
20. S. Jayanti & S.Narayanan, "computational Study of Particle-Eddy interaction in Sedimentation Tanks", *J.Environmental Eng.*, 130 (1), 37-49, (2004).
21. A. Kannan and Sadhi Khan Pathan, "Enhancement of Solid Dissolution Process" (Accepted in *Chemical Engineering Journal* 2004).

#### In Proceedings of National Conferences:

1. M.V. Sadasiva Rao and M. Chidambaram, Comparison of method of inequalities and genetic algorithms of design of multivariable controllers, *Proceedings of Conference on Materials & Techniques for Nuclear cycles covering materials, Robotics, Process instrumentation & inspection technology*, C165-C173, 15-16<sup>th</sup> December 2003, Chennai.
2. Ganesh S. Dombe and M. Chidambaram, Identification of multivariable systems using relay tuning, *Proceedings of Conference on Materials & Techniques for Nuclear cycles covering materials, Robotics, Process instrumentation & inspection technology*, C242-C250, 15-16<sup>th</sup> December 2003, Chennai.
3. K.L.N. Sarma and M. Chidambaram, Design of centralized controllers for nonsquare systems, *Proceedings of Conference on Materials & Techniques for Nuclear cycles covering materials, Robotics, Process instrumentation & inspection technology*, C251-C258, 15-16<sup>th</sup> December 2003, Chennai.



4. M. Chidambaram, Intelligent controllers, Proceedings of Conference on Materials & Techniques for Nuclear cycles covering materials, Robotics, Process instrumentation & inspection technology, C151-C164 (invited lecture), 15-16<sup>th</sup> December 2003, Chennai.
5. Sathe Vivek and M. Chidambaram, Relay auto tuning of parallel cascade controllers, Proceedings of Conference on Materials & Techniques for Nuclear cycles covering materials, Robotics, Process instrumentation & inspection technology, C259-C264, 15-16<sup>th</sup> December 2003, Chennai.
6. M. Chidambaram and Sathe Vivek, A simple method of tuning cascade controllers, Proceedings of National Conference on process identification, control & diagnosis, 8-9<sup>th</sup> August, 2003, Annamalai University, Chidambaram.
7. Sathe Vivek and M. Chidambaram, An improved relay auto tuning of PID controllers for unstable FOPTD systems for unstable FOPTD systems, Proc.of ICECON'03, Tiruchirappalli, 4-6<sup>th</sup> Dec., 2003.
8. K.L.N. Sarma and M. Chidambaram, Design of centralized controllers for non square systems, Proc.of ICECON'03, Tiruchirappalli, 4-6<sup>th</sup> Dec., 2003.
9. M.V. Sadasiva Rao and M. Chidambaram, Multivariable controller tuning by genetic algorithms, Proc.of ICECON'03, Tiruchirappalli, 4-6<sup>th</sup> Dec., 2003.
10. M.Premkumar, Sushma R.Nair & T.Panda: Trends in Pectolytic Enzymes Research: Souvenir in National Seminar on the importance of biotechnology and production of value added and useful product from natural substrates, Andhra Univ. Waltair, pp.7-11, 2003.
11. C. Eswariah & S.Sankaranarayanan, CHEMCON 2003, Paper CHM 352, 4 pages.
12. S. Maharaudrayya, S. Jayanti & Abhijit P Deshpande, "Optimization of the Serpentine Channel Configuration used in PEM Fuel Cell Stacks", National Conference on Fuel Cells, Ambarnath, September 2003.
13. J.Nalla, MM Desai, S. Jayanti & P.S. Mehta, "Evaluating the Effect of Piston Cavity on In-Cylinder Flow in Direct Injection Diesel Engine using CFD Technique, 18<sup>th</sup> National Conference on IC Engines and Combustion, Thiruvananthapuram, Dec.2003.
14. Ramalinga Reddy G., Kannan, A., "Steady State and Dynamic Studies of a Homogenous Azeotropic Distillation Process", INTERFACE 2004, BHTI, Kanpur, February 2004.
15. Sruti Kalpana and Kannan, A., "Analysis of Batch Distillation Process with and without Chemical Reaction, "INTERFACE 2004, HBTI, Kanpur, February 2004, Awarded the Third Prize in the Session on Unit Operations.
16. Ramalinga Reddy G. and Kannan, A. "Non-linear Analysis in Distillation", Presented in National Symposium of Mathematical Methods and Applications (NSMMA 2003), 22<sup>nd</sup> December 2003.
17. Varma Mahesh N. and Kannan, A., "Computational Flow Modeling of a Natural Convection Process", Presented in National Symposium on Mathematical Methods and Applications (NSMMA 2003), 22<sup>nd</sup> December 2003.
18. Sasmita Pradhan and Kannan, A., "Simulation and Analysis of an Extractive Distillation Process", Presented at National Conference on Separation in Process Industries (Feb.14-16<sup>th</sup>, 2003), Institute of Technology, Varanasi, India, Conference Proceedings P.86-94, 2003., Adjudged Best Paper for Session on Distillation and Extraction.

#### **In Proceedings of International Conferences:**

1. R. Padma Sree and M. Chidambaram, IMC based controller design for unstable systems with a zero, Proc.of Intl.Conf. on Chemical and Bprocess Engg., Pages 843-850, 27-29<sup>th</sup> August 2003, Sabha, Malaysia.
2. Sathe Vivek and M. Chidambaram, Cascade controller tuning by relay auto tune method, Proc.of Intl.Conf. on Chemical and Bprocess Engg., Pages 851-855, 27-29<sup>th</sup> August 2003, Sabha, Malaysia.
3. D. Swati, V.S. Ramachandra Rao, R. Pckhardt and M. Chidambaram, Nonlinear PI controller for time delayed buffered acid-base system, Pages 856-861, 27-29<sup>th</sup> August 2003, Sabha, Malaysia.
4. Prof.Shakar Narasimhan, Pramod Vachhani, and Raghunathan Rengaswamy, Clarkson University, USA, "Integrating Diagnostic Knowledge with Nonlinear Programming for Comprehensive Fault Diagnosis - A Hypothesis Driven Approach," AIChE Annual Meeting, Indianapolis, USA, Nov 3-8, 2002.

5. Prof.Shakar Narasimhan, Edward Bai and Sirish L. Shah, University of Alberta, Edmonton, Canada, "A Novel Perspective on Fault Diagnosis using Models Identified by PCA," 53<sup>rd</sup> Canadian Chemical Engineering Conference, Hamilton, Ontario, CANADA, Oct 26-29, 2003 (coauthored with).
6. Prof.Shakar Narasimhan, Harigopal Raghavan and Sirish L. Shah, University of Alberta, Edmonton, Canada, "An alternative to Maximum Likelihood Principal Components Analysis when measurement error covariances are unknown," 2003 Gordon Research Conference on Statistics in Chemistry and Chemical Engineering, Mount Holyoke College, MA, USA, July 27-Aug 1, 2003
7. Siti Kartini Abdul Rahim, Abdul Rahman Mohamed & P.S.T. Sai, "Studies on Photo-Catalytic Degradation of Phenol in Waste Water in a Batch Reactor", Proc.2<sup>nd</sup> Regional Conference on Energy Technology Towards a Clean Environment, 2003, Thailand, 1052-1056.
8. Siti Kartini Abdul Rahim, Abdul Rahman Mohamed & P.S.T. Sai, "Characterization and incineration of Hospital waste", Proc.Environment 2003, Penang, Malaysia, 293-298.
9. Siti Kartini Abdul Rahim, Abdul Rahman Mohamed & P.S.T. Sai, "Studies on Photo-Catalytic Application in Waste Water", Proc.Environment 2003, Penang, Malaysia, 94-99.
10. Che Rohaida Ngah, Abdul Rahman Mohamed & P.S.T. Sai, "Photo-Catalytic Process in Fluidized Bed Reactor", Proc.Environment 2003, Penang, Malaysia, 304-308.
11. Sharif Hussein Sharif Zein, Abdul Rahman Mohamed, P.S.T. Sai & Noor Asmawati Mohd.Zabidi, "Ni/Mn based Catalyst for Methane Decomposition to Hydrogen and Carbon Nanotube: The Effect of Temperature and Space Time", Proc.of Int.Symp.on Renewable Energy: Environment Protection & Energy Solution for Sustainable Development, Kuala Lumpur, Malaysia, pp255-262, 2003.
12. Karunakumari, C.Eswaraiah, Sreenivas Jayanti, S.Sankaranarayanan, 2<sup>nd</sup> International Conference on Fluid Power, IIT, Roorkee, Dec.2002, AP321-328.
13. C. Eswaraiah & S. Sankaranarayanan, MPT 2004, RRL, Bhubaneswar, Feb.2004.
14. B. Nagakishore & S. Jayanti, "A CFD-based Model for Annular Gas-Liquid Flow", INSPEC-03, IIT-Bombay, Mumbai, Jan.2003.
15. M. Valette and S. Jayanti, "Annular Dispersed Flow Calculations with a Two-Phase Three-Phase Three-Field Model", European Two-Phase Flow Group Meeting, Norway, 12-13 May 2003.

**Distinguished Visitors to the Department:**

Sl.No.	Name of the visitor and designation	Date of visit	Purpose of visit
1	Dr. Ramamurthy Nagarajan Advanced Technology Development, Hitachi Global Storage Technology, San Jose	3 April 2003	Seminar Talk
2	Dr.P.R. Subbarayan, Department of Medicine, University of Miami School of Medicine, Miami, USA	29 <sup>th</sup> May 2003	Seminar Talk
3	Dr.K.V.S. Sastry, University fo California, Barkely	27 <sup>th</sup> June 2003	Seminar Talk
4	Dr.K.K. Bhattacharyya, Air Pollution Management Consultant, Canada	30 <sup>th</sup> June 2003	Seminar Talk
5	Dr.Shekar Viswanathan, Professor, National University of Singapore	11 <sup>th</sup> July 2003	Seminar Talk
6	Dr.R. Baskar, NCBS, Bangalore	4 <sup>th</sup> September 2003	Seminar Talk
7	11-Member Malaysian Delegation led by Prof.Ismail Bin-Hj Bakar	16 <sup>th</sup> September 2003	Visit to Biotech.Lab.
8	Dr.Latha Rangan, Academic Visitor, DeMount Fort University, UK	24 <sup>th</sup> September 2003	Seminar Talk
9	Dr.Raghunathan Rengaswamy, Associate Professor, Department of Chemical Engineering, Clarkson University, Potsdam, New York 13699-5705, USA	1 <sup>st</sup> October 2003	Seminar Talk
10	Mr.S. Maruthappa, Sr.Manager, Safety & Fire Protection (MRL) – Retd., Advisor (F&S), Mangalore Refinery and Petrochemicals Ltd.	30 <sup>th</sup> October 2003	Seminar Talk
11	Dr.Simone Arizzi, Technical Director, INVISTA (DuPont), USA	18 <sup>th</sup> November 2003	Seminar Talk
12	Dr.Ram Ratnagiri, OFS FITEL LLC, USA	10 <sup>th</sup> December 2003	Seminar Talk

Sl.No.	Name of the visitor and designation	Date of visit	Purpose of visit
13	Mr.S. Maruthappa, Former Chairman, National Safety Council TN Chapter	23 <sup>rd</sup> January & 6 <sup>th</sup> February 2004	Seminar Talks
14	Dr.Achim Kienle, Professor, Max-Planck-Institute for Dynamics of Complex Systems, University of Magdeburg, Germany	13 <sup>th</sup> February 2004	Seminar Talk
15	Dr.K.P. Zeyer, Professor, Max-Planck-Institute for Dynamics of Complex Systems, University of Magdeburg, Germany	16 <sup>th</sup> February 2004	Seminar Talk
16	Dr. Apurba Sau, Ph.D., TIFR, PDF, University of Texas and Yale University	27 <sup>th</sup> February 2004	Seminar Talk
17	Dr.S. Kilambai, Tata Chemical Ltd., Bombay	23 <sup>rd</sup> March 2004	Visit to Department

#### 4.3.6. Other Activities:

Prof.T. Panda : Guiding 3 Ph.D. 1 M.S.  
 Completed 1 M.S.  
 Helped the Institute for the development of Biotechnology Programme.

Chapter in Book - Dr. G. Sathyanarayana Gummadi "Reconstitution and Assay of Biogenic Membrane-derived phospholipids Flippase activity in proteoliposomes"

From: Methods in Molecular Biology, Vol.228: Membrane Protein protocols: Expression, Purification and Characterization. Edited by B.S.Selinsky, Human Press Inc. NJ, 2003, pp. 271-279.

## 4.4 DEPARTMENT OF CHEMISTRY

### 4.4.1. Introduction:

The Department of chemistry was established in 1959. In addition to offering instructions at the B.Tech and select M.Tech levels, offers 4 semesters M.Sc and Ph.D Programmes. The major areas of teaching at postgraduate level are: Inorganic chemistry, organic Chemistry Biochemistry, Physical Chemistry, Analytical and Theoretical Chemistry. The specializations in Ph.D Programme include:

Inorganic Chemistry	Analytical Chemistry
Organic Chemistry	Electrochemistry
Bioinorganic Chemistry	Heterogeneous Catalysis
Chemistry of Main Group Elements	Photochemistry
Solid State Chemistry	Polymer Chemistry
Nuclear Chemistry	Spectroscopy
Biochemistry & Biotechnology	Theoretical Chemistry
Organometallic Catalysis Bioorganic Chemistry	

### 4.4.2 Academic Programmes:

#### Students on Roll:

Programme	I year	II year	III year	IV year	V year & others	Total
M.Sc.	23	21	-	-	-	44
Ph.D	33	28	25	12	28	126
<b>Total</b>	<b>56</b>	<b>49</b>	<b>25</b>	<b>12</b>	<b>28</b>	<b>170</b>

#### Names of student/scholar attended conference/seminar and symposia abroad/India:

S.No.	Name of the student	Pro-gramme	Name of the conference/seminar/ Symposia	Date and venue
<b>(i) Conference:</b>				
1.	Udayanath Aich	Ph.D	XVIII Carbohydrate Conference	IACS, Kolkata, November, 5-7, 2003
2.	Srimurugan	Ph.D	Indo-US Conference on "Recent advances in organometallic catalysts"	IIT Madras Dec.10 – 12, 2003
3.	A.K. Dora	Ph.D	XI International Congress of Quantum Chemistry 2003	20-26 July 2003, Bonn Germany
4.	T.J. Dhilip Kumar	Ph.D	6 <sup>th</sup> CRSI National Symposium	6 – 8 Feb. 2004, IIT Kanpur
5.	A. Saieswari	Ph.D	6 <sup>th</sup> CRSI National Symposium	6 – 8 Feb. 2004, IIT Kanpur
<b>(ii) Symposia:</b>				
1.	C. Arunkumar	Ph.D	MTIC-X, Modern Trends in Inorganic Chemistry	Dec. 15-17, 2003, IIT Bombay
2.	M. Sankar	Ph.D	MTIC-X, Modern Trends in Inorganic Chemistry	Dec. 15-17, 2003, IIT Bombay
3.	M. Sankar	Ph.D	Chemical Research Society of India (6 <sup>th</sup> National Conference)	Feb. 6-8, 2004, IIT Kanpur
4.	M. Sankar	Ph.D	Chemists' Meet (A Regional Symposium)	Mar.26-27, 2004, IIT Madras
5.	C. Arunkumar	Ph.D	Chemists' Meet (A Regional Symposium)	Mar.26-27,2004, IIT Madras
6.	C. Arunkumar	Ph.D	Chemical Research Society of India (6 <sup>th</sup> National Conference)	February 6-8, 2004, IIT Kanpur
7.	D. Prabhakaran	Ph.D	International Symposium on Chemical Education and Research	Jan. 4 <sup>th</sup> – 7 <sup>th</sup> , 2004, Loyola College
8.	S.Deepa	Ph.D	Trombay Symposium on Radiation and Photochemistry (TSRP 2004)	Jan 8-12, 2004 - BARC, Mumbai
9.	T.Shyamala	Ph.D	Trombay Symposium on Radiation and Photochemistry (TSRP 2004)	Jan 8-12, 2004 BARC, Mumbai

S.No.	Name of the student	Pro-gramme	Name of the conference/seminar/ Symposia	Date and venue
10.	Braja Gopal Mishra	Ph.D	16 <sup>th</sup> National Symposium and 1 <sup>st</sup> Indo-German Conference on catalysis	6-8, Feb 2003, ICT, Hyderabad
			National work shop on advances in catalysis	Jan 6-7, 2004, Loyola College, Chennai
			Chemists' Meet	March 26-27, 2004, IIT Madras
			Chemists' Meet	Dec 7-8, 2003, IIT Madras
			4th National Symposium in Chemistry	Feb 1-3, 2002, NCL, Pune
11.	Santosh Kumar	Ph.D	6 <sup>th</sup> International Symposium on Biocatalysis and Biotransformations	28 <sup>th</sup> June – 3 <sup>rd</sup> July 2003, Olomouc, Czech.
12.	Indranil Basu	Ph.D	International Workshop on Physics of Semiconductor Devices	Dec. 16-20, 2003, IIT M
13.	R. Venkata Subramanian	Ph.D	International Workshop on Physics of Semiconductor Devices	Dec. 16-20, 2003, IITM

#### 4.4.3 Faculties and their Activities:

##### Faculty:

Name and Qualifications	Major area of specialization (only 3 areas)
<b>Professors:</b>	
1. T.S. Chandra, Ph.D, (IISc.B'lore)	Food Biochemistry, Biomass conversion Industrial enzymes
2. N. Chandrakumar, Ph.D (IITK)	Magnetic resonance imaging & spectroscopy; Chem. Physics; Instrumentation
3. R.Dhamodharan, Ph.D, (Mass,USA)	Chemistry of Macromolecules, Chemistry Polymers at Surfaces and Interfaces
4. M.S. Gopinathan, Ph.D (IITK)	Quantum & Theoretical Chemistry, Molecular Spectroscopy, Nonlinear Dynamics & Chaos
5. K. Lalitha, Ph.D (Mysore)	Biochemistry, Hydroperoxide metabolism, Biotechnology
6. D. Loganathan, Ph.D (IITB)	Synthetic Organic, Carbohydrates and Bioorganic Chemistry
7. A.K. Mishra, Ph.D (IITK)	Physical Photochemistry, Fluorescence Spectroscopy, Study of micro- and nano- organized systems
8. T. Pradeep, Ph.D, (IISc, B'lore) Joint with SAIF	Chemical Physics, Advanced materials, Spectroscopy, Ion chemistry, Monolayers, clusters
9. M.V. Sangaranarayanan, Ph.D (IISc, B'lore)	Modelling of Electrochemical Systems
10. S. Sankararaman, Ph.D (IISc,B'lore)	Organic chemistry, synthesis of acetylenic macrocyclic systems and cyclophanes
11. M.S. Subramanian, Ph.D (IITM)	Analytical chemistry, Radio Analytical Chemistry, Chromatography
12. M.N.Sudeendra Rao, Ph.D (IISc,B'lore)	Inorganic Chemistry
13. G. Sundararajan, Ph.D (USA)	Organic – Organometallic - Polymer
14. S. Vancheesan, Ph.D (IITM) Head	Organometallics, Homogeneous catalysis, Asymmetric epoxidation
15. U.V. Varadaraju, Ph.D (IISc,B'lore)Joint with MSRC	Solid State chemistry, Materials joint with MSRC science
16. T.K. Varadarajan, Ph.D (IITM)	Physical Chemistry (Catalysis, Chemical Kinetics)
17. R.P. Viswanath, Ph.D (IITM)	Physics, chemistry, catalysis
18. B.Viswanathan, Ph.D (IITM)	Surface Science, Materials Science, Catalysis, Physical Chemistry
<b>Associate Professors:</b>	
19. Anju Chadha, Ph.D (IISc.B'lore)	Bioorganic chemistry, Enzymes in organic synthesis and their mechanisms
20. Archita Patnaik, Ph.D (Varanasi)	Materials Science (Analytical/Physical chemistry)
21. S. Baskaran, Ph.D (IITKanpur)	Asymmetric synthesis, Natural product and organometallic chemistry
22. Indrapal Singh Aidhen. Ph.D (Pune)	Synthetic organic chemistry. Carbohydrate chemistry
23. K. Mangala Sunder, Ph.D (McGill)	Theoretical Chemistry, Spectroscopy, Chemical Reaction Dynamics

Name and Qualifications	Major area of specialization (only 3 areas)
24. Vidyasagar, Ph.D (IISc,B'lore)	Solid state chemistry
<b>Assistant Professors:</b>	
25. P. Bhyrappa, Ph.D, (IISc.B'lore)	Bioinorganic Chemistry, Supramolecular Chemistry
26. Dillip Kumar Chand, Ph.D	Inorganic Chemistry, Supramolecular Chemistry, Metal driven self assembly
27. N.Narasimha Murthy, Ph.D (IISc.B'lore)	Bioinorganic, Inorganic spectroscopic methods
28. G. Ranga Rao, Ph.D (IISc.B'lore)	Heterogeneous catalysis, porous materials, metal and Si surface chemistry
29. Sanjay Kumar, Ph.D (IIT Kanpur)	Theoretical Chemistry, Molecular Reaction Dynamics

**Short-term course/Workshops/Seminars/Symposia/Conference organized by the faculty members:**

S.No	Coordinator(s)	Title	Period
<b>Conference:</b>			
1.	G. Sundararajan	Indo-US Conference on organometallic Chemistry and olefin Polymerization	Dec. 10-12, 2003
<b>Short term Course</b>			
1.	G. Sundararajan	Chromatography – conducted by American chemical Society and Agilent Technology	Feb. 16,17, 2004
2.	B. Viswanathan	Orientation programme in Catalysis for research scholars in collaboration with CUSAT, Cochin.	October 2003.

**Short-term courses/Workshops/Seminars/Symposia/Conferences/ Training attended by the faculty members in Academic institutions and Public Sector undertakings:**

S.No.	Name of faculty	Title	Period	Venue
<b>Seminar:</b>				
1.	B. Viswanathan	National Seminar on Creating Infrastructure for adoption of fuel cell Technology in India	Feb. 10 – 11, 2004	NTPC, Noida
		National Seminar on Solid State and Allied subjects	Dec. 4-6, 2003.	IIT Delhi.
<b>Symposia:</b>				
1	G. Sundararajan	National Organic Symposium Trust	October 30-Nov. 2, 2003	Majorda Resort, Goa
		Indo-French Symposium on Organic Synthesis	Nov. 3-4, 2003	IISc, Bangalore
		Modern Trends in Inorganic Chemistry	Dec. 15-18, 2004	IITBombay
2.	A.K.Mishra	Applications of fluorescence spectroscopy	July 21-22,2003	CRSI,Regional Chapter, Madurai
3.	M.N. Sudheendra Rao	Modern Trends in Inorganic, Chemistry	Dec.15 – 17, 2003	IIT Bombay
4.	B. Viswanathan	Chemical education and Research	Jan. 4 – 7, 2004	Loyola College Madras
5.	Dillip Kumar Chand	MTIC-X, Modern Trends in Inorganic Chemistry	Dec. 15-17, 2003	IIT Bombay
6.	D. Loganathan	International Symposium on Chemical Education and Research	January, 5-7, 2004.	Loyola College Madras
7.	T. Pradeep	Solid State physics Symposium	Dec.26-30, 2003	Gwalior
8.	P. Bhyrappa	6 <sup>th</sup> National Symposium, Chemical Research Society of India	Feb. 6 – 8, 2004	IIT Kanpur
9.	G. Ranga Rao	1 <sup>st</sup> JSPS-DST Symposium on Surfaces and Interfaces for Nanostructured Materials	25-27 March 2003	Tokyo

S.No.	Name of faculty	Title	Period	Venue
<b>Conference:</b>				
1.	G. Sundararajan	Indian Council of Chemists	Oct. 17-19, 2003	IIT Roorkee
2.	Dillip Kumar Chand	Orissa Chemical Society Conference	Dec. 19 – 21, 2003	FM Autonomous College, Balasore.
3.	A.K.Mishra	Fluorescence Probing of Nonaqueous Electrolytic Media	6-8 Feb 2004	6th National Symposium of CRSI, Department of Chemistry I. I. T. Kanpur
		Aggregation of a pyrene labeled dendrimer in water	Jan 5-7, 2003	RRL, Trivandrum
5.	S. Sankararaman	IKCOC-9, 9 <sup>th</sup> International Kyoto Conference on New Aspects of Organic Chemistry	Nov 10-14, 2004	Kyoto Park Hotel, Kyoto, Japan
6.	M.N. Sudheendra Rao	International Conference on the Chemistry of Selenium and Tellurium	Feb. 23 – 27, 2004	IIT Bombay
7.	T. Pradeep	International Union of Materials Research Societies (IUMRS), International Conference on Advanced Materials	October 9 – 12, 2003	Yokohama
		International Conference on Nanoscience and Technology	December 18-22, 2003	Kolkatta
8.	D. Loganathan	XVIII Carbohydrate Conference	November, 5-7, 2003	IACS, Kolkata

**Special Lectures delivered by the faculty in other Institutions:**

S.No	Name of faculty	Topic of lecture	Venue and Date
1.	R. Dhamodharan	Thermodynamics and Kinetics of Chain Polymerization	NCL, Pune, Dec. 29, 2003 to Jan 03, 2004
2.	M.S. Subramanian	Capillary Electrochromatography	AC College, University of Madras, 4 <sup>th</sup> Dec. 2003
3.	G. Sundararajan	C2-symmetric Catalysts for asymmetric synthesis and controlled polymerisation of olefins	University of Massachusetts – Amherst, 2 <sup>nd</sup> June 2003
		C2-symmetric Catalysts for asymmetric synthesis and controlled polymerisation of olefins	University of Massachusetts – Lowell, 4 <sup>th</sup> June 2003
		C2-symmetric Catalysts for asymmetric synthesis and controlled polymerization of olefins	Stevens Institute of Technology, NJ, 6th June 2003 6, June
		C2-symmetric Catalysts for asymmetric synthesis and controlled polymerization of olefins	Rutgers – The State U. of NJ, 10 <sup>th</sup> June, 2003
		C2-symmetric Catalysts for asymmetric synthesis and controlled polymerization of olefins	International Specialty products, NJ, 11 <sup>th</sup> June 2003
		C2-symmetric Catalysts for asymmetric synthesis and controlled polymerization of olefins	Dupont, Delaware, 16 <sup>th</sup> June 2003
		C2-symmetric Catalysts for asymmetric synthesis and controlled polymerization of olefins	Onio State University, OH, 20 <sup>th</sup> June 2003

S.No	Name of faculty	Topic of lecture	Venue and Date
		C2-symmetric Catalysts for asymmetric synthesis and controlled polymerization of olefins	Sapporo University, Japan, 22 <sup>nd</sup> July 2003
		C2-symmetric Catalysts for asymmetric synthesis and controlled polymerization of olefins	Tokado University, Sendai, Japan, 24th July 2003
		C2-symmetric Catalysts for asymmetric synthesis and controlled polymerization of olefins	Tokyo University, Japan, 25 <sup>th</sup> July 2003
4.	D. Loganathan	Chemical, Bioanalytical and Biological Aspects of Heparin and Related Products	Biological E. Limited, Azamabad, Hyderabad, July 18, 2003.
5.	A.K.Mishra	Applications of Fluorescence Spectroscopy	Department of Chemistry, Pondicherry, 2003
		Fluorescence Spectroscopy: Recent Developments and Applications	Bharathidasan University, 17 Nov 2003.
		Photophysical chemistry	8, March 2004, A.M. Jain College, Chennai.
6.	T. Pradeep	Metal nano particles: chemistry, novel materials and sensors	National Aerospace Laboratories, June 27, 2003
		An overview of analytical instrumentation	A.C. College of Technology Madras, July 4, 2003.
		Analytical applications of spectroscopy	A.C. College of Technology, July 5, 2003
		The nano world: a chemist's perspective	National Institute of Technology, Calicut, July 25, 2003.
		Reactions of nanometals: sensors and novel materials & Functionalized fluorescent nanobubbles	International Union of Materials Research Societies (IUMRS), Yokohama, October 12, 2003.
		Advanced materials science without advanced tools: the Indian experience	International Union of Materials Research Societies (IUMRS), Yokohama, October 9, 2003
		Metal clusters: monolayer dynamics and chemical reactions,	Darmstadt University, Department of Materials Science, November 20, 2003.
		Nano: where science is size dependent,	NSS College, Ottapalam, December 2, 2003
		Capped metal clusters in the gas phase, International Conference on Nanoscience and Technology	International conference on Nanoscience and Technology, Kolkata, December 20, 2003
		Dynamics of monolayers on metal nanoparticles	Solid State Physics Symposium, Gwalior, December 27, 2003
		Analytical applications of spectroscopy	Eureka Forbes, Bangalore, February 5, 2004.
7.	M.N. Sudheendra Rao	Trends in Modern Inorganic Chemistry	NIT, Jalandhar July 28, 2003
		Multiple Bonded Systems in Inorganic Chemistry – Past, Present and Future	Gandhigram Univ., Dindugal, 18 Nov. 2003
		Hypervalent Silicon Research – Newer Perspectives and Potentials	Gandhigram Univ., Dindugal, 18 Nov. 2003
		Chemistry of Phosphiniminocyclo-trithiazenes	Punjab Univ., 25 Nov. 2003
		Icy Today-Extravagance of Bonds	Arulandavar College, Madurai 22 <sup>nd</sup> Jan. 2004
8.	S. Vancheesan	Catalysts and Techniques for Hydrogenation and Transfer Hydrogenation	IPCL, Baroda, 26.12.03



S.No	Name of faculty	Topic of lecture	Venue and Date
		Metal carbonyls and their derivatives as catalysts	IIT Bombay, 7.11.2003
9.	B. Viswanathan	Hydrogen storage by carbon nano-materials	Pohang Institute of Tech., 27 <sup>th</sup> Oct. 2003
		Non-noble metals: Are they possible candidates for DMFC applications	Surface Engg. Lab., Seoul National Univ., KIST, Seoul.
10.	K. Vidyasagar	Metal Phosphonates: A class of organic-inorganic hybrid materials"	IIT Delhi, 4 – 6 <sup>th</sup> February, 2004
		Syntheses and Structural solid-state chemistry of novel tellurites'	IIT Bombay, 23 – 27 <sup>th</sup> , February 2004
11.	Dillip Kumar Chand	Metal driven self assembly of Pd (II) metalocage	Sambalpur University, 24 <sup>th</sup> Dec. 2003
12	Sanjay Kumar	Time-development wane packet methodologies in e-molecule collisions	Univ. of Bonn, Germany, 4 <sup>th</sup> July 2003
		Fragmentation dynamics of metastable multiplycharged ions	TIFR, Mumbai, 30 <sup>th</sup> July 2003.
13	G. Ranga Rao	Sm overlayers and CO interaction	Department of Chemistry and Materials Science, Tokyo Institute of Technology, 28th March 2003
		Sm and SmRu alloy film formation and reactivity on Ru surface	Department of Chemistry, Kyoto University, 22 May 2003.
		DST Sponsored Orientation Programme for Research Scholars in Catalysis	27, 28 October 2003, Cochin University of Science and Technology, CUSAT, Kochi, Kerala
		Rare earth overlayers and oxide nanoparticles for catalytic studies	Tokyo University, 28th, March 2003
		XPS study of Sm film formation and reactivity on Ru(001) crystal	Department of Chemistry, Tokyo University, 8th November 2002.
14	Anju Chadha	Biocatalytic Transesterification of Oil	24 <sup>th</sup> Feb. 2004, IOCL, Faridabad.
		Bioorganic Chemistry at IIT M	IACS, Kolkatta, 8 <sup>th</sup> March 2004.
		Chirality and the Origin of Life	21 <sup>st</sup> August 2003, Tamilnadu Science Centre, Chennai
		Nobel Prize in Chemistry	9 <sup>th</sup> November 2003, Children's Club, Chennai.

#### Visits abroad by faculty:

S.No.	Name of faculty	Country visited	Date	Purpose of visit
1.	S. Sankararaman	Germany	July-Aug 2003	Collaborative research
2.	G. Sundararajan	Moscow, Russia	May 17 – 25, 2003	International Conference on Organometallic Chemistry
		USA	May 26 – June 26, 2003	Visits to universities and discussion
		Japan	July 19 – Aug. 2, 2003	International Symposium on Metatehsis and visits to Universities
3.	T. Pradeep	Japan	October 8 – 13, 2003	IUMRS Meeting
		France, Germany	November 11 – 21, 2003	Measurement at ILL, Grenoble
4.	B. Viswanathan	Hungary	May 18-26, 2003	Indo-Hungarian Catalysis Symposium
		South Korea	October 23-28,2003	Korean Chemical Engg. Society spring Meeting
5.	G. Ranga Rao	Institute for Molecular Science, Japan	August 2002-July 2003	Fellowship/Sabbatical
6.	Sanjay Kumar	Germany	30 <sup>th</sup> June – 1 <sup>st</sup> July, 2003	DST-DAAD project

**Honours and Awards obtained:**

Sl. No.	Name of faculty	Name of Award	Awarded by	Awarded for	Date
1.	B. Viswanathan	Bharat Jyothi award	India International Friendship Society	Excellence	21 <sup>st</sup> August 2003
2.	T. Pradeep	Young Scientist Award	Chemical Research Society of India	Research	Feb. 9, 2003
3.	Dillip Kumar Chand	Dr.R.C. Tripathy	Orissa Chemical Society	Young Scientist	20 <sup>th</sup> Dec. 2003

**Books, Monographs authored or co-authored:**

S.No.	Name of faculty	Title	Publisher	Author/co-author
<b>(i) Books:</b>				
1.	T. Pradeep	Advances in Physical Chemistry	Allied, New Delhi	Editor
		Catalysis: Principles and Applications	Narosa, New Delhi	Author of a chapter
2.	B. Viswanathan	Fuel Cell Principles and Applications	University Press	Ms.Aulice Scibioh
		Photo/Electrochemistry & Photobiology in Environment, Energy and Fuel 2003	Research Signpost	Associate Editor
<b>(ii) Monographs:</b>				
1.	G. Ranga Rao	Adsorption and surface catalytic reactions, Chapter 6 in: Advances in Physical Chemistry	Allied Publishers, New Delhi, pp.119-141, 1999	Ed. T. Pradeep
		Surface Chemistry and Spectroscopy, Chapter 10 in "Catalysis: Principles and Applications"	Narosa Publishers, New Delhi, pp. 163-183, 2002	Eds. B. Viswanathan, S. Sivasanker and A.V. Ramaswamy

**Fellowships of Academies and Professional Societies:**

S.No.	Name of the Academic Professional faculty	Level	Year of Admission
<b>Humboldt Fellowship:</b>			
1.	Dr.Bhyrappa P	Research Fellowship	1999
<b>ISTE/CSI and others:</b>			
1.	G. Ranga Rao	Japan Industrial Technology Association Fellowship (JITA)	2000
2.	G. Ranga Rao	IMS Fellowship at the level of Visiting Associate Professor	2002

**4.4.4 Design and Development Activities:****Brief and specific details of Process/Instruments/Equipment/ Software designed and developed:**

1. Prof.T. Pradeep - Developed a low temperature IR spectrometer with Coupled mass spectrometer.

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

Sl.No	Name of Equipment	Value (Rs.in lakhs)
1.	Dr.Riss's Reflection Ellipsometer	20.00
2.	Thermostat (-50°C to 200°C)	02.35
3.	Diaphragm pump (vacuum brand)	01.05
4.	High Resolution Mass Spectrometer (FIST)	120.00
5.	C,H,N,S,O Elemental Analyser	25.00
6.	FT-IR spectrometer	09.00
7.	UV-VIS spectrometer	04.50
8.	MALDI spectrometer	85.00
9.	GC with FID detector	04.00

**Patents awarded:**

Nano Composites for harnessing solar energy, B. Viswanathan, S. Shanmugam and T.K. Varadarajan, Indian Patent 222/MAS/2003.

**Patents filed:**

One Indian patent filed (a method of preparing purified water from water containing pesticides (chlorpyrifos and Malathion) and purified water prepared by the same method" by Prof.T. Pradeep.

**4.4.5 Research and Consultancy:****Sponsored Research Projects:**

S.No.	Title	Period	Funding agency	Amount, in lakhs	Co-ordinators
1.	Development of Nanoscopic Materials by Photochemical and Thermal "Graft From" Processes	2001-2004	CSIR	8.60	R. Dhamodharan
2.	Surface Engineering of Functional Polymer Coatings of Controllable Thickness on Metals and Oxide Surfaces of Nanoscopic Dimension.	2001-2004	DST	8.60	R. Dhamodharan
3.	Positive Tone Photoresist Materials For Deep UV Image Development – Synthesis, Characterization and Performance Evaluation	2001-2004	DRDO	23.60	R. Dhamodharan
4.	Surface Engineering of Microsystems Using Functional Polymer Coatings – From Method Development to Biomedical Applications	2002-2005	VWF Germany	52.00	R. Dhamodharan Prof. Ruhe, Germany
5.	Studies on the Synthesis and Response to Stimulus of Polymers With Tendency for Crystallographic Association	2003-2005	DRDO	25.00	R. Dhamodharan
6.	Study of distance effect in electron transfer process using microheterogeneous media	3 years	DST	10.30	Dr.A.K.Mishra
7.	Synthesis of Novel Dendrimers Application as fluorescent sensors	3 years	DRDO	22.35	Dr.S.Bhaskaran + Dr.A.K.Mishra (coordinator)
8.	Fluorescent Imaging of the Regulation of Gene expression, Membrane fluidity and Cell-cell interactions in the Riboflavinogenic Hemiascomycete Fungi	3 years	DBT	26.18	Dr.T.S.Chandra + Dr.A.K.Mishra (coordinator)
9.	Development of a Portable Fluorescence Based Fibre-Optic Sensor for Polycyclic Aromatic Compounds in Liquid Media	3.5 years	MHRD	15.00	Dr.A.K.Mishra
10.	Novel cylophanes with acetylenic bridges, Synthesis structure and reactivity studies	1999-2004	Volkswagen Stiftung, Germany	Euro 72,100	Dr.S. Sankararaman Collaborator: Prof. Dr. Henning Hopf, University of Braunschweig, Germany
11.	Cyclophanes with molecular architectures: Investigations of host-guest chemistry and photochemistry	2000-2003	CSIR	10.50	Dr.S. Sankararaman
12.	Synthesis structure and reactivity studies on shape persistent macrocyclic silacyclines	2003–2006	DRDO	20.16	Dr.S. Sankararaman

S.No.	Title	Period	Funding agency	Amount, in lakhs	Co-ordinators
13.	Novel Synthesis of Functionalised resins for the separation of uranium and thorium at trace levels	3 years	BRNS	9.85	Dr.M.S. Subramanian
14.	Synthesis of new single-site catalysts for olefin polymerization	2000-2003	DST	38.00	Drs.G. Sundararajan & B. Viswanahtan
15.	Asymmetric catalysis with C2-symmetric ligands	2002-2005	CSIR	12.00	Dr.G. Sundararajan
16.	Nanosopic optical limiters	2002-2005	MIT	29.5	Dr. T. Pradeep
17.	Nanoscience and nanotechnology....	2003-2006	DST	108	Dr.K. Prasad Rao and Dr. T. Pradeep
18.	Molecular and ionic chemistry at ice surfaces	2003-2008	DST	100.5	Dr. T. Pradeep
19.	Fundamental studies on thermal conductivity of nanofluids	2003-2006	DRDO	19.0	Dr.T. Pradeep with Dr. Sarit Kumar Das
20.	Thermal and electrical conductivity of nanofluids	2003-2006	DST	9	Dr.T. Pradeep with Dr. Sarit Kumar Das
21.	Dynamics of aminoacids in ices	2003-2006	CSIR	3.3	Dr. T. Pradeep
22.	Studies pertaining to the Design and Development of Supercapacitors	3 years	DRDO	21.09	Dr.Sangaranarayana n, M.V
23.	Synthesis and characterization of group VIII B metals complexes	3 years	CSIR	8.00	Dr.S. Vancheesan
24.	Dynamics of Proton Scattering from simple Molecules: A Quantum Mechanical study	3 years	DST	5.04	Dr.Sanjay Kumar
25.	Study of the formation of Negative Ions in Polyatomic Molecules	3 years	DST-DAAD	7.24	Dr.Sanjay Kumar Prof.S.V.K. Kumar, TIFR, Mumbai Prof.S.D. Peyerimhoff, Univ. of Bonn, Germany
26.	IBM Shared University Research Grant Project in IIT Madras	1 year	IBM	2.50 Crores	Dr.Sanjay Kumar Dr.K. Mangala Sunder Dr.P.B. Sunil Kumar Dr.M.S. Sivakumar Dr.N.M Gupte
27.	Atom Economy Based for the Stereo-selective Synthesis of Biologically Active Azacyclic Ring Systems	3 years	DST	24.00	Dr.S. Baskaran
28.	Biocatalytic Deracemisation of Alpha-Hydroxy Carbonyl Compounds: Mechanism, Scope and Limitations	3 years	DST	20.34	Dr.Anju Chadha
29.	Rapid Monitoring of Transesterification and assessing Biodiesel Fuel Quality by estimation of Glycerol	3 years	DST	20.55	Dr.Anju Chadha
30.	Porous Silicon Based Biosensors	3 years	DST	16.68	Dr.Anju Chadha

## Industrial Consultancy projects:

S.No.	Name of faculty	Title	Industry	Amount (Rs.in lacs)
1	T. Pradeep	A method of determining the carboxylation content in butyl rubber	Lakshmi Machine Tools, Coimbatore	20,000

## RBIC projects :

S.No.	Name of faculty	Title	Industry	Amount (Rs.in lacs)
1.	G. Sundararajan	Search for new single-site catalysts	Reliance	Rs.20.00
		Polymerisation of vinyl ethers	International Specialty Products	USD 25,000
2.	S. Baskaran	Development of Extraction conditions and photochemical investigations of Safed Musli	Century Agrotech Ltd.	5.0

## Retainer Consultancy:

S.No.	Name of faculty	Title	Industry	Amount (in lacs)

## Exchange programme with other Universities:

Dr.Sanjay Kumar - DST-DAAD University of Bonn, Germany

## Journal Editorial Boards:

S.No.	Name of faculty	Level	Journal
1.	G. Sundararajan	Regional Editor	ARKIVOC
2.	T. Pradeep	Member of Editorial Board	Asian J. of Spectroscopy
		Member of Advisory Board	Oriental Journal of Chemistry
3.	B. Viswanathan	Editorial Board member	Indian Journal of Chemical Sec. A convergence

## Research Publications:

Total No. Of papers published in Refereed National Journals	:	19
Total No. of papers published in Refereed International Journals	:	64
Total No. of papers presented in National Conference	:	19
Total No. of papers presented in International conference	:	09

## In Refereed National Journals:

1. Ciprofloxacin@SiO<sub>2</sub>: fluorescent nanobubbles, M. J. Rosemary, V. Suryanarayanan, P. Ganapati Reddy, Ian MacLaren, S. Baskaran and T. Pradeep, Proc. Indian. Acad. Sci. Chem. Sci., Prof. C. N. R. Rao Special Issue, 115 (2003) 703-709.
2. Halocarbon mineralization by metal nanoparticles, A. Sreekumaran Nair and T. Pradeep, Current Science, 84 (2003) 1560-1564.
3. Magnetic and spectroscopic studies of a soft ferromagnet: ferricenium tetrabromoferrate(III), [Fe(C<sub>5</sub>H<sub>5</sub>)<sub>2</sub>]<sup>+</sup>[FeBr<sub>4</sub>]<sup>-</sup>, K. Padmakumar, T. Pradeep, K.K. Singh, D.E. Morris, J. Ensling, P. Gütlich and P.T. Manoharan, Indian J. Chem., Special issue, 42A (2003) 2359-2370.
4. Order-disorder transitions of water dipoles at mercury electrodes, M.V. Sangaranarayanan, S. Haripriya, Indian Journal of Chemistry, A 42 (2003) 965-967.
5. Photocatalytic process – Selection Criteria for the choice of materials, B. Viswanathan, Bull. Catal. Soc. India, 2, 71-74 (2003).
6. Hydrogen storage in carbon nano-materials – possibilities and challenges, M. Aulice Scibioh and B. Viswanathan, Chapter 2 in Photo/Electrochemistry & photobiology in Environment, Energy and Fuel 65-100 (2003).
7. Electrochemistry for a cleaner environment, Aulice Scibioh and B. Viswanathan, Chapter 1 in Photo/Electrochemistry & Photobiology in Environment, Energy and Fuel, 1-64 (2003).

8. Hydriding of nitrogen containing carbon nanotubes, M. Sankaran and B. Viswanathan, *Bull. Catal. Soc. India*, 2, 9-11 (2003).
9. Carbon nanomaterials – are they appropriate candidates for hydrogen storage? B. Viswanathan, M. Sankaran and M. Aulice Scibioh *Bull. Catal. Soc. India*, 12-32 (2003).
10. Redox properties of copper oxinate complexes in zeolite matrices, R. Ganesan and B. Viswanathan, *Bull. Catal. Soc. India*, 2, 1-8 (2003).
11. Research in the area of Catalysis in India (as seen from Science citation index data base) B. Viswanathan, *Bull. Catal. Soc. India*, 2, 40-42 (2003).
12. Research in the area of Catalysis – Part 2 (as seen from Science citation index data base) pages 68-70 B. Viswanathan, *Bulletin, Catal. Soc. India*, 2, 68-70 (2003).
13. Copper containing mixed oxides for catalytic oxidation of toluene and phenol in solid-liquid phase, Srinivasan C, and Viswanathan B, *Indian Journal of Chemistry section A-Inorganic Bio-inorganic Physical Theoretical & Analytical Chemistry*, 42 (2): 250-254 Feb. 2003.
14. Adsorption of Small Molecules on Metallic Surfaces, B. Viswanathan, *Bulletin of the Catalysis Society of India* 3, 43-53 (2004)
15. Covalently linked bisporphyrins bearing tetraphenylporphyrin and octabromoporphyrin units: Synthesis and their properties, P. Bhyrappa and V. Krishnan, *Journal of Chemical Sciences*, 116(2): 71-78,2004.
16. G. Ranga Rao, H.R. Sahu and Braja Gopal Mishra, Decomposition of H<sub>2</sub>O<sub>2</sub> over Cu-Ce-O and Fe-Ce-O composite catalysts prepared by fast combustion process, *Indian J. Chem. A* 42, 968-973 (2003).
17. Braja Gopal Mishra, G. Ranga Rao and B. Poongodi, Hydrogen transfer reaction of cyclohexanone with 2-propanol catalyzed by CeO<sub>2</sub>-ZnO materials: Promoting effect of ceria, *Proc. Indian Acad. Sci. (Chem. Sci.)* 115, 561-571 (2003).
18. G. Ranga Rao and Braja Gopal Mishra, Structural, redox and catalytic chemistry of ceria-based materials, *Bull. Catal. Soc. India*, 2, 122-134 (2003).
19. M.J. Rosemary, V. Suryanarayanan, P.G. Reddy, I. Maclaren, S. Baskaran and T. Pradeep, 'Ciprofloxacin@SiO<sub>2</sub>: Fluorescent nanobubbles', *Proc. Indian Acad. Sci. (Chem. Sci.)* 2003, 115, 1.

#### In Refereed International Journals:

1. Very Rapid Copper-Mediated Atom Transfer Radical Polymerization of Benzyl Methacrylate at Ambient Temperature. S. Munirasu and R. Dhamodharan. *The J. Polym. Sci. Part A: Polym. Chem.* 2004, 42(4), 1053-1057.
2. ATRP of Methyl Methacrylate Using a Novel Binol Ester-Based Bifunctional Initiator. K. Dayananda and R. Dhamodharan. *J. Polym. Sci. Part A: Polym. Chem.* 2004, 42(4), 902-915.
3. Improved protocol for the regioselective synthesis antipodal  $\beta$ - tetrabromotetraphenylporphyrin and crystal structure of its Zn(II)-complex, P.K. Kumar, P. Bhyrappa and B. Varghese, *Tetrahedron Lett.* 2003.
4. Highly brominated porphyrins: Synthesis and their properties, P. Bhyrappa, P. Bhavana and J.J. Vittal, *J. Porphyrins Phthalocyanines* 2003, 7, 682-692.
5. Aich U, Lakshmanan T, Varghese B, and Loganathan D, *Crystal Structures of  $\beta$ -1-N-Chloroacetamido Derivatives of D-Glucose and D-Galactose*, *J Carbohydr Chem*, 22, 891-901 (2003).
6. Loganathan D, Winter H C, Judd W J, Petryniak J and Goldstein I J, *Immobilized Marasmius oreades Agglutinin: Use for Binding and Isolation of Glycoproteins Containing the Xenotransplantation or Human Type B Epitopes*, *Glycobiology*, 13, 955-960 (2003).
7. Lakshmanan T, Priya K, Sriram D, and Loganathan D, *On the Structural Significance of GlcNAc and Asn as the Linkage Region Constituents in N- Glycoproteins : A Crystallographic Investigation using Models and Analogs*, *Biochem Biophys Res Commun*, 312, 405-413 (2003).
8. Dillip Kumar Chand, Fujita, K. Birdha, S. Sakamoto and K. Yamaguchi on "Metal Driven Self-assembly of Pyridine Appended Ligands with Cis- Protected/naked Pd (II) Ion: A comparative study, *Dalton. Trans.*, 2750- 2756 (2003).
9. D. Prabhakaran, M.S. Subramanian, "A new chelating sorbent for metal ion extraction under high saline conditions', *Talanta* 59(6), (2003) 1227-1236.

10. D. Prabhakaran, M.S. Subramanian, "Chemically modified chloromethylated resin as an effective metalchelator in the extraction of U(VI), *Analytical Letters*, 36 (10), (2003) 2277-2289.
11. D. Prabhakaran, M.S. Subramanian, "Enhanced metal extractive behaviour using dual mechanism bifunctional polymer: an effective metal chelator, *Talanta*, 61 (4) (2003) 431-437.
12. D. Prabhakaran, M.S. Subramanian, "A column system for the selective Extraction of U(IV) and Th(IV) using a chelating sorbent, *Talanta* 61(4), (2003) 423-430.
13. D. Prabhakaran, M.S. Subramanian, "Synthesis, characterization and metal extractive behaviour of functionalized AXAD-16 polymeric matrix using oxyacetone acetamide, *Separation Science and Technology*, 39(4) (2004) 941-957.
14. D. Prabhakaran, M.S. Subramanian, "Selective extraction and sequential separation of actinide and transition ions using AXAD-16 – BTBED polymeric sorbent, *Reactive Functional Polymers*, 57 (2-3) (2003) 147-155.
15. M. Akhila Maheswari, M.S. Subramanian, Selective extraction of U(VI) and Th(IV) from high saline matrices using AXAD-16-BHBPD as chelating polymeric matrix, *Analytical Letters*, 36 (10) (2003) 2871-2888.
16. M. Akhila Maheswari, M.S. Subramanian, "A new chelating resin for preconcentration and determination of Mn(II), Ni(II), Cu(II), Zn(II), Cd(II) and Pb(II) by FAAS, *Journal of AOAC International*, 86 (6) Nov-Dec. issue.
17. S. Vijayalakshmi, T. N. Karthika, A. K. Mishra and T. S. Chandra, spectrofluorimetric method for the estimation of total lipids in *eremothecium ashbyii* fungal filaments using Nile blue and avoiding interference of autofluorescent riboflavin, *Journal of microbiological methods*, 55, 99-103 (2003).
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19. Tincy Lis Thomas, N. Sivakumar, L. Gurunathan and A. K. Mishra, Fluorescence anisotropy of pyrene incorporated in nylon as a tool to monitor thermal relaxations in nylon, *Polymer Testing*, 22(2), 143 – 147 (2003).
20. J. Shobini, A. K. Mishra and N. Chandra, Conformation of gramicidin-A in CTAB micellar media, *Journal of Photochemistry and Photobiology, B: Biology*, 70(2), 117-124 (2003).
21. M.P. Minimol and K. Vidyasagar, *Ind. J. Chem.* 42A, 2244 (2003) Hydrothermal synthesis and characterization of new one-dimensional tellurates,  $A_2[Te_3O_8(OH)_4]$  (A = Cs, Rb, K, Na).
22. M.P. Minimol, K. Prabhakararao, Y. Ram Sai and K. Vidyasagar, *Proc. Indian Acad. Sci. (Chem. Soc.)* 115, 419 (2003). Hydrothermal synthesis and characterization of new methylenediphosphonates of molybdenum (VI),  $A[MoO_2(O_3PCH_2PO_3h)]$  (a = Rb, NH<sub>4</sub> and Tl).
23. An investigation of the structure of stearate monolayer on Au@ZrO<sub>2</sub> and Ag@ZrO<sub>2</sub> core-shell nanoparticles, A. Sreekumaran Nair, T. Pradeep and I. MacLaren, *J. Mat. Chem.* 14 (2004) 857-862.
24. Stabilization of monolayers by metal nanoparticles manifested in oscillations of interfacial potentials, Anilkumar and T. Pradeep, *Materials Science and Engineering C*, 2004 (In Press).
25. Ciprofloxacin protected gold nanoparticles, Renjis T. Tom, V. Suryanarayanan, P. Ganapati Reddy, S. Baskaran and T. Pradeep, *Langmuir*, 20 (2004) 1909-1914.
26. Mobility of haloforms on amorphous and crystalline solid water surfaces, M. L. Grecea, E. H. G. Backus, T. Pradeep, A. W. Kleyn, and M. Bonn, *Chem. Phys. Lett.*, 385 (2004) 244-248.
27. Detection and extraction of endosulfan by metal nanoparticles, A. Sreekumaran Nair, Renjis T. Tom, and T. Pradeep, *J. Environ. Monitoring*, 5 (2003), 363-365.
28. ZrO<sub>2</sub> bubbles from core shell nanoparticles, A. Sreekumaran Nair, Renjis T. Tom, V. Suryanarayanan and T. Pradeep, *J. Mat. Chem.* 13 (2003) 297 – 300.
29. Towards Understanding Structure and Phase Transitions of Self- Assembled Monolayers on Two- and Three- Dimensional Surfaces: An Overview of Current Efforts, N. Sandhyarani and T. Pradeep, *Int. Rev. Phys. Chem.* 22 (2003) 221-262.
30. Absence of the *rotator* phase and evolution of dynamical motions in cluster monolayers R. Mukhopadhyay, S. Mitra, B. Nair and T. Pradeep, I. Tsukushi and S. Ikeda, *J. Chem. Phys.*, 118, Issue 10 (2003) 4614-4619.

31. Freely dispersible Au@TiO<sub>2</sub>, Au@ZrO<sub>2</sub>, Ag@TiO<sub>2</sub> and AgZrO<sub>2</sub> core-shell nano particles: one step synthesis, characterization, spectroscopy and optical limiting properties, Renjis T. Tom, A. Sreekumaran Nair, Navinder Singh, M. Aslam, C. L. Nagendra, Reji Philip, K. Vijayamohan and T. Pradeep, *Langmuir* 19 (2003) 3439-3445.
32. Thermal conductivities of naked and monolayer protected metal nanoparticle based nanofluids: manifestation of anomalous enhancement and chemical effects, H. E. Patel, S. K. Das, T. Sundararajan, A. Sreekumaran Nair, Beena George and T. Pradeep, *Appl. Phys. Lett.*, 83 (2003) 2931-2933.
33. Nonlinear light transmission through oxide-protected Au and Ag nanoparticles: An investigation in the nanosecond domain, M. Anija, Jinto Thomas, Navinder Singh, A. Sreekumaran Nair, Renjis T. Tom, T. Pradeep, Reji Philip, *Chem. Phys. Lett.*, 380 (2003) 223-229.
34. Solvothermal synthesis of nanoparticles from thiolates, M. J. Rosemary and T. Pradeep, *J. Coll. Interface Sci.*, 268 (2003) 81-84.
35. Evolution of dynamical motions in monolayer protected metal clusters, R. Mukhopadhyay, S. Mitra, I. Tsukushi, S. Ikeda and T. Pradeep, *Chem. Phys.*, 292 (2003) 223-227.
36. Estimation of the electron affinities of nucleobases using thermochemical data and structural considerations, M.V. Sangaranarayanan and S. Haripriya, *Journal of Mol. Structure* 644 (2003) 133-138.
37. Estimation of activation energies for heterogeneous catalytic processes from thermodynamic and structural considerations, M.V. Sangaranarayanan and S. Haripriya, *Journal of Mol. Catalysis A* 207 (2004) 106-116.
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#### In Proceedings of National Conferences:

1. A. Suvitha, Tadaharu Ueda, Toshiaki Yonemura, Masashi Hoja and M.N. Sudheendra Rao, 'Six coordinate silicate derivatives and 2,3-dihydroxynaphthalene - synthesis, structural characterization and cyclic voltammetric studies. A poster presentation made in tenth biennial symposium on 'Modern Trends in Inorganic Chemistry (X-MTIC) held at IIT Bombay during December 15 - 17, 2003.
2. A Suvitha and M.N. Sudheendra Rao, 'Hypercoordinate silicates of 2,3-dihydroxynaphthalene - Synthesis, Mass spectral and Thermal Behaviour. A postel presentation made in Annual Symposium in Chemistry (Regional Meeting) held at IIT Madras during March 26-27, 2004.
3. T.J. Dhillip Kumar and Sanjay Kumar, 'Interaction and Dynamics of collision Energy Transfer in Proton Scattering from CO Molecules', VI th CRSI Symposium, 6 - 8 Feb. 2004, IIT Kanpur, p.308.
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5. Ch. Venkateswararao and B. Viswanathan, 'oxygen reduction by FeN<sub>4</sub> – as evaluated by Density Functional Approach, Workshop on Catalysis on Advances in Catalysis, Loyola College, January 6-7, 2004.
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8. R. Jothi Ramalingam, B. Viswanathan and T.K. Varadarajan, Synthesis and surface characterization of rare earth exchanged manganese oxide OMS-2 materials, workshop on catalysis on Advances in Catalysis, Loyola College, January 6 – 7, 2004.
9. T. Meiyalagan and B. Viswanathan, Carbon nanotubes as supports for Pt – A new generation anodes for DMFC, Seminar on Fuel-to-Fuel Cells at IICT on 4-5 Nov. 2003.
10. B. Viswanathan, S. Shanmugam and T.K. Varadarajan, Inorganic (poly oxometalate) – organic composite – Their exploitation as device materials, National Seminar on Solid state and allied subjects symposium at IIT Delhi, Dec. 4 – 6, 2003.
11. B. Viswanathan Alternates for noble for electrodes in Fuel cells, Seminar on Fuel-to-Fuel Cells at IICT on 4-5 Nov. 2003.
12. V. Chidambaram and B. Viswanathan, Pt on CDX 972 for possible application in fuel cells, Chemists' Meet 2004, March 25-26, 2004 at IIT M.
13. M. Sankar, B. Varghese and P. Bhyrappa, 'Synthesis and properties of novel highly substituted porphyrins' a poster presented at the Chemists' Meet (A regional meeting held at IIT Madras) March 26 – 27, 2004.
14. C. Arunkumar, B. Varghese and P. Bhyrappa, 'Synthesis and shape selective ligation properties of Zn(II)-Octaalkoxy pophyrins', a poster presented at the Chemists' Meet held on March 26-27, 2004.
15. Sankar, M and Bhyrappa, P. 'Highly substituted porphyrins: Synthesis and their properties' 6<sup>th</sup> National Symposium in Chemistry organized by Chemical Research Society of India, (CRSI), February 6 – 8, 2004 at IIT-Kanpur.
16. Arunkumar, C and Bhyrappa, P. 'Nonplanar liquid crystalline porphyrins: Synthesis and their properties' 6<sup>th</sup> National Symposium in Chemistry organized by Chemical Research Society of India, (CRSI), February 6 – 8, 2004 at IIT- Kanpur.
17. Sankar, M and Bhyrappa, P 'Porphyrins with mixed Substituents Pattern: Synthesis and their Properties' National Symposium on 'Modern Trends in Inorganic Chemistry (MTIC-X), December 15 – 17, 2003, IIT Bombay.
18. Arunkumar, C and Bhyrappa P. 'Octahydroxy porphyrins: Synthesis and their Properties' National Symposium on 'Modern Trends in Inorganic Chemistry (MTIC-X), December 15 – 17, 2003, IIT Bombay.
19. G. Ranga Rao, Growth, annealing and oxidation of Sm films on Ru(001) studied by XPS, Proceedings of the International Conference on Advances in Surface Science and Engineering, Indian Society of Analytical Scientists, pp. 213-218 (2002).

#### In proceedings of International Conferences:

1. D. Prabhakaran and M.S Subramanian, 'International Symposium on Chemical education and research, Jan. 4 – 7<sup>th</sup>, 2004, Loyola College, Chennai – 600 034.
2. T. Pradeep, Capped clusters in gas phase, Proceedings of the International Conference on Nanoscience and Technology, Kolakata, December 2003, to appear in J. Nanoscience.
3. A Serendipitous synthesis of 2,5-diethynyloxapine A. Bandyopadhyay and S. Sankararaman, Poster presented in IKCOC-9, 9<sup>th</sup> International Kyoto Conference, Kyoto, Japan, November 10-14, 2003. Abstract PA-037.
4. 1,3,6,8-Tetraethynylpyrene – A new building block for pyrene based highly Fluorescent benzocyclines and benzodehydroannulenes G. Venkataramanan and S. Sankararaman Poster presented in IKCOC-9, 9<sup>th</sup> International Kyoto Conference, Kyoto, Japan, November 10-14, 2003. Abstract PB-103.

5. G. Janarthanan, T. Arun Luiz, babu Varghese and M.N. Sudheendra Rao Synthesis, spectral and X-ray structural characterization of (amino) (catecholato) phosphineselendies, A poster presentation made in the IX International Conference on the Chemistry of Selenium and Tellurium held at IIT Bombay during February 23 – 27, 2004.
6. A. Dora and Sanjay Kumar, 'low-energy Resonant Electron Scattering of CF<sub>3</sub>Cl: A time – Dependent wave packet study, XI International Congress of Quantum Chemistry 2003, 20 – 26 July 2003, Bonn, Germany.
7. Santosh Kumar P, N. Ganesh Pandian and Anju Chadha, 'Microbial deracemisation of  $\beta$ -hydroxy esters – An important strategy towards various chiral intermediates', 6<sup>th</sup> International Symposium on Biocatalysis and Biotransformations, Olomouc, Czech Republic, 28<sup>th</sup> June to 30<sup>th</sup> July 2003.
8. Indranil Basu, R. Venkata Subramanian, Arun Mathew, Anju Chadha and Enakshi Bhattacharya, 'Solid State Potentiometric Biosensor for Estimation of Triglycerides, International Workshop on Physics of Semiconductor Devices 16-20, 2003, IIT Madras.
9. R. Venkata Subramanian, Indranil Basu, Arun Mathew, Enakshi Bhattacharya, and Anju Chadha 'Optimization of Urease Activity for a Potentiometric Urea Biosensor, International Workshop on Physics of Semiconductor Devices 16-20, 2003, IIT Madras.

#### Distinguished Visitors to the Department

S.No.	Name of the visitor and designation	Date of visit	Purpose of visit
1.	Sobhana Babu, Scripps Research Institute, La Jolla, California	28 <sup>th</sup> April 2003	Seminar & Discussions
2.	Dr.Ashish K. Gupta Technion University, Israel	27 <sup>th</sup> May 2003	Seminar & Discussions
3.	Dr.Krishna Kumar Tufts University, USA	8 <sup>th</sup> July 2003	Seminar & Discussions
4.	Dr.Sudha, Marimanikkuppam University of Minnesota, USA	1 <sup>st</sup> August 2003	Seminar & Discussions
5.	Dr.Tadaharu Ueda, Faculty of Science, Dept. of Material Science, Kochi University, Japan	23 <sup>rd</sup> September 2003	Seminar & Discussions
6.	Prof.Dr.P. Chadhuri, Max-Planck Institute of Bioinorganic Chemistry, Muelheim, Germany	13 <sup>th</sup> October 2003	Seminar & Discussions
7.	Dr.Howard H. Weetall, EPA, Las Vegas, NV, USA	28 <sup>th</sup> October 2003	Seminar & Discussions
8.	Prof.Bryan Sanctuary, Dept. of Chemistry, McGill University, Montreal, Canada	10 <sup>th</sup> November 2003	Seminar & Discussions
9.	Prof. Armin deMeijere, University of Gottingen, Germany	Nov. 17, 2003	INSA exchange program Lecture discussion
10.	Prof.Ravi Pandey, Michigan Technological University, USA	19 <sup>th</sup> December, 2003	Seminar & Discussions
11.	Prof.Horst Koepfel, University of Heidelberg, Germany.	9 <sup>th</sup> January 2004	Seminar & Discussions
12.	Prof.J.M. Guenet, Director of Research, CNRS – University of Strasbourg, France	14 <sup>th</sup> January, 2004	Seminar & Discussions
13.	Prof.Robert Schlogl, Max Planck Society, Munche	21 <sup>st</sup> January, 2004	Seminar & Discussions
14.	Prof.Andrew J. Thomson School of Chemical and Pharmacy, University of East Angila, Norwich, U.K.	23 <sup>rd</sup> January, 2004	Seminar & Discussions
15.	Dr.Narayan Hosmane, Presidential Research Professor, Department of Chemistry and Biochemistry, Northern Illinois University, DeKalb, Illinois, USA	27 <sup>th</sup> January, 2004	Seminar & Discussions
16.	Dr.V. Kesavan, Alnylam Pharmaceuticals Cambridge, USA.	12 <sup>th</sup> February, 2004	Seminar & Discussions
17.	Prof.Jack Passmore, Department of Chemistry, The University of New Brunswick, Fredericton, N.B. Canada.	17 <sup>th</sup> February, 2004	Seminar & Discussions
18.	Prof.Tristram Chivers, The University of Calgary, Calgary, Alberta, Canada.	20 <sup>th</sup> February, 2004	Seminar & Discussions
19.	Prof.Dr.Willis Forsling, Director of the Agricola Research Centre at Lulea University of Technology, Sweden.	25 <sup>th</sup> February 2004	Seminar & Discussions

S.No.	Name of the visitor and designation	Date of visit	Purpose of visit
20.	Prof. Andrea Vasella, Laboratory for Organic Chemistry, ETH, Zuerich/Switzerland.	26 <sup>th</sup> February, 2004	Seminar & Discussions
21.	Larry Jones, Basell Polyolefins, Germany	4 <sup>th</sup> March, 2004	Lecture & Discussion
22.	Dr. Balaji Jagirdar, IISc Bangalore	March 17, 2004	Lecture & Discussion
23.	Prof. B.M. Nestmann, Germany	Feb. 19 – March 13, 2004	DST-DAAD Project Interaction with theory group

#### 4.4.6 Other Activities:

##### Prof. S. Vancheesan

Under 'Modernisation and removal of obsolescence of M.Sc Laboratories', Rs.20.00 lakhs were sanctioned by MHRD.

##### Dr. Bhyrappa P

- As a referee for projects from: Department of Science and Technology, India.
- As a referee for international journals: 1. Molecular Crystals & Liquid Crystals  
2. Journal of Porphyrins & Phthalocyanines

##### M.N. Sudheendra Rao

- Invited to serve as an *EXTERNAL SENATOR* for National Institute of Technology at Jalandhar (Punjab) on a two-year term, effective July 2003.
- Served as *Subject Expert* for the promotional interviews of Dept. of Chemistry, National Institute of Technology Karnataka (NITK) at Surathkal held on Feb. 2004.
- Reviewed the performance of the Chemistry Dept., NITK during Feb. 28 – 1<sup>st</sup> March 2004 for submission of a Report for upgradation of the Department on the invitation of the Director, NITK.

##### Dr. Sanjay Kumar

- Coordinator, IBM SUR grant at IIT Madras.
- Member, High Performance Computing Environment Committee at IIT M constituted by the Director.

## 4.5 DEPARTMENT OF CIVIL ENGINEERING

### 4.5.1. Introduction:

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

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

### 4.5.2. 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 postgraduate programmes leading to Dual Degree, 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.

### New Courses Introduced:

The B.Tech and Dual Degree Curricula have been modified.

### Students on Roll:

Programme	I Year	II Year	III Year	IV Year	V Year	Total
B.Tech	44	37	45	38	4	168
M.Tech.	76	76	-	-	-	152
D.D	10	8	10	10	10	48
M.S.	17	19	4	5	-	45
Ph.D.	19	23	8	10	11	71
Total	166	163	67	63	25	484

### Names of student / scholar attended Conference / Seminar and Symposium Abroad or India:

Sl.No.	Name of the student/scholar	Programme	Name of the Conf./ Seminar/ Symposium	Date and Venue
1.	Ms.A.K.Kasturba	Paper Presentation	ICIARMS Int. Conference	18 <sup>th</sup> Dec. – 20 <sup>th</sup> Dec. 2003 Singapore
2.	Mr.R.Ayothiraman	Paper Presentation	11 <sup>th</sup> Int. Conf. On Soil Dynamics and Earthquake Engg of 3 <sup>rd</sup> Int. Conf. On Earthquake Geotechnical Engineering	7 <sup>th</sup> Jan – 9 <sup>th</sup> Jan 2004

### 4.5.3. Faculty and their Development:

#### Faculty :

Name and Qualifications	Major Area of Specialization
<b>Professors:</b>	
Dr.R.Ambalavanan, Ph.D. (IITM)	Building Technology and Construction Mgmt.
Dr.Devdas Menon, Ph.D. (IITM)	Structural Engineering
Dr.K.Elango, Ph.D. (IITM)	Hydraulic & Water Resources Engineering
Dr.S.R.Gandhi, Ph.D. (IITM)	Geotechnical Engineering
Dr.V.Kalyanaraman, Ph.D. (Cornell)	Structural Engineering
Dr.Koshy Varghese, Ph.D. (Texas, Austin)	Building Technology and Construction Mgmt.
Dr.N.R.Krishnaswamy, Ph.D. (IIT Kanpur)	Geotechnical Engineering
Dr.M.S.Mathews, Ph.D. (IITM)	Building Technology and Construction Mgmt.

Name and Qualifications	Major Area of Specialization
Dr.A.Meher Prasad, Ph.D. (RICE)	Structural Engineering
Dr.B.S.Murty, Ph.D. (Washington St)	Hydraulic & Water Resources Engineering
Dr.S.Mohan, Ph.D. (IISc., Bangalore)	Hydraulic & Water Resources Engineering
Dr.S.B.Pattnaik, Ph.D. (IIT Kanpur)	Transportation Engineering
Dr.K.Rajagopal, Ph.D. (Florida)	Geotechnical Engineering
Dr.A.Ramachandraiah, Ph.D. (IITM)	Building Technology and Construction Mgmt.
Dr.K.Ramamurthy, Ph.D. (IITM)	Building Technology and Construction Mgmt.
Dr.V.R.Rengaraju, Ph.D. (IISc. Bangalore)	Transportation Engineering
Dr.K.N.Satyanarayana, Ph.D. (Cornell)	Building Technology and Construction Mgmt.
Dr.K.Srinivasan, Ph.D. (IITM)	Hydraulic and Water Resources Engineering
Dr.V.Thamizh Arasan Ph.D. (IITM)	Transportation Engineering
Dr.B.S.Thandaveswara, Ph.D. (IISc Bangalore)	Hydraulic and Water Resources Engineering

**Associate Professors:**

Dr.A.Boominathan, Ph.D. (Moscow)	Geotechnical Engineering
Dr.Ligy Philip (Ms.) Ph.D. (IIT Kanpur)	Environmental Engineering
Dr.R.Sivanandan, Ph.D. (Virginia Tech.)	Transportation Engineering

Name and Qualifications	Major Area of Specialization
<b>Assistant Professors:</b>	
Dr.P.Alagusundaramoorthy Ph.D.(IITM)	Composite Technology
Dr.Amlan Kumar Sengupta Ph.D. (Univ. of Missouri)	Structural Engineering
Dr.K.Ananthanarayanan, Ph.D. (IITM)	Building Technology and Construction Mgmt.
Dr.G.Appa Rao Ph.D. (I.I.Sc. Bangalore)	Structural Engineering
Dr.G.R.Dodagoudar Ph.D. (IIT Bombay)	Geotechnical Engineering
Shri.K.Gopalakrishna, M.Tech. (IIT Kanpur)	Environmental Engineering
Dr.Karthik K Srinivasan Ph.D. (Texas, Austin)	Transportation Engineering
Dr.Manu Santhanam Ph.D. (Purdue Univ.)	Building Technology and Construction Mgmt.
Dr.R.G.Robinson Ph.D. (IISc., Bangalore)	Geotechnical Engineering
Dr.S.R.Satish Kumar, D.Engg. (Nagoya Univ.)	Structural Engineering
Dr.K.P.Sudheer, Ph.D.	Hydraulic & Water Resources Engineering

**Senior Scientific Officer Gr.I:**

Shri.M.Subbi Reddy, M.S. (IITM)	Transportation Engineering
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**Short-term Courses/Workshops/Seminars/Symposia /Conferences organized by the faculty members:**

Sl.No.	Co-ordinators	Title	Period
<b>Workshops</b>			
1.	Dr.P.Alagusundaramoorthy	Intensive Workshop on Fiber Reinforced Thermoset Plastics	21 <sup>st</sup> to 26 <sup>th</sup> July 2003
<b>Conference</b>			
1.	Dr.S.R.Satish Kumar	Structural Dynamics and Earthquake Engineering SDEE 2003	1-5 Jul 2003
2.	Dr.S.R.Satish Kumar	Earthquake Resistant Structural Design ERSD 2003	7-12 Jul 2003
3.	Dr.S.R.Gandhi	Short term course on "Ground Improvement for Infrastructure Projects"	1-5, Dec, 2003 CEC
4.	Dr.S.R.Gandhi	Short Term Course on 'Deep Foundation for Infrastructure Projects'	8 – 12 Dec. 2003 CEC
5.	Dr.S.R.Gandhi	Short term course on 'Geotechnical Design for Infrastructure Projects'	1 – 12 Dec. 2003 AICTE
6.	Dr.K.Ramamurthy Dr.V.Kalyanaraman	STTP Course on Research Methodology	18 – 24, Dec. 2003 AICTE/QIP
7.	Dr.S.Mohan Dr.P.K.Mohapatra	Design of Irrigation Structures using Computers	22.12.03 -27.12.03 IMTI
8.	Dr.K.N.Satyanarayana	International Symposium on CIB W92 Procurement System	7 – 10, Jan 2004
9.	Dr.K.Rajagopal Dr.Nainan P Kurian	International e-conference on 'Advance in Geotechnical Engineering'	26 – 30 Jan. 2004 AICTE

Sl.No.	Co-ordinators	Title	Period
10.	Dr.A.Meher Prasad Dr.Nagesh Iyer (SERC) Dr.Sudhir K Jain (IITK)	2 <sup>nd</sup> Indo-German Workshop on 'Seismic safety structures, Risk Assessment & Disaster Mitigation'	15-16 <sup>th</sup> Feb. 2004 NPEEE
11.	Dr.V.Tamizh Arasan	International Conference on 'Transportation Systems Planning and Operation'	18 – 20 <sup>th</sup> Feb. 2004

**Short-term Courses/Workshops/Seminars/Symposia/Conferences attended by the faculty members in Academic Institutions and public Sector Units:**

Sl.No.	Name of Faculty	Title	Institution	Period/ Duration
<b>Workshops</b>				
1.	R. Sivanandan	Workshop on Parking Management in Chennai	Institute of Urban Transport (India)-Regional Chapter, Chennai (held at Anna University)	13-2-2004
2.	S.B.Pattnaik	Workshop on Parking Management in Chennai	Institute of Urban Transport (India)-Regional Chapter, Chennai (held at Anna University)	13-2-2004
3.	R. Sivanandan	International Workshop on Level of Safety at Traffic Signals	IIT-Madras	17-2-2004
4.	Amlan K. Sengupta	Retrofitting of Structures	IIT Roorkee	10 <sup>th</sup> – 11 <sup>th</sup> Oct, 2003
5.	S.B.Pattnaik	IUH Workshop on level of Saety and Transport signals	IIT Madras	17.2.2004
<b>Seminar:</b>				
6.	Amlan K. Sengupta	Disaster Management and Mitigation	SERC, Chennai	20 <sup>th</sup> – 21 <sup>st</sup> June, 2003
7.	Amlan K. Sengupta	Rehabilitation of Concrete Structures	Anna University	23 <sup>rd</sup> June, 2003
<b>Conference:</b>				
8.	R. Sivanandan	International Conference on Transportation Systems Planning and Operation	IIT-Madras	18-2-2004 to 20-2-2004
9.	Amlan K. Sengupta	Structural Engineering Convention	IIT. Kharagpur	12 <sup>th</sup> – 14 <sup>th</sup> Dec, 2003
10.	Dr. G. Appa Rao,	"International Conference on Concrete Technology and Structures" (INCONTEST	Kumara Guru College of Technology, Coimbatore	10-12 <sup>th</sup> Sept.,2003

**Special Lectures delivered by the Faculty in other Institutions:**

Sl.No	Name of Faculty	Topic of Lecture	Venue and Date
1.	Dr.A.Boominathan	Dynamic Soil / Pile Parameters	IOC Refinery, Panipet (Haryana) 2 <sup>nd</sup> May 2003
2.	Dr.V.Thamizh Arasan	Transportation System Planning under Indian conditions	Inst. For Traffic and Transport Planning, Faculty of Traffic Sciences, Tech. Univ. of Dresden, Germany 16 <sup>th</sup> June 2003
3.	Dr.V.Kalyanaraman	A review of Smart Control of Structural Buckling	Annual Convention of the Association of Consulting Engineers (India) June 21, 2003
4.	Dr.Devdas Menon	Inspired learning and Teaching	Amritha Institute of Technology, Coimbatore June 20-21, 2003
5.	Dr. G. Appa Rao	"Hot Weather Concrete"	Kumara Guru College of Technology, Coimbatore 10-12, Sept., 2003
6.	Dr. A.R. Santha Kumar	"Ductility of GFRP Beam with Notch" respectively.	Kumara Guru College of Technology, Coimbatore 10-12, Sept., 2003

Sl.No	Name of Faculty	Topic of Lecture	Venue and Date
7.	Dr. A. Boominathan	"Design and Construction of Foundations for Vibratory Machineries"	IOCL, Mathura 13 <sup>th</sup> September 2003
8.	Dr. A. Boominathan	Effect of shear Modulus of Soil on Dynamic Bending Behaviour of Single Piles in Clay	Dept. of Civil Engg, Univ. of California at Los Angeles (USA) 13 <sup>th</sup> Jan 2004
9.	Amlan K. Sengupta	Retrofitting of Existing Multi-storeyed Buildings	Corporation of Chennai, 19 <sup>th</sup> Jan, 2004
10.	Dr.Koshy Varghese	Role of XML in Construction supply chain	Seminar on Construction Management, College of Military Engineering, Pune 26 <sup>th</sup> & 27 <sup>th</sup> March 2004

#### Visits Abroad by Faculty:

Sl.No.	Name of Faculty	Country Visited	Date	Purpose of Visit
1.	Dr. A. Boominathan	USA	Jan 7-10, 2004	To attend and present papers at 11 <sup>th</sup> Int. Conf. on Soil Dynamics and Earthquake Engineering, Univ. of California at Berkeley
2.	Dr. A. Boominathan	USA	Jan 11-13, 2004	Visit to Univ. of California at Los Angeles

#### Honours and Awards obtained:

Sl.No	Name of Faculty	Name of Award	Awarded by	Awarded for	Date
1	Dr.Ligy Philip	ISTE Best Thesis Award	ISTE	Best M.Tech Thesis in Civil Engg	Nov., 2003
2	Dr.K.Rajagopal	Samsher Prakash biennial prize for the best paper published in the Soil Dynamics area	Indian Geotechnical Society	Paper titled "Triaxial Behaviour of Reinforced Clay Under Static and Cyclic Loading" published in Indian Geotechnical Journal in 2002	Dec 2003
3	Dr.N.R.Krishnaswamy	Dr.Shamsher Prakash Biennial Prize	Indian Geotechnical Society	Best Paper Award	Dec. 2003

#### Books / Monographs authored/co-authored:

1	S U Pillai and Devdas Menon -	"Reinforced Concrete Design", Second edition, 875 pages	Tata McGraw-Hill Book Publ. Co., New Delhi
2	Devdas Menon	"Little things that matter in life", 50 pages	Reflections, IIT Madras

#### 4.5.4. Design and Development Activities

Dr.K.Rajagopal developed a large-scale laboratory apparatus for performing pullout tests on soil reinforcement and anchor elements. This is the first of its kind in this country and is not available at any other institute.

Dr.A.Boominathan developed a borehole pick for measurement of seismic wave velocities in soil / rock strata.

Dr.P.Alagusundaramoorthy has set up a pultrusion process for the manufacture of FRP fibers, I Channel and angle sections at COMPTEC IIT Madras. Experimental studies are going on. After successful completion it will be patented.

#### 4.5.5. Research and Consultancy:

##### Sponsored Research Projects:

Sl.No	Title	Period	Funding Agency	Amount (Rs.in lakhs)	Co-ordinators
1.	Seismic evaluation and retrofit of existing multi-storey buildings	2002-04	DST	28.60	Dr.Devdas Menon Dr.V. Kalyanaraman Dr.A. Meher Prasad Dr.S.R. Satish Kumar Dr.P. Alagusundaramoorthy Dr.A K Sengupta



Sl.No	Title	Period	Funding Agency	Amount (Rs.in lakhs)	Co-ordinators
2.	Seismic Evaluation and Retrofit of Existing Multi-storied Buildings	2002-2004	Dept. of Science and Technology	69.20	Dr.A.K.Sengupta Dr.D. Menon Dr. A. M. Prasad
3.	Seismic Evaluation of Pondicherry Rajnivas Building	2003-2004	Public Works Dept., Pondicherry	1.80	Dr.A.K.Sengupta Dr.R. Ambalavanan Dr.Devdas Menon
4.	Damage Assessment of High Performance Concrete Structures	Nov 2003 – Oct 2005	IIT Madras	4.76	Dr.Manu Santhanam
5.	Strength and durability studies of laterite as an alternative building material – strategies to conserve world heritage monuments in laterite	Apr 2003 – Mar 2005	MHRD	10.00	Dr.Manu Santhanam Dr.M.S.Mathews
6.	Development of a Low – cost technology for Arsenic removal	2003-2006	DST	7.56	Dr.Ligy Philip
7.	Congestion Mitigation in Indian Urban Areas	2004-2006	IIT-Madras	48 (appx.)	Prof. Bhaskar Ramamurthi Dr. R. Sivanandan (Sub-project Coordinator)
8.	Seismic Evaluation and Retrofit of Multi-storied Reinforced Concrete Buildings	2002-2004	DST, New Delhi	60.00	Dr.S.R.Satish Kumar
9.	Fracture Assessment of Sodium Pipes	2003-2004	IGCAR, Kalpakkam	7.00	Dr.S.R.Satish Kumar Dr.V.Kalyanaraman
10.	Leak detection and isolation in gas pipeline networks	April 02 October 04	GAIL (India)	17.50	Dr.B.S.Murty Narasimhan (P.I)
11.	Study on the Enhancement Of Recharge Potential In The Recharge Area Of The Neyveli Deep-Seated Aquifers.	01.05.02 to 30.04.05	Coal S & T, Ministry of coal, Govt of India and NLC, Neyveli.	39.18	Dr.A.Boominathan Dr. S. Mohan (Principle Investigator)
12.	Modernisation of Soil Dynamics and Earthquake Geotechnics Laboratory	1/3/2004 – 28/2/2006	MHRD	25.00	Dr. A.Boominathan Dr. G. R. Doda Goudar Dr. K. Rajagopal Dr. S. R. Gandhi Dr. N. R. Krishnaswamy
13.	Improved Risk Assessment and Management in Urban Piped System	01.12.02 - 30.09.04	Loughborough Univ., & DFID UK	16.22	Dr.S.Mohan Dr. K. Elango
14.	Development of a Methodology for Enhancing Level of Safety at Traffic Signals	2001 - 2004	BMBF, Germany & IIT Madras	Provision for visits onlt	Prof.Thamizh Arasan Prof.Dr.Ing.Manfred Boltze, Technical University of Darmstadt, Germany
15.	Modelling Mixed Traffic Flow on Urban Roads and Development of Capacity Standards	2003 – 2006	Ministry of Human Resource Development, Govt. of India	10.00	Dr.Thamizh Arasan Mr.M.Subbi Reddy

**Industrial Consultancy Projects:**

Sl.No.	Name of the faculty	Title	Industry	Amount (Rs.in Lakhs)
1.	Dr.Devdas Menon Dr.A.Meher Prasad	Study of structural design and retrofit of CWST of 168.1 MW AESK Plant at Colombo	Larsen & Toubro Ltd, Baroda	1.70

Sl.No.	Name of the faculty	Title	Industry	Amount (Rs.in Lakhs)
2.	Dr.Devdas Menon Dr.S.R.Gandhi	Foundation and superstructure design of radar towers on Gujarat coast	Dept of Lighthouses & Lightships	5.13
3.	Dr.Devdas Menon Dr.A.Meher Prasad	Certification for fourteen software modules of design programs	Larsen & Toubro – ECC group	1.50
4.	Dr.Devdas Menon Dr.A.Meher Prasad Dr.P.K.Aravindan	Preparation of structural engg design and construction manual for Gypcrete/Rapidwall buildings	Gypcrete India Ltd	5.00
5.	Dr.Devdas Menon	Structural design of quarters for Lighthouse Department at Jamnagar	Dept of Lighthouses & Lightships	1.10
6.	Dr.Devdas Menon	Dynamic Testing of FRP Sleepers	Micron Industries Inc.	3.15
7.	Dr.Devdas Menon	Fastening repeated uplift and tie-pad tests on sleepers for Bangladesh Railway	ISCO Sleepers Ltd	2.25
8.	Dr.Devdas Menon	Proof-checking of A.P. industrial pavilion at Pragati Maidan, Delhi	CR Narayana Rao	1.10
9.	Dr.Devdas Menon	Proof-checking of design of Army Sports Institute, Pune	CR Narayana Rao	3.24
10.	Dr.Devdas Menon	Safety audit of Chennai Airport: strengthening of roof	Airport Authority of India	1.94
11.	Dr.Devdas Menon	Design of flyover for Jaipur-Kishangarh Road Project	L&T Ramboll	2.00
12.	Dr.Devdas Menon	Proof-checking of Chennai Trade Centre structural design	CR Narayana Rao	1.62
13.	Dr.Devdas Menon	Proof consultancy for design of bridges for Udhampur Srinagar Baramulla Rail Lane Project	IRCON	5.94
14.	Dr.Devdas Menon	Proof-checking of IT Park building at Pondicherry	Pondicherry Indl Promotion & Inv. CL	2.16
15.	Dr.Devdas Menon	Proof checking of Mother Teresa Hospital structure at Pondicherry	Threshold Architects, Chennai	1.36
16.	Dr.Devdas Menon Dr.A.Meher Prasad Dr.A.K.Sengupta	Study of earthquake resistance of Raj Nivas structure, Pondicherry	PWD, Pondicherry	1.08
17.	Dr.Manu Santhanam Dr.V.R.Rengaraju	Suitability of fly ash with high unburned Carbon for used in concrete roads	TCP – Power division, Gummidipoondi	0.35
18.	Dr.Manu Santhanam	Testing of Recron-3S fibres for use in concrete/plaster	Reliance Industries, Mumbai	2.00
19.	Dr.Manu Santhanam	Testing of metakaolin in concrete	English India Clays Ltd., Thiruvananthapuram	2.8
20.	Dr.Manu Santhanam	ASTM Certification Testing of Admixtures	Indofil Chemicals, Mumbai	1.20
21.	Dr.Ligy Philip Dr.T.Swaminathan	Preparation of Environmental Management Plan for Chennai Airport	Airport Authority of India	1.50

Sl.No.	Name of the faculty	Title	Industry	Amount (Rs.in Lakhs)
22.	Dr.Ligy Philip (One of the team member)	Water Treatment Plant Design for Neyveli Lignite Corporation	NLC	5.20
23.	Dr.Ligy Philip	Sriganapathy Chemicals	Sriganapathy	0.10
24.	Dr.Ligy Philip	Water sample	Sipcot	0.10
25.	Dr.Ligy Philip	Watersample	Southeern Railway	0.10
26.	Dr.K.Rajagopal Dr.N.R.Krishnaswamy Dr.S.Narasimha Rao	Slope Stability Analysis for Mine III Project	NLC Ltd., Neyveli	1.50
27.	Dr.K.Rajagopal	Consultancy Services for the design and construction of reinforced soil structures and ground improvement	M/s Skanska Cementation India Ltd., Vellore	0.95
28.	Dr.K.Rajagopal	Proof Checking of Designs of Reinforced Anchored Earth Walls	M/s MBN Anchored Earth Ltd., Hyderabad	1.68
29.	Dr.K.Rajagopal	Recommendation of Design Parameters for Anchor Elements	M/s Garware Wall Roped Ltd., Pune	1.96
30.	Dr.K.Rajagopal	Evaluation of the Pullout Capacity of Mesh Elements	M/s VSL Ltd. Chennai	0.70
31.	Dr.K.Ananthanarayanan Dr.V.Sunder	Bathymetry survey, sea erosion on Northern side of Island Sriharikota	Isro , Sriharikota	6.00
32.	Dr.K.Ananthanarayanan Dr.V.Sunder	Bathymetry survey Pnnakkayal	Institute of Hydrolics and Hydrology,Poondi	2.25
33.	Dr.K.Ananthanarayanan Dr.R.Sundaravadivelu	Excavation of Channel in Palur,Chilika	Chilika Development Authority	5.00
34.	Dr.K.Ananthanarayanan Dr.R.Ambalavanan	Preparation of contour map for construction facility of assembly and integration of MBT Arjun Tank at HUF Avadi	Garrison Engineering,Avadi	0.95
35.	Dr.B.S.Murty Dr.V.S.Raju Dr.B.S.Thandaveswara Dr.P.K.Aravindan Dr.A.Meher Prasad	Consulting services for alternative cooling water system to run 1100 cusecs of river water and install 3 Nos. cooling towers at VTPS, Ibrahimpattam and for other civil works at APGENCO	M/s Andhra Pradesh Power Generation Company	11.88
36.	Dr.B.S.Murty Dr.V.S.Raju Dr.R.Sundaravadivelu	Consultancy services for design and construction of civil works for the mini hydro electric scheme at Peddapalli, Karimnagar	M/s Andhra Pradesh Power Generation Company	21.20
37.	Dr.B.S.Murty Dr.V.S.Raju Dr.R.Sundaravadivelu	Consultancy services for vetting of the civil drawings for MHES M-18-1-330 on D-83 branch canal of SRSP	M/s Andhra Pradesh Power Generation Company	9.36
38.	Dr.A.Boominathan	Dynamic Pile Load tests at IOCL – Panipat, PTA Plant	L & T-ECC	3.00
39.	Dr.A.Boominathan	Dynamic Pile Load tests at IOCL – Mathura Refinery, MSQ Plant	L & T, Mumbai	3.24
40.	Dr.A.Boominathan	Dynamic testing of piles at Panipat refinery HCU project	DAELIM	3.00
41.	Dr.A.Boominathan Dr.R.Sundaravadivelu	DHC foundation of bio polymer plant Pondicherry	HLL	1.26
42.	Dr.A.Boominathan.	Dynamic test of piles for compressor foundation at IOCL Panipat	L & T-ECC	5.60
43.	Dr.S.R.Gandhi	Design of Ash Dyke at Parichha	Department of Science and Technology, D-3, Qutab hotel, New Mehrauli road, New Delhi -110 016.	6.22

Sl.No.	Name of the faculty	Title	Industry	Amount (Rs.in Lakhs)
44.	Dr.S.R.Gandhi	Slop Restoration works at Mangalore Refinery	Mangalore Refinery and Petrochemical Limited, Kuthethur P.O. Via Katipalla, Mangalore-575 030.	3.0
45.	Dr.S.R.Gandhi	Ground Improvement technique for the proposed SME erection yard at mine II	Neyveli Lignite Corporation, Neyveli	0.95
46.	Dr.S.R.Gandhi Dr. Devdass Menon Dr. A. Meher Prasad Prof. M.S. Mathews	Preliminary studies related to Geo-technical soil Mechanics and Structural aspects of Ta Prohm temple complex, Siem Reap, Cambodia	Archeological Survey of India, Janpath, New Delhi	2.00
47.	Dr.S.R.Gandhi Dr.V.S.Raju	Augmentation of Ash pond capacity at Kothagudam Thermal Power Station	Andhra Pradesh Power Generation Corporation Limited, Kothagudam Thermal Power Station, Poloncha - 507 115.	4.07
48.	Dr. K.Ramamurthy Dr.S.Mohan Dr.S.Kumaraswamy Dr.R.Ambalavanan Dr.B.K.Bezbarua	Design of storm water treatment plant phase-II for storm water from mine II to TPS II for use in circulating water system	Neyveli Lignite Corporation	2.50
49.	Dr.S.Mohan Dr. S.Kumaraswamy, Dr. R.Ambalavanan, Dr. K. Ramamurthy and Dr. Ligy Philip	Design of Storm Water Treatment System for Neyveli Township	Neyveli Lignite Corporation, Neyveli.	6.50
50.	Dr.P.Alagusundaramoorthy	Providing Technology and Guidance for the Repair of Lighthouses damaged in the recent earthquake at Gujarai using FRP Composites	Govt. of India	1.33
51.	Dr.P.Alagusundaramoorthy Dr.S.K.Malhotra	Design and Analysis o FRP can for DMU/DPC for Indian Railways	Hindustan Fiber Glass Works, Vadodara, India	3.75
52.	Dr.P.Alagusundaramoorthy Dr.R.Sundaravadelu	Construction of slipway at Malpe, Mangalore	Tebma Shipyard limited, Chennai, India	2.00
53.	Dr.P.Alagusundaramoorthy Dr.R.Sundaravadelu	Preparation of technical feasibility report for setting up an impounded deck and its allied facilities for the coast of Veera / sanat Kandla Port Trust	Chief Engineer, Kandla Port Gujarat India	15.00
54.	Dr.A.Ramachandraiah	Study of vibration levels	Simplex Construction	0.30
55.	Dr.A.Ramachandraiah	Study of acoustic absorption	Hyd. Compressors	0.15
56.	Dr.A.Ramachandraiah	Study of sound transmission	Kutty Flush	0.16
57.	Dr.A.Ramachandraiah	Study of vibration levels	L & T	0.25
58.	Dr.V.R.Rengaraju Sri.M.Subbi Reddy	Job mix design and advice for Bitumunous Macadam and Concrete. Evaluation of subgrade material etc.	Government and Private organizations	0.58
59.	Dr.V.Thamizh Arasan	Testing of Aggregate and Derivation of Job-Mix Formula for Airfield Pavement works	The Garrison Engineer, Airforce Station, Chennai	0.58
60.	Dr.V.Thamizh Arasan	Material testing and mix design for resurfacing of Airport Runway Pavement	The Asst. Genl. Manager Engg. ( C ) Airport Authority of India, Chennai International Airport	0.95

Sl.No.	Name of the faculty	Title	Industry	Amount (Rs.in Lakhs)
61.	Dr.V.Thamizh Arasan	Design of Bituminous Mixes for Taxiway Pavements	The Asst. Genl. Manager Engg. ( C ) Airport Authority of India, Chennai International Airport	0.57
62.	Dr.V.Thamizh Arasan	Bituminous Mix Design for Bearing and wearing courses of Highway Pavements	The Divisional Engineer, Highway Department, Chennai	0.60
63.	Dr.V.Thamizh Arasan	Bituminous Mix Design for Repair Works of City Roads	The Divisional Engineer, Highway Department, Chennai City Roads Division	0.80

**RBIC Projects:**

Sl.No	Name of Faculty	Title	Industry	Amount
1	Dr.Devdas Menon	Development of pre cast concrete sections and joints for use in tower structures	Concrete Products & Constn Co.	2.10
2	Dr.P.Alagusundaramoorthy Dr.M.Balasubramanian	Development of Grid/Grating Making by Compression Moulding	Technocraft	1.5
3	Dr.S.Mohan	Development of Optimal Reservoir Operation Policies for Multipurpose Multi-Reservoir System using Soft-Computing Techniques based Decision Support Systems.	Institute for Water Studies, Public Works Dept., Govt. of Tamilnadu.	6.66
4	Dr.S.Mohan	Development of Ground Water Management System Model to Study the Variations in Water Quality and Water Quantity of the Different Aquifer Systems in Neyveli basin and for Prognostic Scenario Planning.	Neyveli Lignite Corporation, Neyveli	1.064
5	Dr.S.Mohan	Development of Optimal Pumping Plan for Ground Water Pressure Control for the Existing and Future Mines at Neyveli and a Comprehensive Regional Ground Water Simulation Model for Neyveli Basin.	Neyveli Lignite Corporation, Neyveli	1.150
6	Dr.S.Mohan	Modelling of Sea Water Intrusion in Coastal Aquifers and Derivation on Optimal Pumping Strategies to Control Salt Water Intrusion in South Chennai Aquifer System	Institute for Water Studies, Public Works Dept., Govt. of Tamilnadu.	1.240

**Retainer Consultancy:**

Sl.No	Name of Faculty	Title	Industry	Amount (Rs.in lakhs)
1	Dr.S.R.Gandhi	Foundation Design	L&T – ECC	0.24
2	Dr.S.R.Gandhi	Foundation Design	FICHTNER	0.12

**Journal Editorial Boards:**

Sl.No	Name of Faculty	Level	Journal
1.	Dr.Manu Santhanam	Life Member	Indian Concrete Institute 2002
2.	Dr.Manu Santhanam	Member	American Concrete Institute 2003
3.		Fellow	Indian Society for Hydraulics 2003

## Research Publications

Total No. of papers published in Referred National Journals	:	18
Total No. of papers published in International Journals	:	26
Total No. of papers presented in National Conference	:	41
Total No. of papers presented in International Conference	:	31

### In Refereed National Journals

1. Appa Rao G and B.K.Raghu Prasad, "Fracture Energy of Fiber Reinforced High Strength Concrete", Journal of Structural Engineering, SERC, pp.153-161.
2. Appa Rao G, "Investigations on Performance of Silica Fume Incorporated Cement Pastes and Mortars", Cement and Concrete Research, V.33. 2003, pp.1765-1770.
3. Bharath Reddy and Devdas Menon, "Computer-aided optimal design of prestressed concrete masts", Indian Concrete Journal, Vol. 77, No. 6, June 2003, pp 1117-1122.
4. Choudhary T D and Devdas Menon, "Strain measurement around holes in concrete panels under direct tension", J. Institution of Engineers (India), Civil Engg Div, Vol. 84, pp 91-95, August 2003.
5. Kumaran G and Devdas Menon, "Dynamic analysis and reliability based analysis of PSC rail-track sleepers", J. Structural Engineering, SERC, Vol. 30, No. 1, April-June 2003, pp 25-31.
6. Mohan S and Ramani Bai, V., 2003. Reliability Based Conjunctive Use Optimization Model for Crop Planning, *Indian Journal of Power & River Valley development*, Vol.53. (Accepted)
7. Mohan S. and Sivahanmugham, R., 2003, "Reverse Osmosis Process for Wastewater Reuse: Performance Study – PART -I", *Journal of Indian Water Works Association*, Vol. 35, No. 4., Oct-Dec., 2003, pp. 295-299.
8. Pancharatnam S and Ramachandraiah A, "A Study on the computer aided acoustic analysis of an auditorium", Journal of the Institution of Engineers, 84, 10-16, 2003
9. Pancharatnam S and Ramachandraiah A, "A comparative study and computer assisted methods in room acoustics – an acoustic study of six concert halls", Journal of Acoustical Society of India, Vol.31, 2003.
10. Pattnaik, S B, and V. Hemalatha, "Evaluation of Pedestrian facilities based on User's perception-chennai as a Casestudy," JIG IE(I), CV83, PP 221-224, Feb 2003
11. Santhakumar A R, Construction Defects: Symptoms Causes, Prevention and Remedy, Journal of Builders Association of India – Southern Centre, Vol.1, pp.7-13, May 2003.
12. Santhakumar A R, Repair/Rehabilitation of Structures, Journal of Builders Association of India – Southern Centre, Vol.2, pp.6-9, June 2003.
13. Santhakumar A R, Corrosion – Fundamentals, Journal of Builders Association of India – Southern Centre, Vol.3, pp.16-18, September 2003.
14. Santhakumar A R, "Artificial Aggregates, Journal of Builders Association of India – Southern Centre, Vol.4, pp.21-33, October 2003.
15. Sengupta, A. K. "Constitutive Models for Plain and Reinforced Concrete – An Overview" Indian Concrete Journal, The Associated Cement Companies Limited Vol. 77, No. 8, August, Pages 1244–1250 2003
16. Sengupta, A. K. "Constitutive Models for Plain and Reinforced Concrete – An Overview" Indian Concrete Journal, The Associated Cement Companies Limited, Vol. 77, No. 8, August Pages 1244–1250, 2003
17. Tamizh Arasan V and Reebu Zachariah Koshy, "Headway Distribution of Heterogeneous Traffic on Urban arterials", Journal of the Institution of Engineers (India), Vol.84, pp.210 –215, November 2003.
18. Thomas, A.V., Satyanarayana, K.N., Ananthanarayanan, K., "Identification of risk factors and risk management strategies for BOT road projects in India" Journal of Indian Highways Vol.31 No.12 December 2003.

### In Refereed International Journals:

1. Alagusundaramoorthy P, I.E.Harik and Choo Ching Chiaw, "Flexural Behaviour of R/C Beams Strengthened with CFRP Sheeter Fabric. ASCE Journal of Composites for Constructin, 7. No.4(2003), p.292-301.

2. Atagusundaramoorthy P, R.Sundaravivelu., et al., "Stability of Stiffened Steel Plates with initial Imperfections", *ASCE Journal of Engineering Mechanics*, 129, No.7, (2003), pp.751-758.
3. Anand K B and K.Ramamurthy, "Laboratory-based productivity study on alternative masonry systems", *asce Jl. Of Construction Engineering and Management*, Vol.129, No.3, May-June 2003, pp.237-242.]
4. Anand K B, Vinod Vasudevan and K.Ramamurthy, "Water permeability assessment of alternative masonry systems", *Building and Environment*, Vol. 38, 2003, pp.947-957.
5. Atkinson,E, K. Elango, S. Mohan, G. Fadda, and S. Cinus , "A Rational Approach to scheduling Main System Maintenance", *Journal of Irrigation and Drainage Systems*, Vol. 17, pp. 239-261, 2003.
6. Jallad, K., Santhanam, M., and Cohen M. D., "Stability and reactivity of thaumasite at different pH levels," *Cement and Concrete Research*, Vol. 33, No. 3, 2003, pp. 433 – 437.
7. Kandaswamy S and Ramachandraiah A, "Experiment investigations of sound transmission on cavity ferro cement panels with ties", *Architectural Science Review*, 46 (1), pp.55-60, 2003.
8. Kandaswamy S and Ramachandraiah A, "Performance of sound transmission on neo-national Journal for Housing Science and Crete blocks using SEA, *International Journal for Housing Science and its – cations*, 27, 1, Lp.45-54, 2003
9. Kandaswamy S and Ramachandraiah A, "Sound transmission performance on cavity ferro cement panels – ties, *Chinese Journal of Acoustics* 22, (2), pp.132-139, 2003.
10. Kumaran, Devdas Menon and K.K. Nair, "Dynamic Studies of Railtrack Sleepers in a Track Structure System", *Journal of Sound and Vibration*, Vol. 268/3, pp: 485-501, November 2003.
11. Lekha K R , N.R. Krishnaswamy and P. Basak (2003) *Consolidation of Clays for variable Permeability and Compressibility*, *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, Vol. 129, No. 11, pp. 1001-1009.
12. Ligy Philip and Deshusses, M.A (2003). Sulfur Dioxide Treatment from Flue gases using a Biotrickling filter – Bioreactor system. *Environmental Science and Technology*. Vol. 37, 9. pp 1978-1982
13. Mohan S and V. Jothiprakash, "Development of Priority Based Policies for Conjunctive use of Surface and Ground Water", *Water International*, Vol. 28, No. 2, pp. 254-267, June 2003.
14. Mohan S and V.Jothiprakash , " Implicit Stochastic Approach for Seasonal Planning of an Irrigation System, *International Water Resources Journal*, Geneva, June 2003, pp. 40- 52.
15. Mohan, K. Elango, M.G. Devamane and V. Jothiprakash, " Evaluation of Multisite Synthetic Streamflow Generation Models, *International Water Resources Journal*, United Nations, June 2003, pp. 16-39.
16. Murty S Bhallamudi, Panday, S., and Huyakorn, P.S., "Sub timing in fluid flow and transport simulations", *Advances in Water Resources*, Elsevier, Vol; 26, No .5, pp. 477-489, 2003.
17. Ramamurthy K, and R.Radhakrishnan, "Influence of plastering on flexural bond strength of brick masonry", *Journal of the British Masonry Society, Masonry International*, Vol.16, No.3, 2003, pp.99-103.
18. Rao, S.V.N., Thandaveswara, B.S., S. Murty Bhallamudi, and Srinivasulu, V., "Optimal groundwater management in deltaic regions using simulated annealing and neural networks", *Water Resources Management*, Kluwer, 17, 409-428, November 2003.
19. Santhanam, M., Cohen, M. D., and Olek, J., "Effects of gypsum formation on the performance of cement mortars during external sulfate attack," *Cement and Concrete Research*, Vol. 33, No. 3, 2003, pp. 325 - 332.
20. Santhanam, M., Cohen, M. D., and Olek, J., "Mechanism of Sulfate Attack: A Fresh Look; Part II – Proposed Mechanisms," *Cement and Concrete Research*, Vol. 33, No. 3, 2003, pp. 341 - 346.
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2. Balasubramanian R, Senthil R and Santhakumar A R, Development of Cost Effective Disaster Resistant Ferrocement House, National Seminar on Advances in Concrete Technology and Concrete Structures for the Future – ADCONST-2003, pp 353-360, December 2003
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2. Alagusundaramoorthy P, R. Veera Sudarsana Reddy, "Experimental Study on the Fracture Behaviour of Ferrocement Beams, International Conference & Exhibition on Innovative World of Concrete, Pune, India, Sep.(2003) in CD ROM.
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4. Appa Rao G and B.K.Raghu Prasad, "Ductility of GFRP Reinforced Composite Notched Beams", ICI Technical Volume on International Symposium on Innovative World of Concrete", ICI Pune, 19-21, September 2003, pp.15.
5. Appa Rao G and B.K.Raghu Prasad, "Fracture Toughness of Fiber Reinforced Composite Notched Beams", Proceedings of International Conference in Recent Trends in Concrete Technology and Structures, 10-12, Sept. 2003, Coimbatore, pp.186-194.
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9. G Kumaran, Devdas Menon and K. Krishnan Nair, "Reliability analysis and design of PSC railtrack sleepers", Proc. of Ninth Intl Conf. on 'Applications of Statistics and Probability in Civil Engineering', San Fransisco, California, USA, July 6-9, 2003., pp: 1167-1174.
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12. Kandaswamy S and Ramachandraiah A, "Performance of sound transmission on composite wooden panels using SEA, Conference on Modelling and Experimental measurements, Cadiz – Spain, June 2003.
13. Kandaswamy S and Ramachandraiah A, "Performance of sound transmission on Gypcrete walls hand using SEA, ICSV, Stockholm, Sweden, 2003.
14. Karthikeyan S, VVGST Ramakrishna and K. Rajagopal "Numerical Modelling of Piles under induced lateral movement in soft clays", Prof. International Workshop on Geotechnics of Soft Clays: Theory and Practice, 17-19 September 2003, Noordwijkerhout, Netherlands.
15. Krishnaswamy. N.R. and Sudhakar. S. (2003) *Application of Geosynthetics for the Improvement of Soft Subgrade Soils in Road Construction*, Proceedings of the International e-conference on Modern Trends in Foundation Engineering conducted by IIT Madras, Chennai, India.
16. Mohan S, K. Elango, and S. Sivakumar, "Evaluation of Risk in Canal Irrigation System due to Non Maintenance using Fuzzy Fault Tree Approach" *IEEE International Conference on Industrial Informatics INDIN 2003*, August 21- 24, 2003, held at Banff, Alberta, Canada.
17. Praveen Nagarajan and Devdas Menon, "Simplified Analysis of Deck Slabs Subject to Wheel Loads – An Assessment of Code Provisions", Proc. of Eighth Intl Conference on 'Innovations in Planning, Design and Construction Techniques in Bridge Engineering', Hyderabad, April 25-27, 2003, pp: 669-679.
18. Rajayogan, V., Sarma, B. S., and Santhanam, M., "Evaluation of Hydroxy Propyl Starch as a Viscosity-Modifying Agent for Self Compacting Concrete," 3<sup>rd</sup> International RILEM Symposium on Self-Compacting Concrete, Reykjavik, Iceland, August 2003.
19. Ramesh Babu, C., and Santhanam, M., "Use of Maturity Method to Evaluate Concrete Strength Development," International Conference on Recent Trends in Concrete Technology and Structures, INCONTEST 2003, Coimbatore, India, September 2003.
20. Reebu Zachariah Koshi and V.Tamizh Arasan, Modelling Stochasticity of Heterogeneous Traffic", Proceedings of the International Symposium on Uncertainty Modelling and Analysis, Colege Park, Maryland, USA, pp.160-165, September 2003.
21. Rengaraju V R and Venkaiah Chowdary, "Behaviour of Crumb Rubber – Polyethy,ene Modified Bituminous Mixex", Proceedings, 2<sup>nd</sup> International Conference on Construction Technology, Kota Kinabalu, Sabah, Malaysia, pp.76-86, 13-15 October 2003.
22. Sambasiva Rao,S, S.R. Satish Kumar and V. Kalyanaraman (2003) Numerical Study On Eccentrically Loaded Hot Rolled Steel Single Angle Struts', The Ninth International Conference on Civil and Structural Engineering Computing, Egmond aan Zee, The Netherlands, 2-4 September 2003.
23. Santhakumar A R, Performance of Concrete Structures under Aggressive Hot Climates, International Conference on Recent Trends in Concrete Technology and Structures (INCONTEST 2003), Vol.I, pp 155-165, September 2003.
24. Santhakumar A R, Use of FR Systems for Seismic Engineering, Proceedings of ICFRC International Conference on Fibre Composites, High Performance Concretes and Smart Materials, pp 125-134, Dec. 2003.
25. Santhanam M, Amal Raj and R.Vikramaditya, "Evaluation of Hardened Concrete properties Using Non-Destructive Methods," CONMAT 2003, IIT Kharagpur, January 2003.
26. Santhanam, M., Cohen, M. D., and Olek, J., "Study of Magnesium Ion Attack in Portland Cement Mortars," 11<sup>th</sup> International Congress on the Chemistry of Cement, Durban, South Africa, May 2003.

27. Sivakumar, A., and Santhanam, M., "An Overview of The Ductility Characteristics of High Strength Hybrid Fibre Reinforced Concrete," International Conference on Recent Trends in Concrete Technology and Structures, INCONTEST 2003, Coimbatore, India, September 2003.
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30. Sundravadivelu,R., Ananthanarayanan,K., and Balaji, C.R," Bathymetry Survey using GPS – A space based technology" International seminar on GTS to GPS, held at Dehadun, February ,2003.
31. Thomas A V, Kalindi Satyanarayana and K. Ananthanarayanan, "Allocation and Management of Development and Construction phase Risks in Indian Private Sector Participation Road Projects", CIB w92, Symposium on Project Procurement for Infrastructure Construction.

**Distinguished Visitors to the Department:**

S.No.	Name of the visitor and designation	Date of visit	Purpose of visit
1.	Dr.E.Palaneeswaran, Poat Doctoral Fellow, Dept. of Civil Engg., Univ. of Hong Kong	30 <sup>th</sup> April 2003	To give a lecture on Contractor Selection System
2.	R. Chetan S. Sankar, Professor, Auburn University, USA	July 29, 2003	To give a seminar talk on 'Bringing Real-World Issues into Engineering Class Room'
3.	Dr.L.N.Reddi, Professor and Head of the Department of Civil Engineering, Kansad State University, Manhattan	July 27, 2003.	To deliver a seminar talk

**4.5.6. Other Activities**

The summer assistantship programme – 2003 was conducted in the Department from 2<sup>nd</sup> June to 27<sup>th</sup> June 2003.

## 4.6 DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

### 4.6.1. Introduction:

Started as Computer Center in 1973, the Department of Computer Science and Engineering was established as a full-fledged department in 1983. It currently offers B.Tech, Dual Degree, M.Tech, M.Tech (Part-time UOP), M.S. and Ph.D programmes. The Dept has the highest number of MS/PhD scholars among all CS Depts. of like institutions in the country.

### 4.6.2. Academic Programmes:

#### New Courses Introduced:

Sl.No.	Course No.	Title
1.	CS 666	Unconventional Models of Computing
2.	CS 668	Planning and Constraint Satisfaction

#### Students on roll:

Programme	I year	II Year	III Year	Iv year	V year	Total
B.Tech	30	33	29	29	-	121
Dual Degree	9	7	7	6	7	36
M.Tech	49	48	-	-	-	97
M.Tech part-time (UoP)	7	13	-	-	-	20
M.S	25	21	16	22	2	86
Ph.D	7	9	7	6	9	38
<b>Total</b>	<b>127</b>	<b>131</b>	<b>59</b>	<b>63</b>	<b>18</b>	<b>398</b>

#### Names of student / 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	Sujatha R Upadhyaya, R. Anitha, Manimegalai, R. Gururaj	PhD	IRISS04 seminar	25/3/04 to 29/3/04, IIT, Bombay, Mumbai
2	Rajasree, Chitra Babu	PhD	Workshop on Specification Techniques	5/1/04 to 9/1/04, Pune
3	Pratibha P	B.Tech	IEEE Congress	8/12/03 to 12/12/03, Canberra
4	N. Rammohan, B. Venkataramana, B.S. Manoj	PhD	10 <sup>th</sup> Annual Intl. Conf. on High Performance Computing	17/12/03 to 20/12/03
5	Paul P. Mathew, R. Gururaj		CIT Conference	22/12/03 to 25/12/03, Bhubaneswar
6	K. Satya Sai Prakash	PhD	IADIS Intl. Conf. on "WWW/Internet 2003"	4/11/03 to 8/11/03, Algarve, Portugal
7	Satya Sai Prakash (PhD), D.V.V.S. Subramani		5 <sup>th</sup> Intl. Conf. on Information Integration and Web Based Application and Services (iiNAS 2003)	15/9/03 to 18/9/03, Jakarta
8	Malluk Mohamed	Ph.D	Intl. Conf. on Communication, Systems and Networks	8/9/2003 to 10/9/2003, Spain
9	L. Kalyan Kumar	MS	Intl. Conf. on VLSI	23/6/03 to 26/6/03, Las Vegas, USA
10	Siva Nageswara Rao Borra	MS	10 <sup>th</sup> Reconfigurable Architectures Workshop	22/4/03 to 26/4/03, NICE, France
11	Kalyan Kumar	MS	8 <sup>th</sup> IEEE European Test Workshop	25/5/03 to 28/5/03, Maastricht, The Netherland

#### 4.6.3 Faculty and their activities:

Prof. S.V. Raghavan has been nominated as Dean of Planning.

##### Faculty:

Name and Qualifications	Major Area of Specialization
<b>Professors:</b>	
Gonsalves T.A., Ph.D (Standford)	Computer Networks, Distributed Systems, Operating Systems, Performance Evaluation Telecom Software, NMS
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 Formal Languages and Automata Algorithms, Molecular Computing.
Muthukrishnan C.R, Ph.D (IIT, Kanpur)	Software Engineering, Computer Architecture, Distributed and parallel systems, Object Oriented Systems and databases.
Pandu Rangan C., Ph.D (IISc)	Algorithms, Parallel and VLSI algorithms, Graph Theory, Computational Geometry, Randomised Algorithms, Computational Learning theory, Crypto-analysis.
Raghavan S.V., Ph.D (IIT, Madras)	E-Banking E-Learning, Intelligent Search Engines, Multicasting, Multimedia Presentation Systems, Mobile Agents, Mobile Wireless Networks, Next Generation Web Browsers, Secure WAN Design in Heterogeneous Systems
Raman S., Ph.D (IIT Madras)	Computer System Design, Microprocessor based peripherals, Natural language processing, Multimedia Semantics.
Siva Ram Murthy C., Ph.D (IISc)	Parallel and Distributed Computing, Real time systems, Computer Network, Architecture for High Performance computing, Dependable Computing
Yegnanarayana B., Ph.D (IISc)	Digital Signal Processing, Speech, Computer Vision, Neural Networks.
Janaki Ram D, Ph.D (IIT Delhi)	Object Oriented Systems, Software Engineering, Parallel and Distributed Systems, Database Systems, Mobile Computing, Real-Time Systems, Computer Networks and Fault-Tolerant Computing Systems.
<b>Associate Professors:</b>	
Hema A Murthy Ph.D (IIT Madras)	Speech processing, Computer Graphics and pattern recognition.
Sreenivasa Kumar P, Ph.D (IISc)	Graph Theory, Algorithms, Parallel Computations, Data Mining and Data Bases.
Deepak Khemani, Ph.D (IIT Bombay)	Artificial Intelligence, Knowledge based systems, Natural Language Processing and Neural Networks.
Sukhendu Das, Ph.D (IIT Kharagpur)	Computer Vision, Image processing and pattern recognition, Graphics, Neural Networks, Digital and Analog Systems.
Chandra Sekhar C., Ph.D (IIT Madras)	Speech recognition, Artificial Neural Networks, Computer architecture

**Assistant Professors:**

Kamakoti V., Ph.D (IIT Madras)

Software for VLSI Design, Computational Geometry, High Performance Computing, Software Aspects of VLSI Design

Narayanaswamy N.S., Ph.D (IISc)

Software for Information Management, Algorithms &amp; Complexity Theory.

Sudha N., Ph.D (IIT Guwahati)

VLSI Architecture for Signal Processing, Neural Network, Computer Network

Ravindran B., Ph.D (UMass, Amherst)

Machine Learning, Reinforcement Learning, Information Filtering, Knowledge Representation

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

Sl.No.	Name of Faculty	Title	Period
1	Timothy A. Gonzalves	10 <sup>th</sup> National Communications Conference	30.1.2004-1/2/2004
2	N. Sudha	17 <sup>th</sup> Intl. Conf. on VLSI Design	Jan. 2004
3	--do--	National Conf. on Adv. Machine Vision	Dec. 2003
4	V. Kamakoti	17 <sup>th</sup> Intl. Conf. on VLSI Design	Jan. 2004
5	B. Yegnanarayana	NIST2004 Speaker Recongition Workshop	May 2003, USA
6	--do--	ICME2004	July 2003, Baltimore
7	--do--	IJCNN2004 conference	July 2003, Portland
8	--do--	LDC workshop	August 2003 CIIL, Mysore
9	--do--	National Conf. on "Language Technology Tools: Implementation of Telugu	October 2003 Univ. of Hyderabad
10	--do--	National Conf. on "Advanced Machine Vision Systems for Societal Applications"	December 2003 CEERI, Chennai
11	--do--	National Workshop on "Advances in Digital Image Processing"	December 2003 JNTU College of Engg., Kakinada
12	--do--	ICISIP2004 conference	January 2004
13	--do--	Symposium on Challenges in Mathematical and Computer Sciences	Osmania University, Hyderabad February 2004
14	D. Janaki Ram	9 <sup>th</sup> Intl. Conf. on Object Oriented Information Systems (OOIS 2003)	Geneva, Switzerland, 2/9/03 to 5/9/03

**Special lectures delivered by the faculty in other Institutions:**

S.No.	Name of Faculty	Topic of Lecture	Venue and Date
1	N. Sudha	Tutorial on "Image processing implementations on FPGAs" in National Conference on Advanced Machine Vision Systems for Societal Applications	CEERI Chennai, 15/12/03
2	T. A. Gonsalves	"Design of Low-Cost Access Terminals for Rural India"	Sri Ramakrishna Engg. College Coimbatore 11-12 July 2003
3	--do--	"Design of Low-Cost Access Terminals for Rural India"	IFET College of Engg. Villupuram, 27/8/03
4	--do--	"Management of Service Level Agreements"	IISc, Bangalore, 30/1-1/2/04
5	--do--	"Demystifying Broadband Internet in India"	Mumbai, 21/2/2004.
6	B. Ravindran	"Reinforcement learning"	Central Univ., Hyderabad 6-7 Apr. 2004

S.No.	Name of Faculty	Topic of Lecture	Venue and Date
7	B.Yegnanarayana	"Edginess Representation of Face Images"	CMU, USA, 6/5/2003
8	--do--	"Prosody Manipulation of Speech using LP Residual"	CMU, USA, 30/5/2003
9	--do--	"Neural network Models for Speech and Image Processing"	CMU, USA, 20/6/2003
10	--do--	"Time-Delay Estimation from Reverberant Speech"	UMD, USA, 23/6/2003
11	--do--	"IIT Madras Speaker Verification System"	NIST workshop, Vienna USA, 24/6/2003.
12	--do--	"Time-Delay Estimation from Reverberant Speech"	CMU, USA, 27/6/2003
13	--do--	"Nonspectral Approaches for Speech Processing",	Haskins lab, New Haven, Connecticut, 10/7/2003.
14	--do--	"Speech research at IIT Madras"	IDIAP, Switzerland 6/9/2003
15	--do--	"Artificial Neural networks"	VIT, Vellore 11/9/2003.
16	--do--	"Artificial Neural Networks"	IIT Madras 17/9/03 to 18/9/03
17	--do--	"Trends in Speech Technology"	Univ of Hyderabad 24/10/03.
18	--do--	"Neural Networks for Speech Recognition"	CAIR, Bangalore 5/11/03
19	--do--	"Artificial Neural Networks",	EE Dept, IIT Madras 2/12/03.
20	--do--	"Introduction to ANN" Inaugural address at National Conference on Advanced Machine Vision Systems for Societal Applications	CEERI, Chennai Center, 15/12/03.
21	--do--	"Artificial Neural Networks",	Bapatla Engineering College, Bapatla, 29/12/03.
22	--do--	"Image processing and applications", Invited Talk at National Workshop on Recent Advances in Digital Image Processing	JNTU College of Engineering, Kakinada, 30/12/03.
23	--do--	"Pattern Recognition Problems in Speech and Image Processing", Le Meridian, Invited talk at ICSIP 2004	Chennai, 7/1/04.
24	--do--	"Processing of Speech and Music - A Challenge for Engineers", Keynote address	Annamalai University Chidambaram 8/1/04.
25	--do--	"Is Pattern Recognition a Statistical Problem?" Invited talk at Symposium on Challenges in Mathematical and Computer Sciences	Osmania University Hyderabad, 29/2/04.
26	--do--	"Activities in Speech and Vision Lab at IIT Madras", Workshop on IT for Defense Applications	CAIR, Bangalore, 20/3/04.



S.No.	Name of Faculty	Topic of Lecture	Venue and Date
27	C. Chandra Sekhar	Speech recognition using support vector machines	Vellore Inst. Of Tech., 12/9/03

**Visits abroad by faculty:**

S.No.	Name of faculty	Country visited	Date	Purpose of visit
1	S. Raman	U.S.A., & U.K.	April - June 2003	Paper presentation at Intl. Confs/Workshops, Visits to universities
2	C. Siva Ram Murthy	Germany	April - June 2003	Collaborative research
3	C. Siva Ram Murthy	Switzerland, German universities	April - June 2003	To deliver lectures
4	N.S. Narayanaswamy	Univ. of Munich, Germany	May - July 2004	Research interaction
5	N. S. Narayanaswamy	Denmark	7-10 July, 2004	To present paper at Workshop
6	C. Pandu Rangan	South Korea	Jan 03 - Jan 04	As full-time invited professor at Info. and Commn. univ., Daejeon, Korea
7	Kamala Krithivasan	Tarragona, Spain	2003	To deliver lectures and to attend a workshop
8	C. Chandra Sekhar	Univ. of Melbourne, Australia	May-June 2003	As Honorary Visiting Academic
9	B. Yegnanarayana	USA	May-July 2003	Professional visit to university, Paper presentation at conferences
10	B. Yegnanarayana	Switzerland	Sep. 2003	Paper presentation
11	B. Yegnanarayana	Germany	February 2004	EU Commission project workshop in University Magdeburg

**Honours and Awards obtained:****Prof. C. Siva Ram Murthy**

Member, Technical Program Committee, 11th IEEE International Workshop on Parallel and Distributed Real-Time Systems, Nice, France, April 22-23, 2003.

Member, Technical Program Committee, ACM MobiCom 2003: Annual International Conference on Mobile Computing and Networking, San Diego, USA, September 14-19, 2003

Member, Technical Program Committee, SPIE OptiComm 2003: Optical Networking and Communications, Texas, USA, October 15-18, 2003.

Co-Chair, Technical Program Committee, Trusted Internet Workshop 2003, in conjunction with 10th International Conference on High Performance Computing, Hyderabad, December 17-20, 2003.

**Prof. C. Pandu Rangan**

Member, Board of Directors, Intl. Asso. for Cryptologic Research, USA

Invited to serve in the Intl. panel of experts for assessing the project proposals Submitted for funding to UGC, Hong Kong.

Elected as Vice President, Cryptology Research Society of India.

**Dr. N. Sudha**

Session Chair, IEEE International Conference on VLSI Design, Mumbai, Jan. 2004.

**C. Chandra Sekhar**

Technical Co-chair and Local Organizing Committee Chairman, International Conference on Intelligent Sensing and Information Processing, Chennai, 4-7, January 2004

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

SI.NO	Name of the faculty	Name of the Academic/ Professional Society	Level	Year of Admission
1.	Prof. B. Yegnanarayana	Indian Academy of Sciences, Bangalore	Fellow	2003

**4.6.4. Research and Consultancy:**

**Sponsored Research Projects:**

Sl. No.	Project No.	Project Title	Coordinators	Period	Funding Agency	Amount (Rs.in lakhs)
1.	CSE0304058DSTNSUD	VLSI Architectures for biometric processing with PCNN	Dr. N. Sudha	3/3/2004 to 2/3/2006	DST	3.54
2.	CSE9798032FCPXBYEG	Information Recovery from Partial Data for Image Processing Applications	Dr.B. Yegnanarayana Dr.D. Sukhendu Das	01/12/1997 to 30/06/2004	USONR	16.00
3.		Internal Development and Research Project: Communication Technology: Indic Computing	Ashok Jhunjhunwala, Hema A Murthy, CS Ramalingam	Nov'03 to Oct'06	IITM	25.00
4.	CSE0304051MICRSVRA	"Application development program"	RAGHAVAN S V	29/05/03 to 28/05/04	Microsoft Corporation	14.13
5.	CSE0304053DSTXHODX	Augmentation of research facilities	HoD (RAMAN S)	03/09/03 to 02/09/08	DST	62.50
6.	CSE0102042DSTXCSIV	Resource Management in High Performance Real-Time Systems and Networks	Dr.C. Siva Ram Murthy	14/09/2001 to 13/09/2006	DST	32.73
7.	CSE0304054DRDOVKAM	Development of high-speed architectures for reconfigurable hardware	KAMAKOTI V	29/10/03 to 28/10/04	DRDO	4.65
8.	CSE0102044DRDOHODX	Communication and Information Technology Research Program	HOD, CSE Dr.B. Yegnanarayana	08/04/2002 to 07/04/2007	DRDO	1,30.00
9.	CSE0304056DSTXVKAM	CAD for Reconfigurable Architectures	KAMAKOTI V	03/03/04 to 02/03/07	DST	1.62
10.	CSE0304057DSTXNSNA	Algorithms and heuristics for dynamic storage allocation	NARAYANA SWAMY N S	03/03/04 to 02/03/07	DST	1.62
11.	CSE0304059MHRDVKAM	Modern wireless and security systems for the department computing facility	KAMAKOTI V and RAMAN S	01/03/04 to 28/02/06	MHRD	15.00
12.	CSE0203048IITMRKAL	Operation of the IITM Web Site	Dr.R.Kalyana Krishnan	05/09/02 to 04/09/07	IITM	10.00
13.	CSE0304060MHRDSUKH	Multi-modal biometrics based secure access system using face and fingerprint recognition	SUKHENDU DAS and RAMAN S	01/03/04 to 28/02/06	MHRD	20.00

Sl. No.	Project No.	Project Title	Coordinators	Period	Funding Agency	Amount (Rs.in lakhs)
14	CSE0304082ISRONNSNA	Software engineering and parallelization of on-board software for spacecraft	NARAYANASWAMY N S	01/10/03 to 30/09/04	ISRO	1.86
15.	CSE0304052ISPLHEMA	Program Translation across DSP processors	Hema A Murthy and T A Gonsalves	Aug'03 to Jul'04	Integrated Softech Solutions Pvt Ltd	3.00

#### Consultancy Research Projects:

Sl. No.	Project No.	Title	Name of faculty	Period	Industry	Amount (Rs. in lakhs)
1.	RB0304CSE002NSTLBYEG	High performance detection system	Dr. B. Yegnanarayana and Dr. N. Sudha	Apr. 2004 to Apr. 2006	NSTL	12.00
2.	RB0304CSE001TUBPDEEPA	A case based reasoning system for TPI	Dr. Deepak Khemani	22/9/2003 to 22/09/2004	Tube Products of India	4.00
3.	RB9900CSE003IAEXBYEG	Development of Phonetic Engine for Speech in Indian Languages	Dr.B. Yegnanarayana and Dr.C.Chandrasekhar	18/10/1999 to 17/10/2004	Intel Asia Electronics Inc.	8.69

#### Retainer Consultancy:

Sl.No	Project No.	Name of the faculty	Period	Industry	Amount (Rs. in lakhs)
1	RC0304CSE476ANDBSRAA	Dr. S. Raman	30/10/2003 to 29/10/2004	Andhra Bank-Hyderabad	1,50,000

#### Journal Editorial Boards:

Sl.No.	Name of Faculty	Level	Journal
1	Prof. C. Pandu Rangan	Series Editor	LNCS, Springer Verlag
2	Prof. B. Yegnanarayana	Associate Editor	IEEE Trans on Speech and Audio Processing

#### Research Publications:

##### In Refereed International Journals:

1. N. Sudha, "A pipelined array architecture for Euclidean distance transformation and its FPGA implementation", accepted for publication in Special Issue on FPGAs, Microprocessors and Microsystems Journal, Elsevier, 2004.
2. N. Sudha and K. Sridharan, "A high-speed VLSI design and ASIC implementation for constructing Euclidean-distance based discrete Voronoi diagram", IEEE Transactions on Robotics and Automation, Vol. 20, No. 2, April 2004.
3. N. Sudha, "An ASIC implementation of Kohonen's map based color image compression", Real Time Imaging, Elsevier, Vol. 10, Issue 1, pp. 31-39, February 2004.
4. S. Dharma Rao, Ch. Vijaya Saradhi, and C. Siva Ram Murthy, "Preferred Link Based Distributed Adaptive Routing in Wavelength Routed Optical Networks", Photonic Network Communications, vol. 7, no. 1, pp. 17-35, 2004.
5. Ch. Vijaya Saradhi and C. Siva Ram Murthy, "Dynamic Establishment of Differentiated Survivable Lightpaths in WDM Mesh Networks", Computer Communications, vol. 27, no. 3, pp. 273-294, 2004.
6. N. Srinivas and C. Siva Ram Murthy, "Design and Dimensioning of a WDM Mesh Network to Groom Dynamically Varying Traffic", Photonic Network Communications, vol. 7, no. 2, pp. 179-191, 2004.
7. G. Raghu Kiran and C. Siva Ram Murthy, "QoS Based Survivable Logical Topology Design in WDM Optical Networks", Photonic Network Communications, vol. 7, no. 2, pp. 193-206, 2004.
8. V. Kamakshi Prasad, T. Nagarajan and Hema A. Murthy, "Automatic segmentation of continuous speech using minimum phase group delay functions", Speech Communications, Elsevier (in Press).

9. N. Sudha, "Design of a cellular architecture for fast computation of the skeleton", *Journal of VLSI Signal Processing*, Kluwer Academic Vol. 35, Issue 1, pp. 61-73, August 2003.
10. N. Sudha, T. Srikanthan and Babu Mailachalam, "A VLSI architecture for 3-D self-organizing map based color quantization and its FPGA implementation", *Journal of Systems Architecture*, Elsevier, Vol. 48, Issue 11-12, pp. 337-352, April 2003.
11. Anita Mittal, G. Manimaran, and C. Siva Ram Murthy, "Dynamic Real-Time Channel Establishment in Multiple Access Bus Networks", *Computer Communications*, vol. 26, no. 1, pp. 113-127, 2003.
12. B.S. Manoj, Christo Frank, and C. Siva Ram Murthy, "Throughput Enhanced Wireless in Local Loop (TWiLL) – The Architecture, Protocols, and Pricing Schemes", *ACM Mobile Computing and Communications Review*, vol. 7, no. 1, pp. 95-116, 2003.
13. G. Phani Krishna, M. Jnana Pradeep, and C. Siva Ram Murthy, "An Efficient Primary-Segmented Backup Scheme for Dependable Real-time Communication in Multihop Networks", *IEEE/ACM Trans. on Networking*, vol. 11, no. 1, pp. 81-94, 2003.
14. U.V. Ramesh Chandra and C. Siva Ram Murthy, "A Faster Algorithm for Solving Linear Algebraic Equations on the Star Graph", *Journal of Parallel and Distributed Computing*, vol. 63, no. 4, pp. 465-480, 2003.
15. B.S. Manoj and C. Siva Ram Murthy, "On the Use of Out-of-Band Signaling in Ad hoc Wireless Networks", *Computer Communications*, vol. 26, no. 12, pp.1405-1414, 2003.
16. N. Sreenath and C. Siva Ram Murthy, "On-line Reconfiguration of Virtual Topologies in Wavelength-routed WDM Networks", *Journal of High Speed Networks*, vol. 12, pp. 141-169, 2003.
17. T.Nagarajan, V. Kamakshi Prasad and Hema A. Murthy, "Minimum phase signal derived from the root cepstrum", *IEE Electronics Letters*, Vol.39, No.12, pp.941-942, June 2003.
18. M. Sakthi Balan, Kamala Krithivasan and Mutyam Madhu, "Some Variants in Communication of Parallel Communicating Pushdown Automata" *Journal of Automata, Languages and Combinatorics*, 8, 401-416, 2003.
19. M.Saravanan, P.C. Reghu Raj, and S. Raman "Summarization and Categorization of text data in high-level data cleaning for Information retrieval", *Applied Artificial Intelligence*, Taylor & Francis, 17:1-14, 2003

#### In Proceedings of National Conferences:

1. B.S. Manoj, K.R. Bharath Bhushan, S.S. Doshi, I. Karthigeyan, and C. Siva Ram Murthy, "MEGHADOOT: A Packet Radio Network Architecture for Rural Communities", in *Proc. 10th National Conference on Communications (NCC 2004)*, Bangalore, January 30-February 1, 2004.
2. A.G.K. Vanchynathan, N. Usha Rani, C. Charitha and T.A. Gonsalves, "Distributed NMS for Affordable Communications", *Proc. 10<sup>th</sup> Natl. Conf. Commun. NCC-04*, IISc, Bangalore, 30/1-1/2/04, pp. 346-351.
3. T Nagarajan and Hema A Murthy, "An Approach to Segmentation and Labeling of Continuous Speech without Bootstrapping," *NCC-2004*, IISc, Bangalore, January, 2004.
4. Durgesh Kumar Kannoija, N. Sudha and S. Srinivasan, "An Area-Efficient VLSI Architecture for Principal Component Neural Network and its Applications to Biometric Signal Processing", *Proceedings of National Conference on Advanced Machine Vision Systems for Societal Applications*, Chennai, India, pp. 233 - 237, Dec. 2003.
5. M A Saifulla, Hema A Murthy and Timothy A. Gonsalves, "Vector Quantization for Internet Traffic," *Proc. NCC-2003*, pp.511-515, Chennai, 2003.
6. T. Nagarajan and Hema A Murthy, "Pairwise Multiple Codebook based Language Identification," *Proc. Workshop on Spoken Language Processing*, pp.101-108, TIFR, Bombay, January 10-11, 2003.

#### In Proceedings of International Conferences: (65 publications)

1. N. Sudha, "An area-efficient pipelined array architecture for Euclidean distance transform and its FPGA implementation", { *Proceedings of Seventeenth International Conference on VLSI design* } (Sponsored by IEEE Computer Society), pages 689-692, Mumbai, India, Jan 2004.
2. N. Sudha, "An ASIC implementation of Kohonen's map based color image compression", { *Proceedings of Seventeenth International Conference on VLSI design* } (Sponsored by IEEE Computer Society), pages 677-680, Mumbai, India, Jan 2004.

3. Ravi Gummadi, N.S. Narayanaswamy, R. Venkatakrishnan, "Algorithms for Satisfiability using Independent Sets of Variables" To appear in the{ LNCS Proceedings of SAT 2004}.
4. N. Ram Mohan and C. Siva Ram Murthy, "A Novel Approach for Protecting Multicast Sessions in Metropolitan WDM Ring Networks", in Proc. { 13th IEEE Workshop on Local and Metropolitan Area Networks}, San Francisco, USA, April 25-28, 2004.
5. T Nagarajan and Hema A Murthy, "Language Identification using Parallel Syllable-like unit Recognition," accepted for presentation at ICASSP-2004, May'17-21, 2004, Montreal, Canada.
6. Rajesh M Hegde and Hema A Murthy, "Application of the Modified Group Delay function to Speaker Identification and Discrimination," accepted for presentation at ICASSP-2004, May'17-21, 2004, Montreal, Canada.
7. Hema A Murthy, C Chandra Sekhar, C S Ramalingam and Srinivasa Chakravarthy, "A Multimodal interface to the computer," SCALLA-2004, Kathmandu, Nepal, Jan 5-7, 2004.
8. Kavish seth, P. Rangarajan, S. Srinivasan, V. Kamakoti, Balakuteswar V. Voleti, A Parallel Architectural Implementation Of The New Three-Step Search Algorithm For Block Motion Estimation, 17th International Conference on VLSI Design, Mumbai, January 5-9, 2004.
9. P.subrahmanya, R.Manimegalai, V. Madhu Muthyam, V. Kamakoti , A Bus Enoding Technique for Power and Crosstalk minimization, 17th International Conference on VLSI Design, Mumbai, January 5-9, 2004.
10. A. Manoj Kumar, Jayaram Bobba and V. Kamakoti , MemMap: Technology Mapping Algorithm for Area Reduction in FPGAs with Embedded Memory Arrays Using Reconvergence Analysis, International Conference on Design Automation and Test in Europe, DATE 2004, Paris, France, February 2004.
11. Manoj Kumar, Jayaram Bobba and V. Kamakoti , SHAPER: Synthesis for Hybrid FPGA Architectures containing PLA elements using Reconvergence Analysis, Twelfth ACM/SIGDA International Symposium on Field Programmable Gate Arrays (FPGA 2004), Monterey, California, February 2004.
12. P. Pratibha, Siva Nageswara Rao Borra, A. Muthukaruppan, S. Suresh, and V.Kamakoti, ASPIRE: Automatic Spatial Partitioning in Reconfigurable Environment Using Genetic Algorithms, Mexican International Conference on Artificial Intelligence, Mexico City, April 2004.
13. Leena Mary and B. Yegnanarayana, Autoassociative neural network models for language identification, ICISIP 2004, Chennai, India, pp.317--320, January 3-7, 2004.
14. Anvita Bajpai and B.Yegnanarayana, Exploring features for audio clip classification using LP residual and AANN models, ICISIP-2004, Chennai, India, pp.305--310, January 3-7, 2004.
15. S.R. Mahadeva Prasanna, Jinu Mariam Zachariah and B. Yegnanarayana, Neural network models for combining evidence from spectral and suprasegmental features for text-dependent speaker verification, ICISIP 2004, Chennai, India, pp.359--363, January 3-7, 2004.
16. Anil Kumar Sao and B. Yegnanarayana, Face verification using correlation filters and auto associative neural networks, ICISIP 2004, Chennai, India, pp.364--367, January 3-7, 2004.
17. Manoj Kumar.A, Jayaram Bobba, Manimegalai, Kamakoti.V, "MemMap-pd: Performance Driven Technology Mapping Algorithm for FPGAs with Embedded Memory Arrays,"11th Reconfigurable Architectures Workshop (RAW2004), Santa Fe, New Mexico.
18. A Nayeemulla Khan, Suryakanth V. Gangashetty and B. Yegnanarayana, Neural network preprocessor for recognition of syllables, ICISIP 2004, Chennai, India, pp.171--174, January 3-7, 2004.
19. Suryakanth V. Gangashetty, C. Chandra Sekhar and B. Yegnanarayana, Extraction of fixed dimension patterns from varying duration segments of consonant-vowel utterances, ICISIP 2004, Chennai, India, pp.159--164, January 3-7, 2004.
20. D. Srikrishna Satish and C.Chandra Sekhar, "Discrete hidden Markov models in kernel feature space for speech recognition," International Conference on Systems, Cybernetics and Informatics, Hyderabad, February, 2004.
21. C.Chandra Sekhar and M.Palaniswami, "Classification of multidimensional trajectories for acoustic modeling using support vector machines," International Conference on Intelligent Sensing and Information Processing, Chennai, pp.153-158, January, 2004.

22. K.R. Venugopal, P. Sreenivasa Kumar and L.M. Patnaik, "Routing and Wavelength Assignment in WDM Wavelength Convertible All-Optical Networks", International Conference on Communication and Broadband Networking -ATM Interact Symposium- 2003, May 5-7, 2003, Bangalore, India.
23. R. Gururaj and P. Sreenivasa Kumar, "GEMS: A framework for general purpose matching service management, Proceedings of the Intl. Conference on Information Technology (CIT 2003)", pp. 386 - 389, Dec 2003, Bhuvanewar, India.
24. Paul P Mathew and P. Sreenivasa Kumar, "Dynamic Object Typing of XML", Proceedings of the Intl. Conference on Information Technology (CIT 2003), pp. 187 - 192, Dec 2003, Bhuvanewar, India.
25. P. Kiran, K. Prasanna, Deepak Khemani and P. Sreenivasa Kumar, "Design of CBR System for Multi-Variate Time Series Analysis", Indian International Conference on Artificial Intelligence (IICAI) December 2003, Hyderabad, India.
26. P. Rajesh Kumar, N. Sudha, S. Srinivasan and K. Sridharan, "A pipelined cellular architecture for Euclidean distance transform", { Proceedings of IEEE TENCON}, pp. 1153-1156, Bangalore, Oct. 2003.
27. G. Ranjith and C. Siva Ram Murthy, "A Multiple Segmented Backups Scheme for Dependable Real-Time Communication in Multihop Networks", in Proc. { 11th IEEE International Workshop on Parallel and Distributed Real-time Systems (WPDRTS)}, Nice, France, April 22-23, pp. 121-128, 2003.
28. Rajendra Singh Sisodia, I. Karthigeyan, B.S. Manoj, and C. Siva Ram Murthy, "A Preferred Link Based Multicast Protocol for Wireless Ad hoc Networks", in Proc. { IEEE International Conference on Communications (ICC 2003)}, Anchorage, Alaska, USA, May 11-15, pp. 2213-2217, 2003.
29. S. Jagadeesan, B.S. Manoj, and C. Siva Ram Murthy, "Interleaved Carrier Sense Multiple Access: An Efficient MAC Protocol for Ad hoc Wireless Networks", in Proc. { IEEE International Conference on Communications (ICC 2003)}, Anchorage, Alaska, USA, May 11-15, pp. 1124-1128, 2003.
30. Vyas Sekar, B.S. Manoj, and C. Siva Ram Murthy, "Routing for a Single Interface MCN Architecture and Pricing Schemes for Data Traffic in Multihop Cellular Networks", in Proc. { IEEE International Conference on Communications (ICC 2003)}, Anchorage, Alaska, USA, May 11-15, pp. 969-973, 2003.
31. Ch. Vijaya Saradhi and C. Siva Ram Murthy, "Segmented Protection Paths in WDM Mesh Networks", in Proc. { IEEE Workshop on High Performance Switching and Routing (HPSR)}, Torino, Italy, June 24-28, pp. 311-316, 2003.
32. Ch. Vijaya Saradhi and C. Siva Ram Murthy, "Distributed Network Control for Establishing Reliability-Constrained Least-Cost Lightpaths in WDM Mesh Networks", in Proc. {IEEE International Symposium on Computers and Communications (ISCC)}, Kamer-Antalya, Turkey, June 30-July 3, pp. 678-683, 2003.
33. Harsha V. Madhyastha, N. Srinivas, G.V. Chowdhary, and C. Siva Ram Murthy, "Grooming of Multicast Sessions in WDM Ring Networks", in Proc. { SPIE OptiComm 2003: Optical Networking and Communications}, Texas, USA, October 15-18, 2003.
34. V. Vidhyashankar, B.S. Manoj, and C. Siva Ram Murthy, "Slot Allocation Schemes for Delay Sensitive Traffic Support in Asynchronous Wireless Mesh Networks", in Proc. { 10th International Conference on High Performance Computing (HiPC)}, Hyderabad, December 17-20, pp. 333-342, 2003.
35. Bhaya Gaurav Ravindra, B.S. Manoj, and C. Siva Ram Murthy, "Ring Based Routing Schemes for Load Distribution and Throughput Improvement in Multihop Cellular, Ad hoc, and Mesh Networks", in Proc. {10th International Conference on High Performance Computing (HiPC)}, Hyderabad, December 17-20, pp. 152-161, 2003.
36. N. Sreenath and C. Siva Ram Murthy, "Multicast Traffic Routing in IP-over-WDM Networks", in Proc. {2nd International Trusted Internet Workshop (TIW 2003)}, in conjunction with 10th International Conference on High Performance Computing (HiPC), Hyderabad, December 17-20, pp. 190-200, 2003.
37. Rajesh Hegde, Hema A Murthy and T. Nagarajan, "Speaker Identification based on the modified group delay feature," {ICON-2003}, CIIL, Mysore, Dec'19-21, 2003.
38. T. Nagarajan, Hema A. Murthy and Rajesh M. Hegde, "Segmentation of Speech into Syllable-like units," {Eurospeech-2003}, Geneva, Switzerland.
39. T. Nagarajan, Hema A. Murthy and Rajesh M. Hegde, "Group Delay based Segmentation of Spontaneous Speech into Syllable-like units," {Proc. SSPR-2003}, pp. 115-118, Tokyo, Japan, April 14-16, 2003.

40. Kamala Krithivasan, K. Sharda and S.V. Varma "Distributed omega automata" IJFCS, Vol. 14, 681-698, 2003.
41. L. Kalyan Kumar, Aditya S. Ramani, Amol J. Mupid, V. Kamakoti and S. Suresh, "Online location Multiple Faults in LUT Based Reconfigurable Systems", International Conference on VLSI Design 2003, (VLSI'2003), Las Vegas, USA, June 23-26, 2003.
42. L. Kalyan Kumar, Aditya S. Ramani, Amol J. Mupid and V. Kamakoti, "Testable Clock Routing Architecture for Field Programmable Gate Arrays", Thirteenth International Conference on Field Programmable Logic and Applications 2003, (FPL'2003), Lisbon, Portugal, Sept. 1-3, 2003.
43. Bobba Jayaram, A. Manoj Kumar and V. Kamakoti, "Parallel Partitioning Techniques for Logic Minimization using Redundancy Identification", International Conference on High Performance Computing 2003, (HiPC'2003), Hyderabad, India, Dec.17-20, 2003.
44. L. Kalyan Kumar, Amol J. Mupid, Aditya S. Ramani and V. Kamakoti, "A Novel Method for Online In-Place Detection and Location of Multiple Interconnect in SRAM Based FPGAs, The Twelfth Asian Test Symposium, November 17-19, 2003, Xi'an, China.
45. Pratibha P, Siva Nageswara Rao Borra, A Muthukaruppan, S. Suresh, V. Kamakoti, An Enhanced Evolutionary Approach To Spatial Partitioning For Reconfigurable Environments, 2003 IEEE Congress on Evolutionary Computation, December 8-12, 2003, Canberra, Australia.
46. P. Pratibha, Siva Nageswara Rao Borra, A. Muthukaruppan, S. Suresh, V. Ganesh and V. Kamakoti, A Parallel Evolutionary Approach to Spatial Partitioning in Reconfigurable Environments, Indian International Conference on Artificial Intelligence, Hyderabad, December 2003.
47. Rupali Sharma, P.C. Reghu Raj and S. Raman "Augmenting Phrase-based Text Representation with Conceptual Indexing for Effective Retrieval", Accepted for Intl. Conf. on Information & Knowledge Engg., (IKE 2003), Las Vegas, Nevada, June 23-26, 2003.
48. P.C. Reghu Raj and S. Raman "Phrase Grammar-based Automatic Conceptual Tagging System", Accepted for Intl. Conf. on Information & Knowledge Engg., (IKE 2003), Las Vegas, Nevada, June 23-26, 2003.
49. Rupali Sharma and S. Raman "Phrase-based Text Representation for Managing the Web Documents", Accepted for Intl. Conf. on Information Technology: Coding & Computing (ITCC 2003), Las Vegas, Nevada, April 28-30, 2003.
50. P.C. Reghu Raj and S. Raman "Mapping Documents onto Concept Databases for Threshold-based Retrieval", Accepted for Intl. Conf. Enterprise Information Systems (ICEIS 2003), Angers, France, April 23-26, 2003.
51. M. Saravanan and S. Raman "Text Summarization: An Upcoming Tool in Text Mining", Accepted for Intl. Conf. Enterprise Information Systems (ICEIS 2003), Angers, France, April 23-26, 2003.
52. Suryakanth V. Gangashetty, C. Chandra Sekhar and B. Yegnanarayana, Dimension reduction using autoassociative neural network models for recognition of consonant-vowel units of speech, Fifth Int. Conf. Advances in Pattern Recognition, ISI Calcutta, India, pp. 156-159, December 2003.
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56. V. C. Raykar, R. Duraiswamy, B. Yegnanarayana and S. R. Mahadeva Prasanna, Tracking a moving speaker using excitation source information EUROSPEECH 2003, Geneva, Switzerland, September 1-4, 2003.
57. B. Yegnanarayana, S. R. Mahadeva Prasanna and M. Mathew, Speech enhancement in multispeaker environment using excitation source information, EUROSPEECH 2003, Geneva, Switzerland, September 1-4, 2003.

- Guruprasad. S, Dhananjaya. N and B. Yegnanarayana, AANN models for speaker recognition based on difference cepstrals, IJCNN 2003, Portland, Oregon, USA, July 20-24, 2003.
58. S. Palanivel, Vinod Pathangay and B. Yegnanarayana, Audio-visual Based person authentication system, IEEE International Conference On Multimedia And Expo.-Demonstration Session, Baltimore, USA, July 2003.
  59. S. Palanivel, B. S. Venkatesh and B. Yegnanarayana, Real time face authentication using autoassociative neural network models, IEEE International Conference On Multimedia and Expo., Baltimore, USA, July 2003.
  60. S. V. Gangashetty, K. Sreenivasa Rao, A. Nayeemulla Khan, C. Chandra Sekhar, and B. Yegnanarayana, Combining evidence from multiple modular networks for recognition of consonant-vowel units of speech, International Joint Conference on Neural Networks, Portland, USA, July 2003.
  61. K. Sreenivasa Rao and B. Yegnanarayana, Prosodic manipulation using instants of significant excitation, Proc. IEEE International Conference On Multimedia and Expo., Baltimore, USA, July 2003.
  62. V. Vinod, Arvind Narayanan, K. Srinathan, C. Pandu Rangan and Kwangjo Kim, On the power of computational secret sharing, Proc. Of Progress in Cryptology – INDOCRYPT'03, vol. 2904 of LNCS, pp. 162-176, Springer-Verlag, Dec. 2003.
  63. S. Amitanand, I. Sanketh, K. Srinathan, V. Vinod and C. Pandu Rangan, Distributed consensus in the presence of sectional faults, Proc. Of 22<sup>nd</sup> ACM symposium on principles of distributed computing, pp. 202-210, ACM press, July 2003.
  64. K. Srinathan, V. Vinod and C. Pandu Rangan, Brief announcement: Efficient perfectly secure communication over synchronous networks, Proc. Of 22<sup>nd</sup> ACM symposium on principles of distributed computing, pp. 252, ACM press, July 2003.

#### Distinguished Visitors to the Department:

Sl.No	Name of the Visitor and Designation	Date of Visit
1	Dr. Frederick Lowy, Dr. Balbir S. Sahini Concordia Univ., Canada	19/4/2004
2	Dr. V.P. Sandlas, Chief Cont. of Defence R&D, Dr. S.S. Prasad, Director, ISSA	3/4/2004
3	Prof. Reynouard, Dean of Research, Ms. Veronique Darleguy, Dr. Rayaud, Dean of studies, INSA, France	20/3/2004
4	Prof. S.K. Chou, Vice Dean Engg. Prof. S.C. Lim, Head, Mech. Engg. Prof. Ling Chung Ho, India Programme Coordinator and Advisor, National Univ. of Singapore	24/3/2004
5	Prof. Helmut Jurgensen, Univ. of Western Ontario	26/2/2004
6	Ms. Clindy Paulauskas, Navigation Technologies, USA	13/2/2004
7	Prof. Mehlhorn, Max Planck Society, Germany	21/1/2004
8	Prof. Andy S. Tanenbaum, Vrije Univ., The Netherlands	19/1/2004
9	Prof. K. Thulasiraman, Oklahoma Univ., USA	6/1/2004
10	Prof. Vijay R Raghavan, Univ. of Louisiana Lafayette	5-19 Dec. 2003
11	Dr. C. Mohan, IBM fellow	9/10/2003
12	Dr. Krishna Bharat, Dr. Narayan Shivakumar Google Inc.	7/11/2003
13	Shri. S. Sairam, CEO ,Machine tools aids bureau	3/11/2003
14	Team from Univ. of New Mexico Tech., USA	23/8/2003
15	Mr. Sentil Velan, Mr. Matsumoto, Yamaha Corporation, Japan	6/8/2003
16	Dr. Shiva Sastry, Univ. of Akron, Ohio, USA	18/7/2003



## 4.7. DEPARTMENT OF ELECTRICAL ENGINEERING

### 4.7.1. Introduction:

The Department of Electrical Engineering encompasses Electrical, Electronics and Communication Engineering. The Department comprises of the following sections.

#### Communication Systems:

- Digital Signal Processing Laboratory
- Microwave and Antenna Laboratory
- Telematics Laboratory
- Communication Laboratory

#### Power Systems, Machines and Drives:

- Electrical Machines and Drives Laboratory
- Power Electronics Laboratory
- Power Systems Laboratory
- High Voltage Laboratory

#### Control and Instrumentation Systems:

- Control and Robotics Laboratory
- Measurements and Instrumentation Laboratory
- Optical networks laboratory

#### Microelectronics:

- Microelectronics Laboratory
- Amorphous Semiconductor Devices Laboratory
- Digital Systems and VLSI Laboratory

### 4.7.2. Academic Programmes:

#### B.Tech Degree in Electrical Engineering:

The Department offers an integrated undergraduate degree in Electrical Engineering that combines all aspects of power, control, communication and microelectronics engineering.

#### M.Tech Degree in Electrical Engineering:

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

1. Communication Systems (EE1)
2. Power Systems and Power Electronics (EE2)
3. Microelectronics and VLSI design (EE3)
4. Control and Instrumentation systems (EE4)

#### Integrated M.Tech. Degree in Electrical Engineering:

Five year integrated M.Tech. (Dual Degree) Programme is offered in three streams:

1. Communication Systems
2. Microelectronics and VLSI Design
3. Power Systems and Power Electronics

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

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

#### New Course Introduced:

Sl. No	Course No	Course Name	From
1	EE622	Introduction to computational Neuro Science	July 2003
2	EE623	Noise in electronic devices and circuits	July 2003
3	EE624	Radio frequency integrated circuits	July 2003
4	EE625	Mobile robotics, sensing, vision and control	July 2003

Sl. No	Course No	Course Name	From
5	EE626	Allied topics in control systems	July 2003
6	EE508	Introduction to Digital Signal processing	July 2003
7	EE532	Digital System design	July 2003

#### Students on Roll:

Sl. No.	Programme	I year	II year	III year	IV year	V year & Others	Total
1.	B.Tech.	76	80	92	86	5	339
2.	Integrated M.Tech.						
	Communication Systems	13	11	10	12	14	60
	Micro-Electronics & VLSI Design	12	10	10	11	11	54
	Power system and Power Electronics	9	10	-	-	-	19
3.	M.Tech. -						
	Communication Systems	24	14	-	-	-	38
	Power System and Power Electronics	10	10	-	-	-	20
	Micro Electronics and VLSI Design	28	17	-	-	-	45
	Control & Instrumentation Systems	18	14	-	-	-	32
4.	M.Tech. - ( UOP )						
	Digital Signal Processing	7	9	-	-	-	16
5.	M.S	34	25	11	11	2	83
6.	Ph.D.	19	12	7	3	4	45
	<b>Total</b>	<b>250</b>	<b>212</b>	<b>130</b>	<b>123</b>	<b>36</b>	<b>751</b>

#### Names of students and scholars who attended Conferences / Seminars and Symposia abroad / India:

Sl.No	Name of the Student	Programme	Name of the Conference/ Seminar/ Symposia	Date and Venue
1	S. Chandrasekar	CBIP-Conference	International conference on Electric power systems	Feb. 2003
2	M.P. Selvan	CPRI-Conference	Power Systems Data Repository and Load Research	Nov. 2003
3	Prasada Reddy	CPRI-Conference	Power Systems Data Repository and Load Research	Nov.2003
4	Rohit Kumar pancholi	Conference	IEEE-ACE 2003, Pune	Dec. 2003
5	Prasada Reddy	Conference	IEEE-ACE 2003, Pune	Dec. 2003
6	Thilak Daniel	Conferecne	IEEE-ACE 2003, Pune	Dec. 2003
7	Rohit Kumar Pancholi	Conference	IEEE ICISIP	Jan. 2004
8	U.Venu Babu,	Conference	IWPSD, Chennai	Dec. 2003
9	L.Helen	Conference	IWPSD, Chennai	Dec. 2003
10	Anitha Rani,	Conference	IWPSD, Chennai	Dec. 2003
11	S.R.Manjula,	Conference	IWPSD, Chennai	Dec. 2003
12	S.P. Madahvi,	Conference	IWPSD, Chennai	Dec. 2003
13	Y.Sushma	Conference	IWPSD, Chennai	Dec. 2003
14	R.J.Daniel	Conference	IWPSD, Chennai	Dec. 2003

#### 4.7.3 Faculty and their activities:

##### Faculty:

##### Name and Qualification

##### Major area of specialisation

##### Professors:

Bhaskar Ramamurthi, Ph.D.(California)	Digital Communication and Communication networks, Signal Processing.
K.N. Bhat, Ph.D.(IIT Madras)	MEMS, Semiconductor Devices-Silicon and GaAs
David Koil Pillai, Ph.D.(Cal Tech)	cellular systems, Wireless communication and signal processing
V.Jagadeesh Kumar, Ph.D.(IIT Madras)	Measurements, Instrumentation
P.A.Janakiraman, Ph.D.(IIT Madras)	Robotics, Control Systems, Instrumentation
A. Jhunjhunwala, Ph.D (Maine)	Communication Networks, Fibre optics, Surface Acoustic Wave Devices.
S.Karmalkar, Ph.D. (IIT Madras)	VLSI, Semiconductor Devices

M.S.Narasimhan, Ph.D.(IIT Bombay)  
 K.M.M.Prabhu, Ph.D.(IIT Madras)  
 K.Radhakrishna Rao, Ph.D.(IIT Kanpur)  
 P.Sasidhara Rao, Ph.D.(IIT Madras)  
 G.Sridhara Rao, Ph.D.(IIT Madras)  
 S.Srinivasan, Ph.D.(IIT Madras)

P.R.Vaya, Ph.D.(IIT Madras)  
 V.Venkata Rao, Ph.D.(Iowa)  
 C.Venkataseshaiah, Ph.D.(IIT Madras) [Head]

**Associate Professors:**

Amitava Dasgupta, Ph.D.(IIT Kharagpur)  
 R.Aravind, Ph.D.(California)  
 Devendra Jalihal, Ph.D.(Duke)  
 Enakshi Bhattacharya, Ph.D.(TIFR Bombay)  
 Nandita Dasgupta, Ph.D (IIT Madras)  
 K.Sridharan, Ph.D (RPI, NY)  
 K.Giridhar, Ph.D.(California)  
 Harishankar Ramachandran Ph.D (California)

**Assistant Professors:**

Anil Prabakar Ph.D (Carnegie Mellon)  
 M.Antony Reddy, Ph.D.(IIT Madras)  
 V.Jayashankar Ph.D (Anna. Uni.)  
 Krishna Vasudevan, Ph.D.(IIT Madras)  
 M.Krishnamurthi, M.Tech (IIT Madras)  
 P.C.Majhee, M.Tech (IIT Madras)  
 G.T.Manohar, M.Tech (IIT Madras)  
 C.Mathiazhagan, Ph.D (Univ.California)  
 Nitin Chandrachoodan Ph.D (  
 R. Manivasakan Ph.D (IIT Bombay)  
 A.N. Rajagopalan Ph.D (IIT Bombay)  
 C. S. Ramalingam Ph.D (Univ.Rhode Irland)  
 R.Sarathi, Ph.D.(IISc)  
 Y. Shanthi Pavan, D.Sc(Univ. Columbia )  
 Srinivas Chakravarthy Ph.D (Austin)  
 Maheshkumar Ph.D (IITK)  
 Souvik Chattopadhyay Ph.D (IISc)  
 Srikrishna B Ph.D (  
 Balaji Srinivasan Ph.D(  
 K.S. Swarup PhD ( IISc)  
 T.G.Venkatesh, Ph.D.(IISc)  
 Vinita Vasudeven, Ph.D (IIT Bombay)  
 T.J.Vitto, Ph.D (IIT Madras)

Antenna Engineering, Applied Electromagnetics  
 Signal Processing  
 VLSI, Analog and Digital ICs  
 Electrical Machines and Power Electronics  
 Machines, Power Electronics, Simulation.  
 Digital Design, DSP Architecture and applications,  
 VLSI Design.  
 Semiconductor Devices  
 Digital Signal Processing, Communications.  
 High Voltage Engineering, Power Systems , EMI/EMC

Si and GaAs Devices, Technology and Simulation  
 Image Processing and Compression  
 Statistical Signal Processing  
 Semiconductor materials and Devices.  
 Si and III-V Semiconductor Devices, Tech, Simulation  
 Robotics, Graphics, Web Programming  
 Communication Systems and Signal Processing.  
 Electromagnetic Fields, Optical Networks

Electromagnetic fields, Optical Networks  
 Electronic Circuits  
 Instrumentation and Measurement, High Voltage.  
 Power Electronics  
 Power Systems  
 Measurements, Instrumentation  
 Microprocessors, control systems  
 RF, Analog Circuits for Telematics.  
 Digital Systems, Microprocessors, VLSI design  
 Communication Networks.  
 Image Processing and Computer Vision  
 Digital Signal Processing, Speech Recognition and  
 Speech Coding  
 High voltage Engineering  
 VLSI Design  
 Neural Networks, Handwritten script Characterisation  
 Power systems  
 Power Electronics  
 Communications  
 Optical networks  
 Power systems, ANN, Distribution Automation  
 Computer Architecture and Networks.  
 CAD for VLSI, VLSI Design  
 Semiconductor devices, Analog Circuits.

## Visiting Faculty:

Arun Sekar (Aug to Dec. 2003)  
From university of Tennessee, USA

Power quality

T.R. Viswanathan (Alexander Chair Professor)  
During Dec. 2003- April 2004  
From Penn State University, USA

analog circuits, VLSI design

## Chief Design Engineer

P.Ramaseshagiri Rao, M.S(IIT Madras)

Semiconductor device technology

## Senior Scientific Officers Gr-I:

T.V.Gopal, M.S (IIT Madras)

Measurements, Computer System Management

H.Renganathan, M.S(IIT Madras)

DSP.Microprocessor Systems

## Scientific Officers Gr I

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

Solid State Electronic Devices, Semiconductor Technology.

Sri. P. Prabhakara Rao

Communications

## Short-term Courses / Workshops/Seminars/Symposia/Conferences organized by the faculty members:

Sl.No.	Co-ordinators	Title	Period
1.	Prof. K.N. Bhat	12 <sup>th</sup> International workshop on the Physics of Semiconductor Devices (IWPSD2003)	16 <sup>th</sup> Dec-19 <sup>th</sup> Dec. 2003
2	Prof. K.N. Bhat	One day workshop on semiconductor devices	15 <sup>th</sup> Dec. 2003
3	K.S. Swarup and Arun sekar	Artificial Intelligence applications in power systems	2 <sup>nd</sup> Dec-6 <sup>th</sup> Dec
4	K.S. Swarup	One day workshop on impact of electricity privatization on the existing electrical power system	23 <sup>rd</sup> Dec. 2003
5	Enakshi Bhattacharya	Tutorial on Bio Sensors	4 <sup>th</sup> -7 <sup>th</sup> Jan 2004

## 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
1	R.Sarathi	ICMAT-2003	NUS, Singapore	7 <sup>th</sup> -12 <sup>th</sup> Dec. 2003
2	N. Dasgupta	ICMAT-2003	NUS Singapore	7 <sup>th</sup> -12 <sup>th</sup> Dec. 2003
3	K.S. Swarup	Tencon-2003	IISc, Bangalore	Oct. 2003
4	K. Sridharan	Tencon-2003	IISc, Bangalore	Oct. 2003
5	R. Arvind	Tencon-2003	IISc, Bangalore	Oct. 2003
6	R.D. Koilpillai	Tencon-2003	IISc, Bangalore	Oct. 2003
7	S. Karmalkar	IWPSD, Chennai	IIT Madras	Dec16-20, 2003
8	E. Bhattacharya	IWPSD, Chennai	IIT Madras	Dec 16-20, 2003
9	N. Dasgupta	IWPSD, Chennai	IIT Madras	Dec 16-20, 2003
10	K.N. Bhat	IWPSD, Chennai	IIT Madras	Dec 16-20, 2003
11	A. Dasgupta	IWPSD, Chennai	IIT Madras	Dec 16-20, 2003
12	P.R.S. Rao	IWPSD, Chennai	IIT Madras	Dec 16-20, 2003
13	R. Arvind	NCC, Conference	IISc, Bangalore	Feb. 2004
14	K. Giridhar	NCC, Conference	IISc, Bangalore	Feb. 2004

## Special Lectures delivered by the faculty in other Institutions:

Sl.No.	Name of the Faculty	Topic of Lecture	Venue and Date
1.	Dr. K. S. Swarup	Presentation on the research activities in the area of power systems.	The power academia meet 2003 held at IIT Bombay during 3 <sup>rd</sup> and 4 <sup>th</sup> of April 2003.

Sl.No.	Name of the Faculty	Topic of Lecture	Venue and Date
		"Transmission operation"	Institution of Engineers (India), Hyderabad, 14 <sup>th</sup> July, 2003
		"Overview of Power Systems"	KCG college of Engineering, Chennai, 28 <sup>th</sup> July, 2003
		"Computational Intelligene in power systems"	The UNESCO Regional training course on engineering simulation, on 20 <sup>th</sup> Sept. 2003, IIT Madras.
		'Advanced Artificial Intelligence Techniques in Power System Protection and computer and communications'	The short term course on Advances in power system protection organized by Anna University to TNEB Engineers. 13 <sup>th</sup> Nov. 2003
		International Conference on Intelligent sensing and Information Procession (ICISIP – 2004)	(ICISIP – 2004) Chennai 4 – 7 January 2004
		Harnessing ICT for Social Development	The CIT 2004 Conference in the Sessing- Harnessing IT Enterprise & Social Development at IIM Ahmedabad Jan 16, 2004
2.	Dr.Ashok Jhunjhunwala	"Wireless and Wireline Future Scenario-Drivers for Telecom in India"	Vikram Sarabai Memorial Lecture, in the "34 <sup>th</sup> IETE Mid-Term Symposium" 3 <sup>rd</sup> April 2003, Mumbai.
		"CorDECT WLL – Designed to connect developing countries"	The Multisource Telecom Workshop, Eskom Megawatt Park, 14 <sup>th</sup> April, 2003, South Africa.
		"Local Entrepreneurship for sustainable telecentres: Case Studies from Indian Villages"	The Acacia Conference, in the Session on "Universal Access: Beyond Telecentres", South Africa on 15 <sup>th</sup> April, 2003
		"Innovative ICTs for Development" in the session on "Rural Wireless Local loop Technologies"	the Acacia Conference, South Africa on 16 <sup>th</sup> April. 2003
		"Emerging technologies in safety and customer satisfaction" in the Economic wireless solution using railways station as communication hub,	Vigyan Bhavan, New Delhi.
		"Reaching the unreached" in the seminar on education and publishing for childrens in India,	organized by Tulika Publishers, Chennai.
		"Towards doubling rural GDP"	the Constance and Arnold C Pohn Symposium on Connecting in a wireless world: Bridging global, cultural and economic divides, University of Michigan, Ann Arbor, USA.
		"Academic-Institute Colloboration-Perspective on Technological innovations"	The Workshop on India and technological innovation, The Asia Center, Harvard, USA.
		"Towards connecting rural India to enhance rural GDP"	The Stuart Gannes digital vision fellowship program, Stanford, USA.
		"Serving the next tier market"	the TIE meeting on succeeding with new real realities, Silicon valley, California
		"Communication technology in banking industry",	The in the network administrative program at Reserve Bank staff college, Chennai
		"-Reaching the unreached"	seminar on education and publishing for children in India, organized by Tulika Publishers, Chennai.
		"Emerging technologies in safety and customer satisfaction"	the Economic wireless solution using railway station as communication hub meeting, Vigyan Bhavan, New Delhi.
		"Driving innovation in India towards emerging markets"	Israel telecom conference, Tel-Aviv, Israel. 7 <sup>th</sup> July,2003

Sl.No.	Name of the Faculty	Topic of Lecture	Venue and Date
		"Commercial internet connectivity in every village-Towards doubling rural GDP in India",	the IEE all India seminar on Information and Communication technology, on 17 <sup>th</sup> August, 2003 at Agartala.
		" Leadership summit-SSI in focus", in the Seminar on "Driving innovation in India towards emerging market"	organized by Swadeshi Jagaran foundation, 19 <sup>th</sup> Aug. 2003, New-Delhi
		"Commercial Internet connectivity in every village-towards rural prosperity"	the National seminar on Rural upliftment through IT, at Coimbatore on 19 <sup>th</sup> Sept.2003.
		"IT and common man : Bringing the Net Effect to 700 million Rural Indians"	Guest Speaker during the Inaugural session on Bangalore ITCOM 2003 in Bangalore. 1 <sup>st</sup> Nov 2003
		"IT and common man : Bringing the Net Effect to 700 million Rural Indians"	seminar at the HP labs India and HP ISO , Bangalore 7 <sup>th</sup> Nov 2003
		"Internet and India : Vision and opportunities as Chairman in the session on "Internet Broadband and IP services"	Telecomm India 2003 , Mumbai.13 <sup>th</sup> Nov 2003
		IT and common man : Bringing the Net Effect to 700 million Rural Indians"	seventh National Conference on e-Governance, Chennai. 13 <sup>th</sup> Nov 2003
		"Telemedicine in Rural India "	during the inauguration of the Diabetic foot clinic organized by the Diabetic foot therapy , Research and Education centre , Sundaram Medical Foundation, Chennai.14 <sup>th</sup> Nov 2003
		"Financing the Technology Business "	the Programme organized by the Indo American Chamber of Commerce at Chennai. 14 <sup>th</sup> Nov 2003
		"Connecting rural India with special emphasis on North East "	symposium on Emerging Trends in Communication Technologies during the 69 <sup>th</sup> Annual meeting of Indian Academy of Sciences , at IIT Guwahati. 22 <sup>nd</sup> Nov 2003
		"Telecom and India : Vision and Opportunities – Learnings from TeNet Groups(IITM)	Chief Guest at the TVS Town Hall meeting organized by TVS electronics, Chennai. 29 <sup>th</sup> Nov 2003
		"What infrastructure is required for territorial development?"	the World Summit of Cities and Local Authorities on the Information Society, Lyon, France, 4 <sup>th</sup> December 2003
		From Principle to Practice: Country Presentations Promoting ICTs"	the Global Symposium of Regulators, Geneva, Switzerland, 9 <sup>th</sup> December 2003
		"Connecting Rural India towards wealth generation"	The Micro finance IT Seminar on Progressive Paradigm organised by i4D at Delhi, 23 <sup>rd</sup> December 2003
		Internet Affordability, Management and Security	The 2 <sup>nd</sup> Asia IT Ministers Summit in Hyderabad, Jan 12, 2004
		"Using internet towards doubling per capita Rural GDP in ten Years" as Chair person in the Plenary Session on "Information Science in the Future of India: Five Ideas that can transformer India"	91 <sup>st</sup> Science Congress, Science and society in the Twenty First Century: Quest for Excellence in Chandigarh. Jan 3 <sup>rd</sup> Feb. 2004
		"Can internet be used to double the rural GDP over the next ten years ?" , at as part of science city's "	Popular Lecture Series", Chennai, 3 <sup>rd</sup> Feb.2004
		" Indian Minds"	HCL get- together at Hotel Taj Coromandel, Chennai 10 <sup>th</sup> March 2004

Sl.No.	Name of the Faculty	Topic of Lecture	Venue and Date
		Technologies from/for the south (Emerging Market)" at the conference on " Scientific Cooperation: balancing social demands with technological challenges north-south sustainable development What is at stake ?" ,	EPFL, Lausanne, Switzerland. 13 <sup>th</sup> Feb 2004
		From cassette tape to CD ROM: Is digital revolution?"	Indian National Science Academy (INSA), New Delhi 27 <sup>th</sup> Feb.2004
		How will our life change in the mobile information society?" and "drivers & inhibitors for mobile growth in south asia"	ITU/MIC workshop shaping the future mobile information society, on 4 <sup>th</sup> March, 2004, Seoul, Korea.
		Doubling the rural GDP in India	14 <sup>th</sup> Commodore Garg memorial lecture organized by institution of Naval architects (Delhi Chapter) at IIT Delhi on 13 <sup>th</sup> March 2004.
		"Experiences of TeNet group-an example of Industry Institute Interaction"	Conference on building industry-Institute linkages-enhancing competitiveness at Chennai on 20 <sup>th</sup> March 2004
		"Technology can make telecenters services more affordable"	World Bank staff and clients organized by the eDevelopment services thematic group of the world bank at Chennai on 23 <sup>rd</sup> March 2004
		Connecting Rural India- Profitability	Foundation day lecture at National Academy of Telecom Finance and Management at Hyderabad

#### Visits Abroad by Faculty:

Sl.No.	Name of Faculty	Country Visited	Date	Purpose of Visit
1	Ashok jhunjunwala	Geneva	10 <sup>th</sup> Dec. 2003	Conference
2	S. Srinivasan	Bangkok	April 2003	Visiting Professor
3	E. Bhattacharya	USA	7 <sup>th</sup> -11 <sup>th</sup> March 2004	Conference
4	N. Dasgupta	Singapore	7 <sup>th</sup> Dec.2003	Conference
5	C. Venkateshaiah	USA	9 <sup>th</sup> Dec. 2003	Conference
6	R.Sarathi	Singapore	7 <sup>th</sup> Dec. 2003	Conference
8	Ashok Jhunjunwala	Israel	7 <sup>th</sup> july, 2003	Conference
9	Ashok Jhunjunwala	France	4 <sup>th</sup> Dec. 2003	Conference
10	Ashok jhunjunwala	Geneva	9 <sup>th</sup> Dec. 2003	Conference
11	Ashok Jhunjunwala	Switzerland	13 <sup>th</sup> Dec. 2003	Conference
12	E. Bhattacharya	Spain	14 <sup>th</sup> -19 <sup>th</sup> March 2004	Conference
13	Ashok Jhunjunwala	Korea	4 <sup>th</sup> March	Conference
14	S. Srinivasan	USA	May2003	conference

#### Honours and Awards obtained:

A. Prof. R.D. Koilpillai was elected as Fellow of Indian National Academy of Engineering.

B. Prof. Ashok Jhunjunwala received the following awards:

1. Dataquest IT Path breaker Award for the year 2003 on 19<sup>th</sup> December 2003 at New Delhi.
2. Outstanding Academician Award 2003 Instituted by Saraswathi Ammal Educational Trust at Arunai Engineering College, Thiruvannamalai on 26<sup>th</sup> December 2003.
3. World Summit Award for "n-Logue Communications" as one of the world's 5 best projects in the e-inclusion category at the World Summit on information Society organised by the International Telecommunications Union on December 10, 2003 at Geneva.
4. "Federation of Indian Chambers of Commerce and Industry" (FICCI) Award for the year 2002 -03 for the significant work in the category of "Outstanding Contribution to Knowledge Based Industries" by Hon'ble President of India, Dr. A.P.J. Abdul Kalam at the FICCI's 76<sup>th</sup> Annual General Meeting, New Delhi on 7<sup>th</sup> January 2004.

### Books published by the Faculty

1. Nandita DasGupta and Amitava DasGupta, "Semiconductor Devices Modeling and Technology", Prentice-Hall of India Pvt. Ltd, New Delhi, January 2004.
2. - K.N. Bhat and Amitava DasGupta (Editors), "Physics of Semiconductor Devices (Proceedings of the Twelfth International Workshop on the Physics of Semiconductor Devices)", Narosa Publishing House, New Delhi, 2004.
3. S. Karmalkar, M. S. Shur and R. Gaska, GaN-based Power High Electron Mobility Transistors, Chapter 3 in Wide Energy Bandgap Electronics (pp. 175-218), edited by Fan Ren, World Scientific.
4. Digital Signal Processing Implementations using DSP Microprocessors by Prof. S. Srinivasan along with Prof. Autav Singh of San Jose State University, CA, USA, Thoms Brooks/Cole publishers, USA and Singapore.

#### 4.7.4. Research and consultancy:

##### Industrial Consultancy Projects:

Sl.No	Name of faculty	Title of the Project	Amount (Rs. in lakhs)
1	Venkateshaiah C	Impulse test on current transformer	0.10
2	Sarathi R	Temperature rise test on 15 MVA transformer	0.16
3	Ashok Jhunjhunwala	Consultancy services to Sasken	6.00
4	Venkateshaiah C	Impulse test on current transformer (33 kV)	0.14
5	Venkateshaiah C	Impulse voltage with stand study and testing of transformers	12.00
6	Jagadeesh Kumar V	Calibration of power track meters	0.07
7	Amitava Das Gupta	Surface characterization of transparent ceramic samples	0.50
8	Venkateshaiah C	Power frequency test on outdoor polycrystic VCB	0.05
9	Venkateshaiah C	Power frequency test on indoor VCB	0.10
10	Venkateshaiah C	Impulse voltage withstand study and testing of transformers	1.21
11	Anil Prabhakar	Encrypted licensing schemes for software distribution	0.24
12	Venkateshaiah C	Lighting impulse withstand test of 100 kVA distribution transformer	0.12
13	Venkateshaiah C	Lighting impulse voltage withstand study test on current transformer (33 kV)	0.10
14	Venkateshaiah C	Lighting impulse voltage withstand study test on P.T.	0.10
15	Anil Prabhakar	Dot - matrix print head optimization	0.40
16	Venkateshaiah C	Calibratin of HV test kit 0-50 kV	0.05
17	Jagadeesh Kumar V	Calibration of three phase PT burden box	0.06
18	Venkateshaiah C	Calibration of motorised HV oil test kit	0.10
19	Jagadeesh Kumar V	Calibration of watt hour meter	0.06
20	Amitava Das Gupta	Indegenous development of silicon photo detectors	12.00
21	Amitava Das Gupta	Technology transfer and prototype production of silicaon PIN photodiodes for detecting He-NE Laser signal	3.00
22	Krishna Vasudevan	DSP Based BLDC Drive Design	3.00
23	Rajagopalan A N	Recognition of humans using biometrics	4.50
24	Rajagopalan A N	Vision algorithms support for Benchmark Vision Systems	2.00
25	Shanthi Pavan	High speed continuous-time adaptive equalizers	22.87
26	Krishna Vasudevan	Study and identification of optimum control strategy for automotive lamp control	1.75
27	Anil Prabhakar	Magnetic analysis of Dot - Matrix printer head	1.29
28	Shanthi Pavan	Introduction to analog integrated circuit design.	12.00

##### Sponsored Research Projects:

Sl.No	Title	Funding Agency	Amount (Rs. in lakhs)	Co-ordinators
1	Education Technology- Development of Digital Video Technology for Distance Learning	Ministry of Human Resource Development	15.00	S. Karmalkar
2	Modernization of the Radio Frequency Lab	Ministry of Human Resource Development	8.00	Harishankar Ramachandran
3	Design of satellite mode and transcoders for spaarse area communication system (SACS).	Space Application Centre (SAC), ISRO.	159.85	Ashok Jhunjhunwala Bhaskar Ramamurthy Giridhar K Devendra Jaiihal



Sl.No	Title	Funding Agency	Amount (Rs. in lakhs)	Co-ordinators
4	Hardware implementation of video imaging system for launch vehicles	ISRO-IITM Space technology Cell	7.36	S. Srinivasan H. Renganathan
5	Driving Applications on Wireless Internet in Rural India	Intel Technologies	45.20	Ashok Jhunjhunwala Bhaskar Ramamurthy R Aravind Devendra Jalihal Timothy A Gonsalves Hema A Murthy
6	Characterisation of nano aluminium powder for combustion in solid propellant	DRDO	9.48	S. R. Chakravathi R. Sarathi C. Venkateshaiah
7	Design and Development of bio informatics for wound assessment	Ministry of Human Resource Development	12.00	Jagadeesh kumar
8	Design of digitally controlled scalable AC-DC and DC-DC power converters	Ministry of Human Resource Development	8.00	S.Chattopadhyay
9	Mitigation of unbalance an harmonics in power distribution system using static compensators	Ministry of Human Resource Development	8.00	Mahesh kumar
10	Computer relaying for power system protection using DSP techniques	Ministry of Human Resource Development	10.00	K.S. Swarup
11	Development of virtual instrumentation laboratory	Ministry of Human Resource Development	13.00	V.Jagadeesh Kumar
12	Infrastructure for R&D activities in mobile computing and communication	Ministry of Human Resource Development	5.00	T.G. Venkatesh
13	Development of wireless systems	Midas Communication Technology (MCT)	60.00	B. Ramamurthi
14	Design and Fabrication of Silicon Micropump for Drug Delivery and Drug Dosage Control	National program on smart materials, (NPSM)	259.60	K.N. Bhat

#### RBIC Projects:

Sl.No	Name of faculty	Title	Amount (Rs. in lakhs)
1	Shanthi Pavan	Retainer Consultancy	0.86
2	David Koilpillai	Retainer Consultancy	0.60
3	Shanthi Pavan	Retainer Consultancy	1.44
4	Shanthi Pavan	Retainer consultancy	2.10
5	Shanthi Pavan	Retainer consultancy	2.88
6	Giridhar K	Retainer Consultancy	0.40
7	Srikrishna B	Retainer Consultancy	0.40
8	Anil Prabhakar	Magnetic analysis of dot matrix printer head	1.30
9	Shanthi Pavan	Introduction to analog circuit design	1.20
10	Bhaskar Ramamurthi	Retainer Consultancy	0.40

#### Research Publications:

No. of Papers Published in International Journals	..	20
No. of Papers Published in National Conference	..	23
No. of Papers Published in International Conference	..	25

#### In Refereed International Journals:

1. V. Jagadeesh Kumar, P. Sankaran and K. Sudhakara Rao, "Measurement of C and tan of a capacitor employing PSDs and dual slope DVMs", IEEE Trans. on Instrum. & Meas, Vol. 52, #5, October 2003, pp. 1588-1592.
2. Vinod V Thomas, Krishna Vasudevan and V. Jagadeesh Kumar, "Online cage rotor fault detection using air-gap torque spectra", IEEE Trans. on Energy conversion, Vol. 18, NO. 2, June 2003, pp. 265-270.
3. Manivasakan, R.; Hamdi, M.; Tsang, D.H.K.,"Performance analysis of stochastic fair sharing scheme for link sharing" IEEE Transactions on communication, Vol- 52 , No. 2, Pages:195 – 198, Feb. 2004

4. Rajagopalan AN, Chellappa R, Koterba N, Robust face recognition in the presence of clutter, Audio-and Video-Based Biometric person Authentication, Proceedings, Lecture Notes in Computer Science 2688: 1-9 2003.
5. Estimation of Triglycerides by a Porous Silicon based Potentiometric Biosensor, R. Ravi Kumar Reddy, I. Basu, E. Bhattacharya and A. Chadha, Current Applied Physics 3 (2003) 155–161.
6. K.N.Bhat, B.R.K.Reddy, V.V.Kumar,K.S.Kumar,Y.Sushma, N.R. Babu and K.Natarajan, " Design Optimization, Fabrication and Testing of a capacitive Silicon Accelerometer using an SOI approach" International Journal of Computational Engineering Science(IJCES) , Voloume 4, Number 3, pp.485-488, September 2003
7. Vishwanath Krishna Bhat, K.N.Bhat and A. Subrahmaniam, "Effect of oxide growth temperature on the electrical performance of extremely thin (~ 3 nm ) wet oxides of silicon", Material Science and Engineering', Elsevier Science , B98, pp.140-143, 2003
8. M.R. Ravi, Amitava DasGupta & Nandita DasGupta, "Effect of Sulfur Passivation and Polyimide capping on InGaAs-InP PIN photodetectors", IEEE Trans. Electron Devices, vol. 50, no.2, February 2003.
9. V. Srinivasa Chakravarthy and Bhaskar Kompella, "The shape of handwritten characters" , Pattern Recognition Letters, Volume 24, Issue 12, August 2003, Pages 1901-1913.
10. S. Karmalkar, D. Mahaveer Sathaiya and Michael Shur, Mechanism of the Reverse Gate Leakage in AlGaIn / GaN HEMTs, Applied Physics Letters., vol. 82, No. 22, June 2003.
11. S. Karmalkar, On the Bipolar Transistor Collector Current at the Onset of Base-widening as a Function of the Collector-base Voltage, Solid State Electronics, vol. 47, pp.951-955, June 2003.
12. K.S. Swarup and S.Yamashiro, A Genetic Algorithm approach to generator unit commitment, International journal of electrical power, Vol-25, No.9, pp679-687, 2003
13. C. Vijayalakshmi, Devendra Jalihal, Bhaskar Ramamurthi, "Capacity of High Density Macro Cellular Wireless Local Loop System Based on Dynamic Channel Selection", Vol.49, Issue 6, Nov.-December 2003.
14. K.M.M.Prabhu, A. Madhu Sudana Rao, and P.C.W. Sommen, "Time-Recursive Parallel IIR Filter Structures for the IFFT/FFT in DMT Transceiver Systems", IJECE, Volume 2, No. 2, pp. 83- 92, Summer- Fall 2003.
15. R. Subramanian, R. Sharadh and K.M.M. Prabhu, "Performance of Dual Tone Multi-frequency Signal Decoding Algorithm Using the Sub-band Non-uniform Discrete Fourier Transform on the ADSP-2192 Processor", Microprocessors and Microsystems Journal, Vol. 27, No. 10 pp. 501- 510, 2003.
16. V. Ashok Narayanan and K.M.M. Prabhu, "The Fractional Fourier Transform: Theory, Implementation and Error Analysis", Microprocessors and Microsystems Journal, Vol. 27, No. 10 pp. 511- 521, 2003.
17. M.J. Dehghani, R. Aravind and K.M.M. Prabhu, "Design of M-Channel IIR Uniform DFT Filter Banks Using Recursive Digital Filters", ETRI Journal, Vol. 25, No. 5, PP. 345- 355, October 2003.
18. R. Sarathi and Uma Maheswar Rao, Tracking phenomena in silicon rubber insulation under DC voltages- A physico chemical analysis, Journal of applied polymer science, Volume 88, Issue 10,pp2392-2399, 2003, Interwiley Publications.
19. C.R. Anilkumar, S.Deepa, A.k.Mishra and R. Sarathi, Investigation in to the failure of XLPE cables due to electrical treeing –A physico chemical approach, Polymer Testing Journal, Elsevier Science, vol-22, No.3, pp313-318, 2003.
20. R. Sarathi, C.Venkataseshaiah and S.R. Chakravarthi, Generation of nano alumina powder using wire explosion technique, Materials Letter Journal, Vol-58, No.6, pp1046-1050, Dec. 2003.

#### In Proceedings of International Conferences:

1. Roy Paily, Amitava DasGupta, Nandita DasGupta, Pankaj Misra and Lalit M.Kukreja, Proceedings of the 12<sup>th</sup> International workshop on the Physics of Semiconductor Devices (IWPSD2003), p.480, IIT Madras, December, 2003.
2. Vaibhav G. Marathe, Roy Paily, Nandita DasGupta and Amitava DasGupta, Proceedings of the 12<sup>th</sup> International workshop on the Physics of Semiconductor Devices (IWPSD2003), p.483, IIT Madras, December, 2003.
3. S.N.Barik, P.Misra, Rani J.R, A.K.Srivastava, T.A.Khan, Nandita DasGupta, V.P.M.Pillai, R.V.Nandedkar and L.M.Kukreja, Proceedings of the 12<sup>th</sup> International workshop on the Physics of Semiconductor Devices (IWPSD2003), p.1017, IIT Madras, December, 2003.
4. Nandita DasGupta and M.R.Ravi, Proceedings of International Conference on Communications, Devices & Intelligent Systems (CODIS2004), p.268, Kolkata, January 2004.
5. M.R. Ravi, A. Dasgupta and N. Dasgupta, Silicon nitride and polyimide capping layers on InGASS/INP Pin photodetector after sulfur treatment, International conference on Materials for Advanced Technologies, 7<sup>th</sup> -12<sup>th</sup> Dec 2003, Singapore.

6. Ananda kumar Illam K. guruprasad, N. Dasgupta and A. Dasgupta, Analytical subthreshold current modeling of non-uniformly doped small geometry SOI Mosfets, International conference on Materials for Advanced Technologies, 7<sup>th</sup> -12<sup>th</sup> Dec 2003, Singapore.
7. Roy Pailly, A. Dasgupta, N. Dasgupta, T. Ganguli and lalit M. Kukreja, International conference on Materials for Advanced Technologies, 7<sup>th</sup> -12<sup>th</sup> Dec 2003, Singapore.
8. I. Basu, R.V. Subramanian, A. Mathew, A. Chadha and Enakshi Bhattacharya, Potentiometric Biosensors Based on Silicon and Porous Silicon, Technical Proc. of the 2004 Nanotechnology Conference and Trade Show, March 7-11, 2004, Boston, Vol 1 p 224-227.
9. Enakshi Bhattacharya, L.Helen Anitha Rani, U.Venu Babu, P.R.S.Rao, K.N.Bhat and J. Martin, Effect of Porous Silicon Formation on Stiction in Surface Micromachined MEMS Structures, Proc. of PSST-2004, Fourth International Conference on Porous Semiconductors – Science and Technology, 14-19 March, 2004, Valencia, Spain, to be published
10. K.N. Bhat, Y. Sushma, N. Ramesh babu, B.R.K. Reddy, V. Kumar and K. Sivakumar, International conference on Materials for Advanced Technologies, 7<sup>th</sup> -12<sup>th</sup> Dec 2003, Singapore.
11. V.Pradeepkumar and S. Karmalkar, International conference on Materials for Advanced Technologies, 7<sup>th</sup> -12<sup>th</sup> Dec 2003, Singapore.
12. D. Mahaveer Sathaiya and S. Karmalkar, International conference on Materials for Advanced Technologies, 7<sup>th</sup> -12<sup>th</sup> Dec 2003, Singapore.
13. M.H. Vasantha, D. Mahaveer Sathaiya and S. Karmalkar, International conference on Materials for Advanced Technologies, 7<sup>th</sup> -12<sup>th</sup> Dec 2003, Singapore.
14. R. Sarathi, Roshan Bhattarai and C. Venkateshaiah, Investigations of Breakdown Characteristics of Nitrogen gas under Non-Standard Oscillatory Transient voltage, Powercon-2003, Dec. 2003, USA
15. R. Sarathi, H.S. Kumar, C. Venkateshaiah and A. K.Sundaram, Investigations of the transients due to switching operation of capacitor banks in a Distribution System, Powercon-2003, Dec. 2003, USA
16. R. Sarathi, S.R. Chakravarthi and C. Venkateshaiah, International conference on Materials for Advanced Technologies, 7<sup>th</sup> -12<sup>th</sup> Dec 2003, Singapore.
17. R. Sarathi and R.H. Vora, Investigation into the Effect of Transformer Oil on Polyimide and its Nanocomposites, International conference on Materials for Advanced Technologies, 7<sup>th</sup> -12<sup>th</sup> Dec 2003, Singapore.
18. Sundaram Venka, M.J. Dehghani, R. Aravind and K.M.M. Prabhu, "A Class of M-Channel Reduced Complexity IIR Cosine Modulated Filter Banks", Proc. Of the IEEE Intl. Conference, TENCON- 2003, pp. 1040-1044, October 14-17, 2003, Bangalore, India.
19. U.Venu Babu, L.Helen Anitha Rani, P.R.S.Rao, K.N.Bhat and Enakshi Bhattacharya, Fabrication of Surface Micromachined Cantilever Beams for Stiction Studies, Proc. of IWPSD-2003, Intl. Workshop on Physics of Semiconductor Devices, December 16-20, 2003, IIT, Madras, p 743-745.
20. P. Rajesh kumar, N.Sudha, S. Srinivasan and K. Sridharan, "A pipelined cellular architecture for Euclidean distance transform", Proc. Of the IEEE Intl. Conference, TENCON- 2003, October 14-17, 2003, Bangalore, India.
21. T.K. Priya and K. Sridharan, Hardware design for efficient construction of an environment map for mobile robot navigation, Proc. of the IEEE Intl.Conference, TENCON- 2003, October 14-17, 2003, Bangalore, India.
22. M.G.P. Prasad, S.Dube and K. Sridharan, An efficient fractals-based algorithm for clustering, Proceedings of IEEE Tencon 2003, Oct. 2003
23. K. S. Swarup, R.K. Pancholi, Particle swarm optimization for economic dispatch with line flow and voltage constraints, Proc. of the IEEE Intl. Conference, TENCON- 2003, October 14-17, 2003, Bangalore, India.
24. K. S. Swarup and Kishore Chitte, Power system state estimation using interior point barrier method, Proc. Of the IEEE Intl. Conference, TENCON- 2003, October 14-17, 2003, Bangalore, India.
25. J. Amarnath reddy and K.S. Swarup, Open distributed client server model in an energy management system for power system security, Proc. Of the IEEE Intl. Conference, TENCON- 2003, October 14-17, 2003, Bangalore, India.

#### In Proceedings of National Conferences:

1. Rohit Budhiraja and Bhaskar Ramamurthi, "Modified 3G DECT physical layer with improved multi-rate capability" Proc. of the Nat. Conf. On Communications, Chennai, 2003

2. J.Amarnath reddy and K.S.Swarup, Client Server model Simulation for Energy management system for power system security' in "Power system data Repository and load Research" TSII-12 to TSII-20, organized by Central Power Research Institute Bangalore during 20-21 Nov 2003.
3. Nikunj Vohra and .K.S.Swarup in 'Java based Power System Studies' in "Power system data Repository and load Research" TSIII-44 to TSIII-51, organized by Central Power Research Institute Bangalore during 20-21 Nov 2003.
4. M.P.Selvam and K.S.Swarup-'Object Oriented design and data structure for network topology Processor' in "Power system data Repository and load Research" TSIV-1 to TSIV-8, organized by Central Power Research Institute Bangalore during 20-21 Nov 2003.
5. K.N.Bhat, E. Bhattacharya, A.DasGupta, N.Dasgupta, P.R.S.Rao,V.Vnoth Kumar, K.Sivakumar, S.R.Manjula, S.P. Madahvi, Y.Sushma,R.J.Daniel, Proceedings (in CD) pp1-9, National Workshop on MEMS for Aerospace Applications (MEMSPACE-2004), VSSC , ISRO, Trivandrum, January 16-17, 2004.
6. Enakshi Bhattacharya, U. Venu Babu, L. Helen Anitha Rani, P.R.S. Rao and K.N.Bhat, Proceedings (in CD), National Workshop on MEMS for Aerospace Applications (MEMSPACE-2004), VSSC , ISRO, Trivandrum, January 16-17, 2004.
7. Prem Kumar, Vinod, Ananth and Dr.K.S.Swarup 'Development of an microprocessor based data acquisition system for substation automation.'in "Power system data Repository and load Research" TSIV-9 to TSIV-19,organized by Central Power Research Institute Bangalore during 20-21 Nov 2003.
8. K.N.Bhat, "MEMS and its Applications" Tutorial lecture of three hours duration presented in the Second Annual Symposium – TECIT 2004 ( Trends in Electrical & Electronics , Communication and Information Technologies) , held at the Centre for Electronics Design and Technology (CEDT) , Indian Institute of Science, Bangalore, February 26-27, 2004
9. K.N.Bhat, "MEMS Materials and Applications" Presented in the International Workshop on Crystal Growth and Characterization of Technologically Important Materials, Crystal Growth Centre, Anna University Chennai, February 24-28, 2004
10. K.N.Bhat, E. Bhattacharya, A.DasGupta, N.Dasgupta, P.R.S.Rao,V.Vnoth Kumar, K.Sivakumar, S.R.Manjula, S.P. Madahvi, Y.Sushma,R.J.Daniel," Proceedings (in CD) pp1-9, National Workshop on MEMS for Aerospace Applications (MEMSPACE-2004) , held in VSSC , ISRO, Trivandrum, January 16-17, 2004
11. J Thilak Daniel, K S Swarup 'Transmission Pricing in Open Access under Congestion', IEEE ACE 2003, Pune, December 2003, Electrical Transmission Systems Session (ETS), pp. ETS1.1-ETS1.6.
12. Rohit Kumar Pancholi, K S Swarup,'Particle Swarm Optimization (PSO) for optimal power flow under normal and Contingency conditions', IEEE ACE 2003, Pune, December 2003, ET Session (ET), pp ETS4.1-ETS4.6.
13. Prem Kumar, Vinodh Ananth, K S Swarup, 'Development of Microprocessor based Data Acquisition System for substation Automation', IEEE ACE 2003, Pune, December 2003, Power Quality Session (PQ), pp. PQ4.1-PQ4.6.
14. K V Prasad Reddy, K S Swarup 'ANN based Pattern Recognition Technique for Dynamic Security Assessment with Generation Rescheduling', IEEE ACE 2003, December 2003, Pune, Inter Disciplinary Session 3 (ID3), pp ID3.1-ID3.7.
15. V. R. Avinash, R. Aravind, Session17\_03, NCC 2004: 10th National Conference on Communication. ., Bangalore
16. N. Balamurali, Devendra Jalihal, K. Giridhar, Session1\_01, NCC 2004: 10th National Conference on Communication. ., Bangalore
17. Sheetal Kalyani, K. Giridhar, Session1\_03, NCC 2004: 10th National Conference on Communication., Bangalore.
18. Rahul Rajendran, K. Giridhar, Session7\_01, NCC 2004: 10th National Conference on Communication. ., Bangalore
19. M. R. Raghavendra, K. Giridhar, Session8\_04, NCC 2004: 10th National Conference on Communication., Bangalore.
20. J. Klutto Millesh, K. Giridhar, Devendra Jalihal, Session10\_02, NCC 2004: 10th National Conference on Communication., Bangalore.
21. N. Radhakrishnan, S. Sriram, H. Ramachandran, A. Jhunjunwala, Session9\_01, NCC 2004: 10th National Conference on Communication., Bangalore.
22. S. Ibrahim Sadhar, P. Y. Praveen Kumar, A. N. Rajagopalan, Session5\_03, NCC 2004: 10th National Conference on Communication., Bangalore

23. K. Guha, V. Suchitra, H. Ramachandran, PS02\_06, NCC 2004: 10th National Conference on Communication., Bangalore

**Distinguished Visitors to the Department:**

Sl.No.	Name of the Visitor and Designation	Date of Visit
1	Dr. Paulraj, Stanford University, USA	19 <sup>th</sup> April 2003
2	Dr. Joseph Shapira, President of Comm & Sens, a strategic consulting company, and Chairman of Celletra Ltd, Israel	25 <sup>th</sup> April 2003
3	Mr. Vivek Pawar, Texas Instruments, Bangalore.	30 <sup>th</sup> April 2003
4	Dr.Siew Chee Kheong, Director of Nanyang University, Singapore.	18 <sup>th</sup> June 2003
5	Mr. Alk Tandon, Shyam Telecom, New Delhi.	19 <sup>th</sup> June 2003
6	Mr.Wido Hoville, Vice-President, SR Telecom, Canada	20 <sup>th</sup> June 2003
7	V.B.Taneja, Senior Director, DIT	24 <sup>th</sup> June 2003
8	Shri.A.K. Burwar, Chairman, SBI	15 <sup>th</sup> July 2003
9	Mr. K. Mahadevn, Tamilnadu Telecom, Chennai Telephones	15 <sup>th</sup> July 2003
10	Mr. Mahendra Nahata, Chairman, HFCL, New Delhi	25 <sup>th</sup> July 2003
11	Mr. Ram Shinde, General Manager, Dishnet DSL Ltd	8 <sup>th</sup> Sept. 2003
12	Mr. A. Senthil Kumar , Manager, Dishnet DSL Ltd., Chennai	8 <sup>th</sup> Sept 2003
13	Dr. S. Jaganathan, Senior Staff Engineer, Infineon Technologies,Bangalore.	29 <sup>th</sup> Sept. 2003
14	Dr. Ray Stata, Chairman Analog Devices, USA.	9 <sup>th</sup> Oct. 2003
15	Mr.Raman Puri , Vice Admiral, Navy, New Delhi	15 <sup>th</sup> Nov. 2003
16	Mr.Gopal Srinivasan, Director of TVS Electronics, Chennai	24 <sup>th</sup> Nov. 2003
17	Dr. Shahidarpur, Illinois Institute of Technology, USA	26 <sup>th</sup> Dec. 2003
18	Hon'ble Mr. Justice D.P. Wadhwa, Chairperson Telecom Disputes Settlement & Appellate Tribunal to Chennai	23 <sup>rd</sup> Jan. 2004
19	Prof. Douglas Allen, Dept. of Philosophy, University of Maine, USA.	29 <sup>th</sup> Jan. 2004
20	Mr. Ray Stata, Chairman of Analog Devices, USA	18 <sup>th</sup> Feb. 2004
21	Prof. Holtz, University of wuppertal, Germany	24 <sup>th</sup> Feb. 2004
22	Mr. Kamal Taori, Secretary to planning	11 <sup>th</sup> March 2004
23	Dr. Joseph Shapira, Chairman of Celletra Ltd, Israel	16 <sup>th</sup> March 2004
24	Mr. Kunal Bajaj, Telecom Regulatory Authority of India, New Delhi.	31 <sup>st</sup> March 2004

## 4.8 DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES

### 4.8.1. Introduction

The Department of Humanities and Social Sciences has existed from 1959, when the Institute was established. This was in tune with the recommendations of the Niranjana Sarkar Commission, which designed the format of the IITs. In 1969, the Department introduced two Postgraduate Programmes (M.Tech) one each in Industrial Engineering and in Industrial Management. The Industrial Engineering Programme was merged with the Industrial Management Programme in 1981. The Department has started an MBA programme replacing the M.Tech (IM) programme from the Academic year July 2001. The Department also offers research programmes (Ph.D) in the various disciplines of Humanities and Social Sciences and in the major functional areas of Management. In addition, the Department offers a masters' level research programme (MS) in Management. The major areas in the Department are teaching and research:

- Undergraduate courses in Humanities and Social Sciences
- M.B.A. Programme
- M.S. Programme in Production and Operations Management, Supply Chain Management, Financial Management, Business Policy/Strategic Management, Marketing Management, Organizational Behaviour, Personnel Management and Industrial Relations, Entrepreneurship, Technology Management, Project Management, Knowledge Management, Applied Decision Analysis, Systems Analysis and Modelling, Public Systems Management, Applied Economics, Applied Sociology, Business History, Business Communication, Environmental Management, Financial Engineering
- Ph.D Programme in British, American, Commonwealth Literature New Literatures in English, Linguistics, Sociolinguistics, Psycholinguistics, English Language Teaching (ELT), German Studies, Modern Indian History, Socio-Economic and Cultural Developments, Economics, Psychology, Sociology, Science and Technology Policy Studies, Environment and Natural Resources Policy, Development Studies, Production and Operations Management, Supply Chain Management, Financial Management, Business Policy/Strategic Management, Marketing Management, Organizational Behaviour, Personnel Management and Industrial Relations, Entrepreneurship, Technology Management, Project Management, Knowledge Management, Applied Decision Analysis, Systems Analysis and Modeling, Public Systems Management, Applied Economics, Applied Sociology, Business History, Business Communication, Environmental Management, Financial Engineering

### 4.8.2. Academic Programmes:

#### New Courses Introduced:

S.No.	Course No.	Title
1.	HS212	Science, Technology, Medicine in India: A Historical Perspective
2.	HS301	Creative Writing
4.	HS304	Religion and Modern Science
5.	HS305	Professional Ethics
6.	HS308	American Studies I
7.	HS309	Short Story Classics
8.	HS313	Introduction to Indian Philosophy
9.	HS341	Modern Science in India
10.	HS630	African and African- American Literatures

#### Students on Roll:

Sl.No	Programme	I Year	II Year & others	III Year	IV Year	V Year	Total
1.	MBA	38	39	-	-	-	77
2.	M.S.	3	6	3	3	-	15
3.	Ph.D	23	18	12	1	5	59
	<b>Total</b>	<b>91</b>	<b>63</b>	<b>15</b>	<b>4</b>	<b>5</b>	<b>151</b>

#### Name of student/scholar attended conference/seminar and symposia abroad/India:

S.No.	Name of the Student	Programme	Name of the Conference /seminar/symposia	Date and Venue
1.	Mrs. Lata Dayaram, Ms. G. Revathi, Mr. Ravi Kumar, Ms. Elizabeth Devasiya, Ms.K.S. Rajeswari, Ms. Kasi Komala Ayangar, Mr. Nagendra Kumar and Ms. Padma	UGC Sponsored National Conference	"Management in transition"	Feb.21 <sup>st</sup> & 22 <sup>nd</sup> 2003

**4.8.3 Faculty and their activities:****Faculty:**

<b>Name and Qualifications</b>	<b>Major Area of Specialisation</b>
<b>Professors:</b>	
R.N. Anantharaman, Ph.D (Bangalore) (Head)	Organisational and Consumer Behaviour, Human Resources Management, Industrial Relations
Shreesh Chaudhary, Ph.D (CIEFL Hyderabad)	Theoretical Linguistics, ELT & Need Based Courses in English
L.S.Ganesh, Ph.D (IIT Madras)	Technology Management, Project Management, Applied Systems Analysis and Decision Making
Evangeline Manickam, Ph.D (Madras)	American Literature, English, French
Malathy Duraisamy, Ph.D (Madras)	Applied Economics/Econometrics Labour Economics/Economics of Science and Technology
V.R.Muraleedharan, Ph.D (IIT Madras)	Health Economics/Public Policy/History of Healthcare in South India
T.T.Narendran, Ph.D. (IIT Madras)	Operations Management, Decision Support Systems, Group Technology
C.Rajendran, Ph.D (IIT Madras)	Production Management, Scheduling, Computer Simulation
B.Subramanian, Ph.D (Karnataka)	German Studies, Philosophy
<b>Associate Professors:</b>	
Elizabeth Nainan Kurian, Ph.D (IIT Madras)	American Fiction
S. Jayachandran, Ph.D (IIT Madras)	Marketing Management
T.J.Kamalanabhan, Ph.D (Madras)	Industrial Psychology, Organisational Behaviour
G. Srinivasan, Ph.D (IIT Madras)	Operations Management, Group Technology, Production Management, Operations Research
M. Thenmozhi, Ph.D (Madras)	Financial Management, International Business
<b>Assistant Professors:</b>	
Devaki Reddy, Ph.D (JNU)	English, Sociolinguistics, ELT
M.Durgaprasada Rao, M.B.A. (Andhra)	Management Accounting, General Management
R Madhumathi, Ph.D (Madras)	Financial Management and Accounting
S. Mohan, M.A. (Madras)	English, Science Fiction, Technical Report Writing Business Communication Indian Writing in English
Prema Rajagopalan, Ph.D (IIT Kanpur)	Sociology of Science & Technology/Development/ Women in Science & Technology
D. Veeraraghavan, Ph.D (IIT Madras)	Social and Economic History, Labour Movements
K. Srilata, Ph.D	African Literature, Cultural Studies, Creative Writing
John Bosco Lourdusamy, D.Phil (Oxon)	History of Science; Science Technology & Society

Brahme Milind, Ph.D (JNU)	German Studies, Comparative Literature & Modern Marathi Literature
G Arun Kumar, Ph. D (IISc)	Finance
Debashish Acharya, Ph.D (Univ. of Hyd.)	Macro & Monetary Economic, International Trade & Finance
N. Sreekumar, Ph.D (Univ. of Hyd.)	Philosophy
G. Ramasubramaniam, Ph.D (MIT)	Quantitative Methods, Applications in Customer Management, Service Quality, Transportation
<b>TTK Chair</b>	
P. Vijayaraghavan, Ph.D, (IIM)	Marketing
<b>DAAD Visiting Faculty</b>	
Ms Susanne Romanowski	German
<b>Part-time Faculty</b>	
Ms. Pranjali Bandhu	German
Ms Veena Selvam	English
Ms Aysha Viswamohan	English

**Short-term Courses/Workshops/Seminar/Symposia/Conferences Organized by the faculty members:**

S.No.	Co-ordinator	Title	Period
1.	Dr M Thenmozhi/ Dr T J Kamalanabhan  Dr. M. Thenmozhi  Dr M Thenmozhi	Small Industries Management Programme  TAP: Strategy Formulation in a Competitive Scenario  Manufacturing Sector competitiveness in the Globalised Scenario – A Policy Perspective and International Experiences. Technology Appreciation Programme in "Strategy Formulation in a Competitive Scenario"	May19th to Aug-22 <sup>nd</sup>  May 22 2003  Sept. 25 <sup>th</sup> 03  April 22 <sup>nd</sup> 03
2.	Dr. C. Rajendran	Simulation Models in Engineering and Technology	Sept.9 <sup>th</sup> to 20 <sup>th</sup> 2003
3.	Dr. B. Subramanian	Rethinking the idea of Europe, Culture Studies as European Studies	23-2-2004 to 25-2-2004
4.	Dr. V. R. Muraleedharan	Health Systems Development One day Conference on "Transplantation of Human Organs Act 1994-Challenges and Policy Options"  "Introducing the National Health Insurance Scheme for the Poor" at New Delhi Tamil Nadu Health System Development Proj	25.2.2003 to 01.03.2003 8 <sup>th</sup> March 2003  22 <sup>nd</sup> March 2003  18 <sup>th</sup> –20 <sup>th</sup> Feb'03
5.	Dr. T.J. Kamalanabhan	Training Programme Organized on "Creativity and Problem Solving" at Cochin Port Trust, Cochin. Human relationship skills for Managers	11 <sup>th</sup> to 14 <sup>th</sup> August 2003  7 <sup>th</sup> –11 <sup>th</sup> April'03
6.	Dr G Ramasubramanian Dr. G. Srinivasan	"Data Mining & Warehousing" – 5 day Short Term Training	October 2003
7.	Dr Devaki Reddy	English Lang. Teaching	17 <sup>th</sup> – 22 <sup>nd</sup> Nov'03

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

S.No	Co-ordinator	Title	Period
1.	Dr. M. Thenmozhi	Debt Market: Trends & Practices	August '03
2.	Dr. B. Subramanian	National Conference on Yoga	Jan 15 <sup>th</sup> & 16 <sup>th</sup> 2004
3.	Dr. Milind Brahme	Foreign language Teaching in India-Millennium Implications-CIEFL, Shillong (Paper presented) Landeskunde in DaF Unt-DACHL-IND + M.S. Univ. Baroda (Panel discussion)	21-10-03 to 23.10.03 28.01.04 to 31.01.04



S.No	Co-ordinator	Title	Period
4.	Dr. Sreekumar	Science of Consciousness: Wisdom, Spirituality and Culture Philosophy in the new Millennium : Problems and Prospects	10 <sup>th</sup> & 12 <sup>th</sup> March 2004 16 <sup>th</sup> & 17 <sup>th</sup> March 2004
5.	Dr. John B. Lourdasamy	Science and Religion Two-Day National Seminar on Language Education & Literacy	13 <sup>th</sup> Feb.2004 9 <sup>th</sup> & 10 <sup>th</sup> Feb.2003
6.	Dr. Devaki Reddy	National Seminar on Language Education & Literacy (Presented the paper titled "Linguistic Awareness & Language Learning") "National Seminar on Undergraduate Engineering Education in India" "International Conference on Women in the Digital Era: Opportunities & Challenges" held at Annamalai University	9 <sup>th</sup> & 10 <sup>th</sup> Feb.2003  19 <sup>th</sup> September 2003 10-12 December 2003
7.	Dr. Prema Rajagopalan	XXIX All India Sociological Conference (Maharana Pratap University of Agriculture & Technology, Udaipur)	21-23 <sup>rd</sup> December 2003
8.	Dr. Debashish Acharya	ICFAI Conference on Business and Finance with University of Philadelphia (ICFAI – Hyderabad)	15 <sup>th</sup> & 16 <sup>th</sup> Dec.2003
9.	Dr. C. Rajendran	International Conference on Digital Aided Modeling & Simulation-DAMS 2003 UNESCO Regional Trg. On Simulation Modl .in Eng.& Tech.	6 <sup>th</sup> to 8 <sup>th</sup> Jan.2003  9 <sup>th</sup> Sept to 20 <sup>th</sup> Sept.2003
10.	Dr. S. Jayachandran	4 <sup>th</sup> Residential National Convention on Reservation Policy (Organized by NIPA @ Mysore)	9 <sup>th</sup> to 11 <sup>th</sup> Jan.2003
11.	Dr. Evangeline Manickam	XXV Annual Congress of the Indian Association for American Studies @ M.L. Sukhadia University, Udaipur (Presented a paper titled "Emancipation, Empowerment & the south Asian expatriate Woman: a reading of Bapsi Sidhwa's American Brat	16 <sup>th</sup> to 18 <sup>th</sup> Jan.2003
12.	Dr. V. R. Muraleedharan	Workshop on "Incorporating Environmental Concepts in Management School Curriculum @ IIM, Bangalore Workshop on the topic of "Health Service Regulation" organized by London School of Hygiene & Tropical Medicine, London International Seminar on "Gender in Medical Text Books" organized by Achutha Menon Centre in Health Sciences Studies, TVM. National Public Hearing on Rights to Health Care "Implementation of Transplantation of Human Organs Act in Tamilnadu" Two day National Consultation on Community Health Policy in India organized by UNDP	7 <sup>th</sup> & 8 <sup>th</sup> Feb.2003  21.05.2003 to 23.05.2003  15 <sup>th</sup> and 18 <sup>th</sup> July 2003  6 <sup>th</sup> Sept;03 18 <sup>th</sup> Oct. 2003  Mysore 30 <sup>th</sup> & 31 <sup>st</sup> Oct.2003
13.	Dr. G. Srinivasan	GT/CM World Symposium 2003 at Columbus, Ohio, USA	28.07.2003 to 30.07.2003
14.	Dr. L.S. Ganesh	Project Management  Creativity and Problem Solving  TATA Teleservices Ltd., KLK, Estate Fateh Maidan	12 <sup>th</sup> Sept. to 13 <sup>th</sup> Sept. 2003 31 <sup>st</sup> Oct. to 1 <sup>st</sup> Nov. 2003 17 <sup>th</sup> April to 18 <sup>th</sup> April'03
15.	Dr R Madhumathi	Test of Equality and Efficiency on VAT Computation Methods	Indian Accounting Assoc, Calcutta

**Special Lectures delivered by the faculty in other Institutions:**

S.No.	Name of Faculty	Topic of Lecture	Venue and Date
1.	Dr. M. Thenmozhi	Working Capital Management	Anna Institute of Management – Oct.2003

S.No.	Name of Faculty	Topic of Lecture	Venue and Date
		Operation research Applications in Finance	Mahatma Gandhi University, Kottayam – Aug. 16 <sup>th</sup> 2003
		Towards sustainable Manufacturing Superiority	Mgmt Assoc. & SIEMA Coimbatore, 29 <sup>th</sup> Nov'03
		Cluster analysis & Factor Analysis for data mining, STTP	Periyar Mani-ammai College of Technology for Women, Thanjavur 24 <sup>th</sup> July 2003
		Knowledge Management (ICWA)	30 <sup>th</sup> May 2003
		Economic Value Addition Cost Carnival 2004	ICWA, 25 <sup>th</sup> -26 <sup>th</sup> March 2004
2.	Dr. R. Madhumathi	Research Methodology	MOP Vaishanava College for Women
3.	Dr. B. Subramanian	Cultura Animi	Kavivalya Dham Lonarla, Jan.15 <sup>th</sup> 2004
		INDISCHE POLITISCHE PHILOSOPHIE HEVTE	TUDRESDEN INSTITUT FOR PHILOSOPHIE 14 <sup>TH</sup> Sep. 2003
		GREEN CARD vs GREEN BACK Resource Person	The Federal Foreign Office, Germany at Berlin 17 <sup>th</sup> Sept.2003
4.	Dr. S. Devaki Reddy	English Language Teaching (Organized by Hornby Trust, U.K.	BCL, Chennai 17-22 <sup>nd</sup> Nov.2003
5.	Dr. K. Sriyata	Translation Theory	University of Madras- Refresher Course for College Faculty April 2003
6.	Dr. Sreekumar	Philosophical Developments in the West-An Overview	Government Brennen College, 18 <sup>th</sup> Dec.'03 Thalassery, Kerala
7.	Dr. Shreesh Chaudhary	Teaching & Testing Speaking	Academic Staff College-UGC Bharathiar University, Coimbatore
8.	Dr. Prema Rajagopalan	Built Environment & Society	National Institute of Fashion Technology, Chennai (22 <sup>nd</sup> March 2004)
		Women in the Built Environment	Periyar Maniammai College of Technology for Women, Thanjavur (26 <sup>th</sup> March 2004)
9.	Dr. T.J. Kamalanabhan	Communication /Better Skills	Airport Authority of India BSNL, April'03
		Interpersonal Skills Selection Process	ICWA Institute, Feb.'03
10.	Dr. Debashish Acharya	Monetary Policy Issues	Academic Staff College, Bangalore University, Bir. on 8 <sup>th</sup> Dec. 2003

#### Visits Abroad by Faculty:

S.No.	Name of Faculty	Country Visited	Date	Purpose of Visit
1.	Dr. M. Thenmozhi	Banff, Calgary and Canada	July 2003	Presenting a paper Titled Micro Finance determinants of Non-traditional debt financing"
2.	Dr. C. Rajendran	Germany	June-July 2003	Alexander Van Humboldt Fellowship
3.	Dr. B. Subramanian	Germany	Sept.2003	Moderator at the Indo-German Media Dialogue Berlin 17 <sup>th</sup> Sept. 2003
4.	Dr. T.J. Kamalanabhan	Australia & Malaysia	June/July 2003	Conference at Australia (Paper presented) Invitation from KVTPM & MMU at Malaysia
5.	Dr G Srinivasan	USA	July 28 <sup>th</sup> – August 2 <sup>nd</sup> '03	Paper presentation & visited Universities & Industries
6.	Dr V R Muraleedharan	London	May 21 <sup>st</sup> – May 23 <sup>rd</sup> '03	Workshop on Health Service Regulation

**Honours and Awards obtained:**

S.No	Name of Faculty	Name of Award	Awarded by	Awarded for	Date of award
1.	Dr. M. Thenmozhi	Rs. 1 lakh & Citation	Shri Atal Bihari Vajpayee	For developing the best Manufacturing Policy(organized by FICCI & WTI, Delhi)	April 2003
2.	Dr. M. Thenmozhi	Cash Prize		Research Papers Presented at UTI, Mumbai	December 2003
3.	Mr. B. Harikrishnan	Cash award for Rs.2000/.	Justice S. Ranganathan	TAG QUIZ-2003	11 <sup>th</sup> Jan.2003
4.	MBA Students			Manaquest 2003	
5.	MBA Students		Anna University	ADPROBE 2003	28 <sup>th</sup> March '03
6.	MBA Student	Overall Trophy	PSG Institute of Management	Management Fest	15 <sup>th</sup> & 16 <sup>th</sup> March 2003
7.	Mr Debashish Gosh (MBA) & Manoj Sharma (B.Tech)	Ist Prize	IIT Bombay	The event "The Great Indian Advt. Bazar	8 <sup>th</sup> & 9 <sup>th</sup> Nov;03
8.	Mayamayan Nair, Ronobijay Bhaumik Vipin Pandey	Overall Championship for Best Marketing Team & Best Systems Team	Amrita Inst. of Mgmt. Coimb.	Mgmt. Events	21&22 <sup>nd</sup> Nov'03

**Books/Monographs authored or co-authored**

Sl.No.	Name(s) of Author (s)	Title of Text Book/Monograph	Publisher
1.	Dr. K. Srilata	The other half of the Coconut: Women writing self respect history	Kali for Women/Zubaan New Delhi
2.	Dr. Shreesh Chaudhary Shri Kudchedkar S	Readings in ELT in India	Orient Longman
3.	Dr. S. Devaki Reddy	Teachers' guidelines on Spoken English-Speak English -8	Orient Longman
4.	Dr. B. Subramanian	Anarchist Apartheid, Towards a Study of the Weltanschauung of tradition Unipluralism Goethe Society of India, Year book 2001-2002	

**Fellowships of Academies and Professional Societies:**

Sl.No.	Name of Faculty	Professional Society	Academic Society	Level Fellow	Year of Admission
1.	Dr. S. Devaki Reddy	Indian Reading Association	Member of IATEFL		2003-2004
2.	Prof.V R Muraleedharan	World Bank Assisted Health system Devlp. Project	Govt. of TN	Expert Adviser	Dec'03
3.	Dr. John Bosco Lourdusamy	of the International Publication "Journal of Science Education and Technology"		Editorial Board Member	March'03

**4.8.4 Design and Development Activities:****New Facilities added or major equipment procured through project funds:**

Language Laboratory: 30 Booth Tandberg/Learning machine, video, cine projector, self access audio facility, instruction material for spoken English & German

Mullimedia Lab: It has a file server with six nodes besides other computer peripherals

**MBA Laboratory:**

1. Pentium IV Windows NT server
2. Internet facility -50 nodes
3. Other computer peripherals

#### 4.8.5 Research and Consultancy

1. Prof. C Rajendran has permitted to take up collaboration research work at Monash Univ., Malaysia from 07.05.2003 to 30.06.2003 under professional visit.

#### Sponsored Research Projects:

Sl.No.	Title	Period	Funding Agency	Amount (in lakhs)	Co-ordinators
1.	CD-Cell Project	2003-2004	CCE	1.40	Dr. R. Madhumathi
2.	Domestic Financial Market Integration in India: Some Post-Liberalization Issues and Evidence	07.05.2003		1.00	Dr. Debashish Acharya
3.	Psychosocial aspects of Women Entrepreneurs	3 years	IIT	8.50	Dr. T.J. Kamalanabhan Dr. R.N. Anatharaman Dr. D. Malathy
4.	Modernization & Removal of Obsolescence	01.04.2003 to 31.03.2005	MHRD		Dr. G. Srinivasan
5.	Devlp. of Computer Aided Instructional Module on "Financial Services"	One year	CCE	1.30	Dr. M. Thenmozhi
6.	Pvt. Health Sector in T.N.	5mnts	DANIDA	9.00	Dr V R Muraleedharan

#### Research Publications

Total No. of papers published in Refereed National Journals ✓	..	13
Total No. of papers published in Refereed International Journals	..	13
Total No. of papers presented in National Conference	..	3
Total No. of papers presented in International Conference	..	10

#### In Refereed National Journals:

1. Thenmozhi, M. and Fareed Jaman, "Competitive Advantage for Players in mutual fund industry: A study based on the perceptions of Mutual funds", Management and Accounting research, April-June,2002, Vol.5.No.4.pp.57-68
2. Thenmozhi, M, "Towards Sustainable Manufacturing superiority: A Comprehensive Manufacturing Sector policy Framework", Academic foundation, New Delhi, 2003.pp. 195-352
3. Thenmozhi, M., "Innovation in Technology Financing in India", in Globalisation, Flexibility and Competitiveness: A Technology Management Perspective, Sushil & K Momaya, (eds), Vikas Publishing house, New Delhi, 2002.
4. Dr. Sreekumar - Article titled Global Trade and Intellectual Property Rights: Some Ethical Issues in the book Applied Ethics, edited by Dr. A. P. Dubey, and published by Northern Book Centre, New Delhi.
5. Dr. Sreekumar - Article titled Wittgenstein on Religion: Reading with Suresh Chandra in the volume entitled Suresh Chandra: Thoughts and Works, edited by Prof. R. C. Pradhan and Published by the Indian Council of Philosophical Research, New Delhi.
6. Dr. Sreekumar-Article titled Indian Philosophy and regional languages, (originally in Malayalam in the journal Pachakkuthira (combined issue of 2003 October-December and 2004 January-March)
7. Dr. Shreesh Chaudhary – "Language Policy of the East India Company 1600-1857 A case study in Interdisciplinary Research" in Studies in Humanities & Social Sciences – Vol.IX, No.2, Winter 2002 – PP:65-78
8. Dr. S. Devaki Reddy, "Women's Empowerment and Language" was published in the proceedings of 'International Conference on Women in the Digital Era: Opportunities and Challenges'.
9. Dr. D. Malathy & L.V.L.N. Sharma "Market Efficiency in Indian Stock, Forex and Call Money Markets". Review of Development and Change Vol.III No.1 Jan-June 2003, pp.25-40
10. Dr. D. Malathy & Dr. P. Duraiswamy – Public expenditure and Grants-in- Aid for Secondary Education in Tamil Nadu (Journal of Educational Planning and Administration ) Vol.XVIII No.4, Oct.2003, pp 449-480.
11. Dr. T.J. Kamalanabhan and Lata Dayaram-Unearthed: The Other side of group cohesiveness, Journal of Social Sciences-Dec.2003
12. Dr T J Kamalanabhan and Dr I R Nagaraj, Research issues on Strategic HRM and Organisational performance in Management & Change Journal-Vol.7, No.1 (2003).

**In Refereed International Journals:**

1. Framinan, J.M., Leisten, R., and Rajendran, C., "Different initial sequences for the heuristic of Nawaz, Ensore and Ham to minimize makespan, idle time or total flow-time in the static permutation flowshop sequencing problem", *International Journal of Production Research*, Vol.41, No.1, 21-148 (2003).
2. Ramanan, G.V., and Rajendran, C., "Scheduling in kanban-controlled flowshops to minimize the makespan of containers" *International Journal of Advanced Manufacturing Technology*, Vol.21, 348-354 (2003).
3. Rajendran, C., and Ziegler, H., "Scheduling to minimize the sum of weighted flowtime and weighted tardiness of jobs in a flowshop with sequence-dependent setup times". *European Journal of Operational Research*, Vol.149, 513-522(2003).
4. George, A.P., Rajendran, C., and Ghosh, S., "An analytical-iterative clustering algorithm for cell formation in cellular manufacturing systems with ordinal-level and ratio-level data". *International Journal of Advanced Manufacturing Technology*, Vol.22, 125-133(2003).
5. Issac, G., Rajendran, C., and Anatharaman, R.N., "Do quality certifications improve the software industry's operational performance?" *Software Quality Professional*, Vol.6, No.1, 30-37 (2003).
6. Sureshchander, G.S., Rajendran, C., and Anatharaman, R.N., "Customer Perceptions of service quality in the banking sector of a developing economy: a critical analysis" *International Journal of Bank Marketing*, Vol.21, No.5, 233-242 (2003).
7. Sureshchander, G.S., Rajendran, C., and Anatharaman, R.N., "The influence of total quality service age on quality and operational performance" *Total Quality Management & Business Excellence*, Vol.14, No.9, 1033-1052 (2003).
8. Issac, G., Rajendran, C., and Anatharaman, R.N., "Determinants of software quality customer's perspective" *Total Quality Management & Business Excellence*, Vol.14, No.9, 1053-1070 (2003).
9. Thiagarajan, S., and Rajendran, C., "Scheduling in dynamic assembly job-shops with jobs having different holding and tardiness costs". *International Journal of Production Research*, Vol.41, No.18, 4453-4486 (2003).
10. Mani, T.P. Murugan, N., and Rajendran, C., "TQM is a must for success, but not sufficient for survival: A conceptual framework as contemplated in ancient Tamil Literature in India", *Total Quality Management*, Vol.14, No.4, 605-636 (2003)
11. Mani, T.P. Murugan, N., and Rajendran, C., "Classical approach to contemporary TQM: An integrated conceptual TQM model as perceived in Tamil classical literature". *Total Quality Management*, Vol.14, No.5, 605-636(2003).
12. Dr R N Anantharaman and A K Paul "Impact of People Management Practices on organizational performance: analysis of a casual model" *International Journal of Human Resources Management* Vol.4, No.7, 1246 – 1266.
13. Dr. John Bosco Lourdasamy- "The Indian Association for Cultivation of Science: A Tortuous Tryst with Modern Science; *Journal of Science Education and Technology* – Vol.12, No.4, Dec.2003.

**In Proceedings of National Conferences:**

1. Rakesh Gupta & Thenmozhi, M, Determinants of Capital Structure Choices of Indian manufacturing firms in the last decade of Liberalisation, UTI Institute of Capital market Conference, December, 2003.
2. Manish Kumar and Thenmozhi, M. Rajendran, C., "Neural Network based forecasting of daily returns of exchange rate", UTI Institute of Capital Markets Conference, December, 2003.
3. Sony Thomas, Thenmozhi M., "Expiration Day Effects of Nifty Index Futures on Nifty: Evidence from Indian Market", UTI Institute of Capital Markets Conference, December 2003.

**In Proceedings of International Conferences:**

1. Thenmozhi, M, L.V. L.N. Sarma and S.K. Preethi, "Micro finance determinants of Non-traditional debt financing", *International Conference on Financial Engineering and Applications*, Canada, Proceedings, pp-24-33 July 2003.
2. L.V.L.N. Sarma, Thenmozhi M., Preethi S.K., "Effect of Non-traditional debt on financial risk: Evidence from Indian Manufacturing firms", *International Conference on Business and Finance*, Hyderabad, December 2003.
3. Sony Thomas, Thenmozhi M., Impact of Index Derivatives on S&P CNX Nifty Volatility, Information Efficiency and Expiration Effects, *International Conference on Business and Finance*, Hyderabad, December 2003.
4. Manish Kumar, Thenmozhi, M., Rajendran, C., Forecasting Daily Returns of Exchange Rates using Artificial Neural Network and ARIMA Model, *International Conference on Business and Finance*, Hyderabad, December 2003.

5. Dr. Debabshish Acharya - Impact of ADR listing on Asset Prices in Indian Market & Market Volatility – ICFAIIF & ICFAI Conference Proceedings (Forth-Coming) with Dr. G. Arun Kumar
6. Dr. D. Malathy and Dr. P. Duraiswamy " Returns to Investment in Education and Regional Development in India" – Paper presented in the UKFIET Oxford International Conference an Education and Development on the State of Education Quantity, Quality and – 9-11 September 2003, Oxford University, UK (Presented by co-author)
7. Dr R N Anantharaman and K S Rajeswari, "Role of personality factors as moderators in the relationship between stress and strain "COSMOR 20 – 21 Sept'03, IISC Bangalore
8. Rajeswari K S and Ananthraman R N (2003)"Development Scale to measure stress among Software professionals – A factor analytic study" (pp34-43). In proceedings of ACM SIGCPR Conference, Philadelphia USA.
9. T J Kamalanabhan and I R Nagaraj, Vth International Conference on Industrial and Organizational Psychology, Topic: Impact of Stratetgic Human Resource Practices on Organizational Performance" during 26<sup>th</sup> – 29<sup>th</sup> Jan'03 at Melbourne, Australia.
10. T J Kamalanabhan and R Ravikumar, Xth International Conference on Industrial Conference on Advances in Management, Topic: Employee reactions on and experiences of organizational change: The role and commitment to Change" during July 16<sup>th</sup> – 19<sup>th</sup> 2003 at Seoul, Korea.

#### Distinguished Visitors to the Department

Sl.No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1.	Dr Sakthivel, Professor Bowling Green State Univ., USA	4 <sup>th</sup> April, 2003	For Discussion
2.	Prof.Dr.Bernhard Irrgang DAAD Visiting Faculty	27 <sup>th</sup> Jan – 3 <sup>rd</sup> Feb'03	Series of Guest Lectures

#### 4.8.6 Other Activities

1. Article in the year book of the Goethe Society of India 2002- "Katka's Trial & G.A. Kulkarni's Iskilar-Self Reflectas Necessity"
2. Dr R N Anantharaman and K S Rajeswari (2002) Publisher a chapter titled "Identification of probable antecedent and process variables in the study of stress in Information system personnel" p265 – 275) In the book Psychology in India – intersecting crossroads U – Vindya (ED)– Concept publishing Co. New Delhi.
3. Dr. B. Subramanian- Edited the GSI Yearbook 2001-2002
4. Dr. Milind Brahme – Elected Joint Secretary of the Goethe Society of India in Feb.2004.
5. Dr. K. Srilata – reading & publishing poetry & short stories
6. Dr. N Sreekumar – Publish articles in newspapers and periodicals in English and Malayalam.
7. Dr. John Bosco Lourdusamy – served as examiner for M.A. and M.Phil courses in the Dept. of History, Pondicherry University.
8. Dr. John Bosco Lourdusamy – Chosen as Editorial Board Member of the International Publication "Journal of Science Education and Technology"
9. Dr M Thenmozhi, Chaired the session on "Research Papers in Finance" at the National Conference on Business Research at PSG Tech. Coimbatore on 29<sup>th</sup> Nov.'03.
10. Dr B Subramanian has taken over charge as Coordinator – NSS for a period of two years w.e.f May 2003. In addition Dr John Bosco Lourdusamy, Assistant Professor of this Department has been requested to be part of the NSS Coordinating Team.
11. Dr S Devaki Reddy has been commissioned by Orient Longman to prepare material for teachers to teach spoken English at the high-school level.
12. Prof. L S Ganesh visited Bombay from 1<sup>st</sup> to 10<sup>th</sup> October, 2003 to contact various industries for the MBA placement activities along with 7 MBA students.
13. Dr K Srilata, Dr John Bosco Lourdusamy, Dr Milind Brahme, Dr N Sreekumar and Dr G Arunkumar has joined as Assistant Professor during 2003.

## 4.9 DEPARTMENT OF MATHEMATICS

### 4.9.1. Introduction:

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

- |  |   |
|--|---|
| 1. Algebra and its applications                  | 15. Inventory and Reliability                   |
| 2. Applied Probability                           | 16. Mathematical logic & Applications           |
| 3. Approximation Theory                          | 17. Mathematical Modelling                      |
| 4. Computational Fluid Mechanics                 | 18. Mathematical Physics                        |
| 5. Continuum Mechanics                           | 19. Nonlinear Analysis                          |
| 6. Coding Theory                                 | 20. Numerical Analysis                          |
| 7. Complex Analysis                              | 21. Operations Research                         |
| 8. Data Networks                                 | 22. Operator Theory                             |
| 9. Differential Equations and Ill-Posed problems | 23. Queueing Theory                             |
| 10. Fluid Mechanics                              | 24. Statistical Quality Control                 |
| 11. Functional Analysis                          | 25. Stochastic Processes and their applications |
| 12. Fuzzy Sets and Systems                       | 26. Theoretical Computer Science                |
| 13. Graph Theory and Combinatorics               | 27. Wavelets and their applications             |
| 14. Harmonic Analysis                            |   |

### 4.9.2. Academic Programmes:

Students on Roll:

Programme	I Year	II Year & others	III Year	IV Year	V Year & Others	Total
M.Sc.	29	27	-	-	-	57
M.Tech	8	7	-	-	-	15
Ph.D	12	11	7	5	8	43
Total	49	45	7	5	8	115

Names of Student/Scholar attend Conferences / Seminars and Symposia abroad/India:

Sl. No.	Name of the Student	Programme	Name of the Conference/Seminar/Symposia/Workshop	Date and Venue
<b>Conferences :</b>				
1.	Dr. Pravati Sahoo Post Doctoral Fellow	National Conference	Analysis and Related Topics in Mathematics	May 26-27, 2003 Bhubaneswar Orissa
2.	Ms. Sunanda Naik	National Conference	Analysis and Related Topics in Mathematics	May 26-27, 2003 Bhubaneswar Orissa
3.	Mr. K. Lakshmanan	International Conference	Descriptive Complexity of Formal Systems 2003 (DCFS 2003)	July 12-14, 2003 Budapest Hungary
4.	Mr. R. Balaji	Conference	Annual Conference of Indian Mathematical Society	December 25-29, 2003 University of Lucknow
		International Conference	International Conference on Operations Research 2004	January 8-10, 2004 ISI, Kolkatta
5.	Mr. H. Ramesh	Conference	23 <sup>rd</sup> Foundation of Software Technology & Theoretical Computer Science	December 15-17, 2003 IIT Bombay Mumbai
Sl. No.	Name of the Student	Programme	Name of the Conference/Seminar/	Date and Venue

Sl. No.	Name of the Student	Programme	Name of the Conference/Seminar/Symposia/Workshop	Date and Venue
6.	Mr. Antony Vijesh	International Conference	Analysis & Applications	December 22-25, 2003 BHU, Varanasi
7.	Dr.B.Uma Post Doctoral Fellow	International Conference	Nonlinear Phenomena	January 5-10, 2004 IISc, Bangalore
8.	Mr. D.Anilkumar	International Conference	SIAM Student Conference	Feb 3-4, 2004, University of Florida, USA
<b>Symposia :</b>				
9.	Mr. Moon Kumar Chetry Mr. Y.I. Sowri Raju Mr. K. Paramasivam	International Symposium	Theory of Rings and Modules	May 7-8, 2003 Aligarh Muslim University, Aligarh
10.	Mr. T.Johnson	National Symposium	National Symposium on Mathematical Methods and Applications	December 22, 2003 IIT Madras
<b>Workshop:</b>				
11.	Mr.K. Lakshmanan	Workshop	Membrane Computing 2003 (WMC 2003)	July 17-22, 2003 Taragona, Spain
12.	Mr. D. Anil Kumar	Workshop	Partial Differential Equations – Viscosity Solutions and Applications	July 21-August 8, 2003 IISc, Bangalore
13.	Mr. D.Sukumar Mr. Swadesh Kumar Sahoo Mr.V.Sankar Raj Mr.A.Anony Eldred Mr.G. Ramesh	Workshop	Joint India AMS Workshop and Conference	December 11-17, 2003 ISI, Bangalore
14.	Mr.V.Murugan	Workshop	Ultrametric Analysis and Applications (UMAAA)	March 3-7, 2004 RKM Vivekananda College, Chennai
15.	Mr. R.Balaji Ms. T.Dimple	Workshop	Optimization and Risk Modeling	December 17-23, 2003 IIT Bombay, Mumbai
16.	Mr. D.Sukumar Mr.V.Sankar Raj Mr.A.Anony Eldred Mr.G. Ramesh Ms. Pallavi Mahale Mr.E.Shine Lal Mr. P.Ravi Shankar	Symposium	Recent Trends in Operator Theory and Banach Algebras	March 3-5, 2004 Ramanujan Institute for Advanced study in Mathematics, University of Madras, Chennai



S.Kalpakam, Ph.D (IIT Madras) [Head]	Applied Probability and Stochastic Processes, Operation Research
S.H. Kulkarni, Ph.D (IIT Bombay)	Functional Analysis and Numerical Analysis
P.R.Parthasarathy, Ph.D (Annamalai)	Applied Probability and Stochastic Models, Mathematical Ecology, Operations Research, Statistical Inference, Population Models, Compartmental Theory and Carcinogenesis
A. Rangan, Ph.D. (IIT Madras)	Probability Theory, Stochastic Processes, Operations Research, Application to Biological Sciences, Ecology and Reliability
P.V.Subrahmanyam, Ph.D (IIT Madras)	Fixed Point Theory and Application, Fuzzy sets, Functional Equations, Summability Theory
M.Thamban Nair, Ph.D (IIT Bombay)	Applicable Functional Analysis (Spectral Approximation, Operator Equations, Inverse and Ill-posed Problems)
R.Usha, Ph.D (IIT Madras)	Fluid Mechanics and Bio-Fluid Mechanics
P. Veeramani, Ph.D (IIT Bombay)	Fixed Point Theorems and their Applications to Problems in Optimization and best Approximation, Fuzzy Set Theory

**Associate Professors:**

Arindama Singh, Ph.D (IIT Kanpur)	Numerical Analysis (Solution of Singular Perturbation problems) and Mathematical Logic.
S.G. Kamath, Ph.D (IIT Delhi)	Mathematical Physics
S. Ponnusamy, Ph.D. (IIT Kanpur)	Complex Analysis, Function Spaces, Special functions and Conformal Geometry
R. Rama, Ph.D (Anna Univ)	Theoretical Computer Science (Algebraic Theory of Automata, Mathematical Theory of L-Systems, Computability)
Satyajit Roy, Ph.D. (IISc Bangalore)	Computational Fluid Dynamics, Boundary Layer Theory, Convective Heat Transfer
S. Sundar Ph.D. (IIT Madras)	Numerics for Differential Equations, Modelling and Simulation, Numerical Analysis, Numerical Linear Algebra, Databases and Datamining
V. Vetrivel, Ph.D. (IIT Madras)	Non-Smooth Analysis, Optimization Theory, Fixed Point Theory

**Assistant Professors:**

R. Radha, Ph.D. (Matscience, Chennai)	Harmonic Analysis and Wavelets
Y.V.S.S. Sanyasiraju, Ph.D. (IIT Madras)	Computational Fluid Dynamics, Numerical Analysis, Numerical Linear Algebra
K.C.Sivakumar, Ph.D. (IIT Madras)	Functional Analysis and Mathematical Programming
Ch Srinivasa Rao, Ph.D. (IISc., Bangalore)	Differential Equations
W.B. Vasantha, Ph.D (Ramanujan Institute for Advanced study in Mathematics, Chennai)	Group Theory, Ring Theory, Lattice Theory, Semigroups, Coding Theory, Application of Algebra, Fuzzy Algebra and Linear Algebra

**Senior Scientific Officer (Gr.I):**

K. Swaminathan, Ph.D (Agra University, Agra)	Fluid Dynamics, Ship Hydrodynamics, Mathematical Problems related to naval architecture and ocean engineering, Systems Simulation and development of Software for Control Systems, Image Processing and Computer Graphics.
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**Short-term Courses / Workshops / Seminar / Symposia/ Conferences organised by the faculty members:**

Sl.No.	Title	Date	Co-ordinator(s)
1.	Instructional Workshop on Real Analysis	October 11, 2003	Prof. P.V.Subrahmanyam
2.	National Symposium on Mathematical Methods	December 22, 2003	Dr. YVSS Sanyasi Raju
3.	Regional Workshop on Analysis (RAW) 2004	January 30-31, 2004	Dr. S.Ponnusamy
4.	Short-term Course on Computational Fluid Dynamics and Some Applications	February 23-28, 2004	Dr. YVSS Sanyasi Raju

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3.	Regional Workshop on Analysis (RAW) 2004	January 30-31, 2004	Dr. S.Pornusamy
4.	Short-term Course on Computational Fluid Dynamics and Some Applications	February 23-28, 2004	Dr. YVSS Sanyasi Raju

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

Sl. No.	Name of Faculty	Title	Institution	Period
1.	Prof. S.A. Choudum	Meeting to promote R&D activities in Discrete Mathematics	IISc, Bangalore	September 29, 2003
		Embeddable Properties of Graphs into Networks	Cusat, Kochin	January 22-25, 2004
		Graph Theoretical Properties of Fullerenes	Madurai Kamaraj University, Madurai	March 5, 2004
2.	Prof. S.Kalpakkam	Seminar on Point Processes and Product Densities	Anna University Chennai	August 8-9, 2003
3.	Prof. V.Subrahmanyam	Refresher Course on Borel and Lebesgue measurability	Ramanujan Institute for Advanced study in Mathematics, Chennai	December 2-3, 2003
4.	Prof.M.Thamban Nair	Recent Trends in Applied Mathematics	Kumaraguru College of Technology, Coimbatore	April 25-26, 2003
		Ill-posedness of certain inverse problems	IIT Bombay, Mumbai	May 8, 2003
		PG Board of Studies Meeting	University of Pondicherry, Pondicherry	July 11-12, 2003
5.	Prof. R. Usha	6 <sup>th</sup> Annual CFD Symposium	AeSI, IISc., Bangalore	August 11-13, 2003
		UNESCO Regional Training Course on Simulation Models in Engineering and Technology	IIT Madras Chennai	September 9-20, 2003
		International Conference on Nonlinear Phenomena	IISc., Bangalore	January 5-10, 2004
		International Conference on Mathematical Biology	IIT Kanpur Kanpur	February 19-21, 2004
		Short Term Course on Computational Fluid Dynamics and Some Applications	IIT Madras Chennai	February 23-28, 2004
6.	Prof.P.Veeramani	Refresher Course on Industrial Mathematics with Computer Applications	University of Pune, Pune	November 6-8, 2003
		National Conference on Fuzzy Mathematics and the Annual Conference of Kerala Mathematics Association	Payyanur College, Kerala	January 8-10, 2004
		Eleventh Ramanujan Symposium on Recent Trends in Operator theory and Banach algebras.	Ramanujan Institute for Advanced study in Mathematics, Chennai	March 3-5, 2004
		National Seminar on Recent Trends and Application of Mathematics in Engineering	Mepco Schlenk Engineering College, Sivakasi	March 5-6, 2004
7.	Dr.Arindama Singh	Cognitive Sciences & Creativity	University of Hyderabad	February 26-28, 2004
		Update Seminars in TCS	Institute of Mathematical Sciences, Chennai	February 29-March 2, 2004

Sl. No.	Name of Faculty	Title	Institution	Period
11.	Dr. V.Vetrivel	Modeling in Life and Material Sciences and in Technology	ICTP, Trieste, Italy	March 8- April 3, 2004
12.	Dr. R.Radha	IV Congress of International Society for Analysis, Applications & Computation	York University, Toronto, Canada	August 11-16, 2003.
		Joint India AMS Mathematics Conference	IISc, Bangalore	December 17, 2003
		Regional Workshop on Analysis	Theivanai Ammal College for Women, Villupuram	December 30, 2003
		National Workshop on Recent Advances in Mathematics	Cochin University of Science & Technology	January 22-25, 2004
		Recent trends in Operator theory and Banach Algebra	Ramanujan Institute for Advanced Study in Mathematics, Chennai	March 3-5, 2004
13.	Dr.YVSS Sanyasi Raju	6 <sup>th</sup> Annual Symposium on CFD	IISC, Bangalore	August 11-13, 2003
14.	Dr. K.C.Sivakumar	Joint India AMS Meeting	IISc, Bangalore	December 16-20, 2003
		Recent Trends in Operator Theory and Banach Algebras	Ramanujan Institute for Advance Study in Mathematics, Chennai	March 3-5, 2004
		Mathematics of Infinities	Jerusalem College of Engineering, Chennai	March 12, 2004

**Special Lectures delivered by the faculty in other Institutions:**

Sl. No.	Name of Faculty	Topic of Lecture	Delivered at	Date
1.	Prof.S.A.Choudum	Embedding of graphs into networks	Cochin University of Science & Technology, Cochin	January 22-23, 2004
		Graph Theoretical Properties of Fullerenes	Madurai Kamaraj University, Madurai	March 5, 2004
2.	Prof.S.Kalpakam	On Quees in Series	Anna University, Chennai	August 8, 2003
3	Prof. S.H. Kulkarni	Uniform norms on real algebras	Indian Statistical Institute, Bangalore	May 29, 2003
		Hahn Banach Theorems	Theivanai Ammal College for Women, Villupuram	January 30-31, 2004
		Shift Operators on $C(X)$	Ramanujan Institute for Advanced Study in Mathematics, Chennai	March 4, 2004
4.	Prof..P.R.Parthasarathy	Applied Birth and Death Models	Tech University, Darmstadt	July 11, 2003
		Stochastic models of Carcinogenesis	University of Tuebingen	October 23, 2004
		Cancer Growth Models as Inaugural address	National Seminar on Recent developments in Reliability & Biostatistics, University of Madra	March 26-27, 2004
5.	Prof..P.V.Subrahmanyam	Solutions of differential equations – Some pedagogical to ponder	International Conference on "Teaching of Calculus", University of Kerala	January 12-14, 2004
6.	Prof. M.Thamban Nair	Recent Trends in Applied Mathematics	Kumaraguru College of Technology Coimbatore	April 25-26, 2003
		Ill-posedness of certain inverse problems	IIT Bombay, Mumbai	May 8, 2003
		Operator Theory	Sharada P.G. College, Vijayawada (Nagarjuna University) Vijayawada, A.P.	December 4 – 5, 2003
		On optimality of regularization methods for inverse problems	India-AMS Joint Conference, IISc, Bangalore	December 18, 2003

		Applied Mathematics	Technology Coimbatore	
		Ill-posedness of certain inverse problems	IIT Bombay, Mumbai	May 8, 2003
		Operator Theory	Sharada P.G. College, Vijayawada (Nagarjuna University) Vijayawada, A.P.	December 4 – 5, 2003
		On optimality of regularization methods for inverse problems	India-AMS Joint Conference, IISc, Bangalore	December 18, 2003
Sl. No.	Name of Faculty	Topic of Lecture	Delivered at	Date
		Eigen-pairs of perturbed matrices	Ramanujan Institute University of Madras, Chennai	March 4, 2004
7.	Prof. R.Usha	Numerical Study of particulate suspension flow through wavy walled channels	Aeronautical Society of India, Bangalore	August 11-13, 2003
		Wave Dynamics on Thin Film Systems	IISc., Bangalore	January 5-10, 2004
		The Stability Characteristics of flow in Plane and Wavy Walled Channels	IIT Kanpur, Kanpur	February 19-21, 2004
		Dynamics of a Thin Liquid Film on a Rotating Disk – Spin Coating	National Institute of Technology, Warangal	March 26, 2004
		Finite Difference Scheme – Consistency, Stability and Convergence	National Institute of Technology, Warangal	March 26, 2004
8.	Prof. P.Veeramani	Role of Fuzzy Ranking in Fuzzy Linear Programming problems	Payyanur College Payyanur, Kerala	January 8-10, 2004
		Fuzzy Linear programming	Mepc Schlenk Engineering College, Sivakasi	March 5-6, 2004
9.	Dr. Arindama Singh	MTTS (Linear Algebra) series of lectures	IIT Guwahati	June 3-23, 2003
		Canlor's Little Theorem	IIT Guwahati	June 12, 2003
		Stability of Linear Systems	Pondicherry Central University, Pondicherry	November 24, 2003
		Creativity, Creativity! Creativity?	University of Hyderabad, Hyderabad	February 26-28, 2004
10.	Dr. S. Ponnusamy	Liouville's Theorem and its Consequences	Theivanai Ammal College for Women, Villupuram	October 28, 2003
		Why Singularities are important?	Theivanai Ammal College for Women, Villupuram	October 28, 2003
		Factorisation of Entire Functions	Theivanai Ammal College for Women, Villupuram	January 30-31, 2004
11.	Dr. Satyajit Roy	Non-uniform mass transfer in Boundary Layer flows	Madurai Kamaraj University, Madurai	November 12, 2003
		Non-Uniform Mass Transfer and Inverse problems in Boundary Layer Flows	IISc., Bangalore	January 5-10, 2004
12.	Dr.S.Sundar	Kinetic Schemes for Two-Dimensional Isentropic Compressible Flow	Anna University Chennai	April 8-9, 2003
		Mathematics – A Key Technology	Good Earth School, Tambaram, Chennai	November 11, 2003
		Natural Convection in Glasswool	Madurai Kamaraj University, Madurai	November 13, 2003
		Series of lectures on Conservation Laws and	Pondicherry Central University	November 23-24, 2003

Sl. No.	Name of Faculty	Topic of Lecture	Delivered at	Date
		Wavelet based Image Compression – An Introduction	Cochin University of Science & Technology, Cochin	January 23, 2004
		Wavelets – An introduction – As part of Valedictory address	Rajalakshmi Engineering College	February 18, 2004
		Multipliers for Hermite expansions	Ramanujan Institute for Advanced Study in Mathematics, Chennai	March 5, 2004
14.	Dr.YVSS Sanyasi Raju	Fourth order Semi Compact ADI scheme (SCADIS) for unsteady stream function vorticity equations	Aeronautical Society of India, Bangalore	August 11-13, 2003
		Convergence, Stability and consistency of Numerical Schemes	IIT Madras, Chennai	February 2, 2004
		Solvers – Linear Equations	IIT Madras, Chennai	February 2, 2004
15.	Dr. K.C.Sivakumar	Recreational Mathematics	Marudhar Kesari Jain College for Women, Chennai	October 14, 2003
		Invitation to Mathematics	Jeppiar Engineering College for Women, Chennai	October 21, 2003
		A Mathematical Excursion	Velammal Engineering College, Chennai	November 11, 2003
		Three types of Operator Monotonicity	Ramanujan Institute for Advanced Study in Mathematics	March 5, 2004
		Mathematics Infinites	Jerusalem College of Engineering Chennai	March 11, 2004
17.	Dr.Ch.Srinivasa Rao	On the solution of the non-planar equation	Madurai Kamaraj University, Madurai	November 13, 2003

## Visits Abroad by faculty:

Sl. No.	Name of Faculty	Country Visited	Date	Purpose of Visit
1.	Prof.A.Avudainayagam	Germany	01.05.03 to 29.07.03	Guest Professor (University of Kaiserslautern)
2.	Prof.S.Kalpakam	Germany	05.06.03 to 21.07.03	IIT-BMBF Indo-German Project
3.	Prof.P.R.Parthasarathy	Germany	01.05.03 to 31.12.03	Humboldt Fellowship (University of Tuebingen). Visited Technische Universitat, Darmstadt, 10-11, July 2003, German Cancer Research Centre, Heidelberg on 27 <sup>th</sup> June 2003 for discussion on Cancer models, University of Kaiserslautern on 20 <sup>th</sup> June 2003 for discussion on Industrial Mathematics, University of Osnabrueck on 4 <sup>th</sup> July 2003 for discussion on Queueing models, Max Planck Institute, Tuebingen for discussion on Biomathematics during August 2004.
4.	Dr.S.Ponnusamy	USA	19.08.02 to 27.05.03	Research and Teaching
5.	Dr.S.Sundar	Germany	01.06.03 to 31.07.03	TU-Kaiserslautern, June 1-30, 2003, University of Magdeburg, July 1-22, 2003 . TU -Darmstadt , July 22-31, 2003
		Italy	06.03.04 to 03.04.04	Attended Workshop
6.	Dr.V.Vetrivel	Italy	06.03.04 to 03.04.04	Attended Workshop
7.	Dr.R.Radha	Canada	11.08.03 to 16.08.03	Attended and gave invited talk in the Special Session on Harmonic Analysis and Partial Differential Equations at the Fourth Congress of the International Society for Analysis, its Applications and Computation (ISAAC)

			31.07.03	TU -Darmstadt , July 22-31, 2003
		Italy	06.03.04 to 03.04.04	Attended Workshop
6.	Dr.V.Vetrivel	Italy	06.03.04 to 03.04.04	Attended Workshop
7.	Dr.R.Radha	Canada	11.08.03 to 16.08.03	Attended and gave invited talk in the Special Session on Harmonic Analysis and Partial Differential Equations at the Fourth Congress of the International Society for Analysis, its Applications and Computation (ISAAC)

**Honours and Awards obtained:**

Sl. No.	Name of the faculty	Name of the award	Awarded by	Awarded for
1.	Prof..M.Thamban Nair	C.L. Chandana Mathematics Award	Canadian World Education Foundation 2003	Distinguished and Outstanding Contribution to Mathematics Research and Teaching in India
2.	Mr. B. Kumar I MSc Student (MA 03C013)	APALAT Scholarship Award	Institute of Mathematical Sciences, Chennai	

**Books/Monographs authored /co-authored:**

S.No.	Name of Faculty	Title	Publisher	Author/Co-author
1.	Prof. S.H.Kulkarni	Proceedings of the International Workshop on Linear Algebra, Numerical Functional Analysis and Wavelet Analysis	Allied Publishers	Editor
2	Dr.Arindama Singh	"Logics for Computer Science"	Prentics-Hall of India	Author
3.	Dr. R.Radha	Proceedings of International Conference on "Wavelets and their applications"	Allied Publishers	Editor

**Fellowships of Academies and Professional Societies:**

Sl. No.	Name of the faculty	Name of the Academy / Professional Society	Level	Year of Admission
1.	Prof.S.H.Kulkarni	Forum D Analysis, Chennai	Fellow	2003
2.	Prof.P.R.Parthasarathy	Institute of Mathematical Statistics (IMS) U.S.A.	Fellow	2003
		American Mathematical Society	Member	2003
3.	Prof..M.Thamban Nair	Board of Studies of Pondicherry University	Member	2003
		Board of Studies of University of Calicut	Member	2003
4.	Prof..R.Usha	ISTE	Life Member	2004
5.	Prof..P.Veeramani	Forum D' Analystes, Chennai	FELLOW	2003
6.	Dr.S.Ponnusamy	Bulletin of the Malaysian Mathematical Sciences Society, Malaysia.	Member of the Editorial Advisory Board of the Journal	2003
7.	Dr.Satyajit Roy	ISTE	Life member	2003
		The Aeronautical Society of India	Life member	2003
8.	Dr.V.Vetrivel	American Mathematical Society	Member	2003
9.	Dr.R.Radha	American Mathematics Society	Member	2002
		ICTP	Member of the Board of Reference for Office of External Activities	2003
10.	Dr.YVSS Sanyasi Raju	Aeronautical Society of India	Life Member	From 1997
		American Mathematics Society	Member	2003-04

**4.9.4. DESIGN AND DEVELOPMENT ACTIVITIES:**

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

Sl. No	Name of the Faculty	Name of Equipment	Value (in Rs.)
1.	Dr.S.Sundar	Numeric UPS 2 KVA, 17" LCD Monitor (2 Nos.) HP Laser Jet Printer (1015 series) (1 No.) Internal CD Writer (1 No.) DVD Writer (1 No.) SBA Power Stream PRO Intel Pentium IV. 2.0 GHz (2 Nos.)	44,660/- 77,000/- 13,500/- 2,850/- 13,800/- 50,700/-
2.	Dr.R.Radha	COMPAQ Intel Pentium 4 processor 2.8 GHz, COMPAQ 17" Monitor HPL Laser Jet Printer 2300 HP Scanjet Printer 3970C UPS 700 VA	US\$ 985 US\$ 25 39,200/- 12,400/- 7,700/-
3.	Dr.K.C.Sivakumar	HCL Intel Pentium IV – 17" LCD Monitor (Samsung) UPS 700 VA	86,775/- 7,700/-
4.	Dr.Ch.Srinivasa Rao	PC Printer – HP Laser jet UPS 700VA	55,375/- 17,700/- 7,700/-

## 4.9.5. Research And Consultancy:

## Sponsored Research Projects:

SL. No.	Title	Period	Funding Agency	Amount (Rs.in lakhs)	Co-ordinators
1.	Application of Queuing Model in production and Inverting Management	3 years	DLR		Prof. S.Kalpakam and Prof.K.P.Kistner Faculty of Economics University of Bielefeld Germany
2.	Embeddable Properties of graphs and interconnection networks	Jan,2002- Jan,2005	DST	12.41	Prof.S.A.Choudum,
3.	Mathematical Aspects of Distributed Systems and Supercell Structures	June, 2002- June 2005 (3 years)	DST	11.00	Dr.R.Rama, Dr. Arindama Singh, Prof. Kamala Krithivasan (CSE).
4.	Numerical Study of Particulate suspension flow through wavy walled channels	2000-2003	CSIR	4.83	Prof. R.Usha Prpf..E.G.Tulapurkara, (Dept. of AE).
5.	Surface-tension driven gas liquid flows under microgravity condition: measurements and CFD predictions	2000-2003	ISRO	12.74	Prof. R.Usha Dr. Sreenivas Jayanthi
6.	Non-smooth Calculus and Proximal Bundle Methods	02-01-02- 01-01-05	DST	4.03	Dr.V.Vetrivel
7.	Applications of Special Functions and Hardamard Multiplication of Power Series	2002-2004	DST-DAAD	5.44	Dr. S. Ponnusamy Prof. Wolfgang Luh, (Univ. of Trier, Trier, Germany)
8.	Knowledge Based Systems for Spatial Databases and GIS	2003-2006	ISRO-IITM	10.62	Dr.S.Sundar, IITM Dr. K.M.M.Rao (NRSA, Hyderabad)
9.	A Study of Generalized Burgers Equations	3 years	ICSR, IIT Madras	4.30	Dr.Ch.Srinivasa Rao

SL. No.	Title	Period	Funding Agency	Amount (Rs.in lakhs)	Co-ordinators
10.	Determination of heat transfer	3 years	GTRE	3.90	Dr.YVSS Raju
11.	Wavelets in Signal and Image Processing	3 years	ICSR, IIT Madras	4.50	Dr.R.Radha
12.	Numerical Solutions of Infinite Linear Programs	3 years	ICSR, IIT Madras	4.70	Dr.K.C.Sivakumar

**RBIC Projects:**

SL.No	Name of Faculty	Title	Industry	Amount(Rs. In Lakhs)
1.	Dr.Y.V.S.S. Sanyasi Raju	Determination of heat transfer coefficients for the nozzle guide value.	GTRE, Bangalore	3.4 Lakhs

**Exchange programme with other Universities:**

Sl.No.	Programme Name	Name of University	Student Name	Guide Name
1.	Sandwich Ph. D Programme in Industrial Mathematics, DAAD	AG Technomathematic, University of Kaiserslautern Germany	Mr.Samir Roy (Since April 2002) Mr. Mohan Kumar (Since August 2002)	Prof. H. Neunzert (Germany) Dr. S. Sundar (IIT Madras)
2.	Sandwich M. Tech Project, DAAD-IIT FB Numerical Mathematik	University of Trier Germany	Mr.Kamal Hasan Behra, M.Tech (II year)	Prof. Axel Klar (Germany) Dr. S. Sundar (IIT Madras)
3.	Sandwich M.Tech Project DAAD-IIT	AG Technomathematic, University of Kaiserslautern, Germany	Mr.Annadata Baskar Subramanian, M.Tech (II year)	Prof.H.Neunzert (Germany) Dr. S.Sundar, (IIT Madras)
4.	Sandwich M.Tech Project DAAD-IIT	AG Technomathematic, University of Kaiserslautern, Germany	Mr. Sarat Sasi M.Tech (II year)	Prof.H.Neunzert (Germany) Dr.A.Avudainayagam (IIT Madras)

**Journal Editorial Boards:**

Sl.No.	Name of Faculty	Level	Journal
1.	Prof.P.R.Parthasarathy	Regional Editor	Statistical Theory and Methods Abstracts
		Advisory Editor	Journal of Information and Optimization Sciences
		Associate Editor	Journal of Applied Statistical Sciences, International Journal of Computer Mathematics, American Journal of Mathematics and Management Sciences, Pure and Applied Matematika Sciences, Journal of Decision and Matematika Sciences and Assam Statistical Review
2.	Prof..P.V.Subrahmanyam	Editor	Journal of Analysis
		Editorial Board Member	JDEDS
3.	Dr.S.Ponnusamy	Managing Editor	The Journal of Analysis, Published by Forum D Analystes
		Editorial Member	Journal of Indian Academy of Mathematics
		Editorial Advisory Board Member	Bulletin of the Malaysian Mathematical Sciences Society
		Official Referee	Journal of Inequalities in Pure and Applied Mathematics

**Research Publications:**

No. of papers published in Refereed National Journals	..	2
No. of papers published in Refereed International Journals	..	19
No. of papers presented in National Conferences	..	4
No. of papers presented in International Conferences	..	11



**In Refereed National Journals:**

1. Arindama Singh, Convergence of two regularization methods for a singularly Perturbed PDE, Special Issue, *J. Orissa Math. Soc.* 2003 No.1.
2. Arindama Singh, Adequacy of Computational Logic, *J. Orissa Math. Soc.* 2003.

**In Refereed International Journals:**

1. N.V.Kalpakam and S.Ponnusamy, Convolution transform for Boechmians, *Rocky Mountain of Math*, 33(2003), 1353-1378.
2. I.Nezhmetdinov and S.Ponnusamy, On the univalence of an integral operator on a subclass of meromorphic convex univalent functions, *Hokkaido Math*, J.32(2003), 401-413.
3. S.H.Kulkarni, A very simple and elementary proof of a theorem of Ingelstam, *American Mathematical Monthly*, Vol.111, 2004.
4. P.R.Parthasarathy, Some unusual birth and death processes, *Mathematical Scientist*, 28, (2003), 79-90.
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8. M.Thamban Nair with S.George, An optimal order-yielding discrepancy principle for simplified regularization of ill-posed problems in Hilbert scales – *International Journal for Mathematics and Mathematical Sciences*, Vol.39 (2003) 2487-2499.
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1. Kalpakam, S. and Klaus-Peter Kistner, On Queues in Series, in *Stochastic Processes* (eds) S.K.Srinivasan and A.Vijayakumar, *Narosa Publishing Home*, (2003), pp 160-179.
2. M.Thamban Nair, On Order optimality of regularization methods for ill-posed problems– *Proceedings of the National Conference on Recent Trends in Applied Mathematics*, Coimbatore, 2003, Pages 21-35.

3. R.Radha, Wavelet based Image Compression – An introduction, National Workshop on *Recent Advances in Mathematics*, CUSAT 2004.
4. YVSS Sanyasi Raju, Fourth Order Semi Compact scheme to solve incompressible fluid flow equations – Proceedings of 6<sup>th</sup> *Annual CFD Symposium*, 11-13, August 2003, IISC, Bangalore.

#### In Proceedings of International Conferences:

1. R.Balasubramanian, S.H.Kulkarni and R.Radha, Finite dimensional approximation of the Operator Equations, Proceedings of the *International Workshop on Linear Algebra, Numerical Functional Analysis and Wavelet Analysis*, Allied Publishers, October 2003, pp 57-69.
2. P.V.Subrahmanyam, A system of functional equations having solution of bounded variation" – *International Conference on Analysis*, Allied Publishers, New Delhi 2004, P.113-117.
3. P.V.Subrahmanyam, An extension of Newton's method, Proceedings of *International Conference on Analysis* – Allied Publishers New Delhi, 120—126., 2004.
4. M. Thamban Nair, Regularization and approximations of ill-posed problems – Proceedings of the *International Conference on Recent Trends in Mathematical Analysis* – Allied Publishers Pvt. Ltd, 2003, Pages 33-57.
5. M.Thamban Nair and M.P.Rajan, On improving accuracy for Arcangeli's r solving ill-posed problems with modelling error - Proceedings of the *International Conference on Recent Trends in Mathematical Analysis*, Allied Publishers Pvt. Ltd., 2003, Pages 190-198.
6. R.Usha, Stability Characteristics of Particulate Suspension Flow through wavy-walled channels, 2<sup>nd</sup> BSME ACME *International Conference on Thermal Engineering*, January 2-4, 2004, pp 393-400.
7. P. Veeramani, D. Sukumar, Best Approximation and Best Proximity Pair Theorems - Summer Symposium in Real Analysis XXVI at Washington and Lee University, Lexington, Virginia, USA, June 25-29, 2003'.
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11. S.Sundar, Grid Free Method for Poisson Equation, Wavelet Analysis & Applications, *New Age International Publishers*, pp.151-166, 2004.

#### Distinguished Visitors to the Department:

Sl. No.	Name of the visitor and Designation	Date	Purpose of visit
1.	Prof. V.D.Sarma, Prof. Prawal Sinha, Prof. Sureshnanda and Prof. K.D.Joshi, Heads of Department of Mathematics, IIT Delhi, Kanpur, Kharagpur and Bombay	12.04.03	JAM Meeting
2.	Prof. S.K. Jain Distinguished Professor and Director Centre for Ring Theory, University of Ohio, Athens, USA	03.07.03	Seminar talk
3.	Prof. T.V. Panchapagesan Department of Mathematics University of Los Andes Merida Venezuela	10.07.03	Seminar talk
4.	Dr. S.S. Ramkumar Texas Tech University Lubbock, USA	25.07.03	Seminar talk
5.	Ms. Janaki Ph.D. Student, University of Calgary Alberta, Canada	14.08.03	Seminar talk
6.	Dr.Sekhar Majumdar, Deputy Director, CTFD Division National Aerospace Laboratories, Bangalore	29.08.03	Seminar talk
7.	Prof. T.S.Prasanna Kumar Dept. of Metallurgical Engineering IIT Madras, Chennai	04.09.03	Seminar talk
8.	Prof. M.C.Nadkarni Visiting Professor Institute of Mathematical Sciences, Chennai	11.09.03	Seminar talk

Sl. No.	Name of the visitor and Designation	Date	Purpose of visit
9.	Prof. S. Thangavelu Statistics & Mathematics Unit India Statistical Institute, Bangalore	15.09.03 and 16.09.03	Visit and Seminar talk
10.	Prof. Wolfgang Luh and Prof. J. Muller University of Trier, Germany	07.09.03 to 26.09.03	Visit and Seminar talk
11.	Dr. M. Rajesh Institute of Mathematical Sciences, Chennai	25.09.03	Seminar talk
12.	Dr. Tanmay Basak Dept of Chemical Engineering IIT Madras, Chennai	09.10.03	Seminar talk
13.	Prof. M. Krishna Institute of Mathematical Sciences, Chennai	16.10.03	Seminar talk
14.	Dr. Harish Chandra Librarian Central Library IIT Madras, Chennai	23.10.03	Seminar talk
15.	Dr. Murali K. Vemuri Chennai Mathematical Institute Chennai	06.11.03	Seminar talk
16.	Prof. Shiva Shankar Chennai Mathematical Institute Chennai	13.11.03	Seminar talk
17.	Dr. K. M. M. Rao Deputy Director National Remote Sensing Agency Hyderabad	17.11.03	Seminar talk
18.	Prof. G. Srinivasan University of New Brunswick Canada	20.11.03	Seminar talk
19.	Prof. Gustav Feichtinger, Dept of Operations Research Vienna University of technology Austria, Europe	02.12.03 to 06.12.03	Visit and Seminar talk
20.	Mr. Ashok Kumar Vaikuntan Fraunhofer Institut Techno-und-Wirtschafts Mathematik Kaiserslautern Germany	18.12.03 and 19.12.03	Visit and Seminar talk
21.	Dr. Mike Herschhorn Dept of Mathematics University of New South Wales Australia	08.01.04	Seminar talk
22.	Prof. Rathnasingham Shivaji W. L. Giles Distinguished Professor Dept of Mathematics and Statistics Mississippi State University USA	11.01.04 to 22.01.04	Visit and Seminar talk
23.	Dr. C. S. Aravinda Chennai Mathematical Institute Chennai	19.01.04	Seminar talk
24.	Prof. Michael Stevenson, President and Vice-Chairman and Prof. Rendall Martin Director, International Cooperation & Mobility, Simon Fraser University Canada	03.02.04	Visit and interaction with faculty members
25.	Prof. S. Kumaresan University of Mumbai Mumbai	03.02.04	Seminar talk
26.	Dr. D. Sundararaman Professor in Mathematics Howard University Washington D.C. 20069	10.02.04	Seminar talk
27.	Dr. Jaya N. Iyer Institute of Mathematical Sciences, Chennai	12.02.04	Seminar talk

## 4.10 DEPARTMENT OF MECHANICAL ENGINEERING

### 4.10.1. Introduction:

The Department of Mechanical Engineering was established in the year 1959. The department offers Ph.D., M.S., M.Tech and B.Tech. programmes. The department has excellent facilities to carry out state-of-the-art research in 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, Machine Dynamics laboratory and Composites Technology Centre.

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

### 4.10.2. Academic Programmes:

#### New Courses Introduced:

S.No.	Course No.	Title
1.	ME 708	Compact Heat Exchangers
2.	ME 733	Geometric Modelling (M.Tech. UOP)
3.	ME 319	Machining and Metrology (B.Tech. Core course)
4.	ME 220	Manufacturing Technology (B.Tech Core Course)

Students on roll: (Academic section will furnish)

Programme	I Year	II Year	III Year	IV Year	V Year & others	Total
B.Tech.	85	87	88	72	3	335
Dual Degree – Energy of Technology	8	7	6	9	5	35
Intelligent Mfrg. Product Design	9	9	7	5	8	38
	8	9	6	5	6	34
M.Tech. – Thermal Engg.	40	30	-	-	-	70
Design Manufacturing Engg.	33	26	-	-	-	59
	20	17	-	-	-	37
M.Tech (UoP) – Auto.Engine Tech.	11	12	-	-	-	23
M.S.	19	30	9	6	1	65
Ph.D.	54	32	18	14	21	139
<b>Total</b>	<b>287</b>	<b>259</b>	<b>134</b>	<b>111</b>	<b>44</b>	<b>835</b>

Names of Student/Scholar who attended Conference/Seminar and Symposia Abroad/India:

Sl. No.	Name of the Student/Scholar	Programme	Name of the Conference/ Seminar/ Symposia	Date and Venue
<b>Conference:</b>				
1.	Nazar, J	Ph.D.	XVIII National Conf. on I.C. Engines and Combustion, College of Engineering, Thiruvananthapuram	Dec. 17-19, 2003
2.	Nazar, J	Ph.D.	ISTE National Conference on Alternate Fuels, IRTT, Erode	Mar. 05, 2004
3.	Dibakar Rakshit	MS	ISTE National Conference on Alternate Fuels, IRTT, Erode	Mar. 05, 2004
4.	B. Premachandran	Ph.D.	ISTE National Conference on Alternate Fuels, IRTT, Erode	Mar. 05, 2004

Sl. No.	Name of the Student/Scholar	Programme	Name of the Conference/ Seminar/ Symposia	Date and Venue
5.	Wilson Samuel	Ph.D.	ISTE National Conference on Alternate Fuels, IRTT, Erode	Mar. 05, 2004
6.	N. Krishnan	Ph.D.	ISTE National Conference on Alternate Fuels, IRTT, Erode	Mar. 05, 2004
7.	V. Swaminathan	Ph.D.	ISTE National Conference on Alternate Fuels, IRTT, Erode	Mar. 05, 2004
8.	S.H.Somashekhar	Ph.D	FE- approach- Electro –mechanical-fluid modeling of jet pipe Electro hydraulic Servo valve International workshop.	University of Bath.U.K
9.	S.H.Somashekhar	Ph.D	Modeling and Investigation on Jet pipe Electrohydraulic Flow Control Servo valve	Oct. 26-31, 2003 USA
10.	S.H.Somashekhar	Ph.D	FE Approach: Role of fluid properties in actuator dynamics.	Jan.16-19, 2004 Delhi
11.	S.H.Somashekhar	Ph.D	Solid modeling and internal leakage analysis in precision hydraulic component.	15-16 Feb.2003 Palghat.
12.	S.H.Somashekhar	Ph.D	Material sensitivity in design of hydraulic components	Dec.15-16, 2003 SERC Chennai.
13.	S.H.Somashekhar	Ph.D	Fluid-structure interaction through finite element method: Actuator dynamics	Dec.19-20, 2003 Bangalore.
14.	Somashekhar S.H	Ph.D	Frequency response of critical components of a hydraulic Servo valve Dec.18-19 2003.	Dec.18-19, 2003
15.	Satheshh Kumar	Ph.D	A Review of stewart platform in vibration isolation applications.	Feb 23-28 IIT Delhi.
16.	Satheshh Kumar	Ph.D	Active Vibration Isolation Using A Multi-Axis Robotic Platform	Sweden
17.	Satheesh Kumar	Ph.D	Vibration Isolation using a Multi-Axis Robotic Platform.	Dec.18-19 IIT Delhi.
18.	K.B.Sudharsan	Ph.D	A Robot vision system for identification of defective components in automated transfer lines	Dec.15-16 SEC Chennai.
19.	T.V. Prabhu	Ph.D	Advances in tactile sensors for robotic applications in nuclear fuel fabrication: An overview.	Dec.15-16 SERC Chennai.
20.	Mr. B.V.N. Rama Kumar	Ph.D.	Thirtieth National Conference on FMFP – Presented paper entitled "A Combined CFD and Network Approach for the Simulation of Flow Systems".	December 11 – 13, 2003 at Suratkal.
21.	K. Lingadurai	Ph.D.	International Conference on CAD-CAM Robotics and Automated Factories.	12-13 August 2003 IIT Delhi
22.	J. John Rozario Jegaraj	Ph.D.	International Conference on Leading Edge Manufacturing in 21 <sup>st</sup> Century.	3-6 Nov. 2003, Japan
23.	J. John Rozario Jegaraj	Ph.D.	National Conference on Precision Engineering (COPEN)	19-20 Dec. 2003 (Bangalore)
24.	J. John Rozario Jegaraj	Ph.D.	Conference on Advances in Materials and Manufacturing Technology (CAMMT).	2 <sup>nd</sup> April 2004 IIT Madras.
25.	Shajan Kuriakose	Ph.D.	Conference on CAD/CAM Robotics and Autonomous factories IIT Delhi.	11-13 Aug.2003
26.	Shajan Kuriakose	Ph.D.	Conference on Precision Engineering (COPEN).	19-20 Dec.2003 (Bangalore)
27.	Shajan Kuriakose	Ph.D.	International Conference on Precision Engineering.	2-5 March 2004 SIMT Singapore.
28.	Shajan Kuriakose	Ph.D.	Conference on Advances in Materials and Manufacturing Technology (CAMMT)	2 <sup>nd</sup> April 2004 IIT Madras

Sl. No.	Name of the Student/Scholar	Programme	Name of the Conference/ Seminar/ Symposia	Date and Venue
29.	Ajmal Deen Ali	Ph.D.	Conference on Advances in Materials and Manufacturing Technology (CAMMT)	2 <sup>nd</sup> April 2004 IITMadras
30.	S.Devaprasad	Ph.D.	Conference on Responsive Supply Chain and organizational competitiveness.	5-7, Jan.2004 CIT Coimbatore
31.	L.V.Mohan	Ph.D.	International Conference on CAD-CAM Robotics and Autonomous Factories	11-13 <sup>th</sup> Aug. 2003 IIT Delhi
32.	L.V.Mohan	Ph.D.	Conference on Precision Engineering (COPEN)	19-20 Dec. 2003 CMTI Bangalore.
33.	L.V.Mohan	Ph.D.	International Conference on Precision Engineering.	19-20 Dec.2003 SIMT Singapore.
34.	L.V.Mohan	Ph.D.	Conference on Advances in Material and Manufacturing Technology (CAMMT).	2 <sup>nd</sup> April 2004 IITMadras
35.	N.Rajesh	Ph.D	Conference on Precision Engineering.	19-20 Dec. 2003 CMTI Bangalore
36.	N.Rajesh	Ph.D	Conference on Advances in Materials and Manufacturing Technology (CAMMT).	2 <sup>nd</sup> April 2004, IITMadras.
37.	Ch.R.Vikram Kumar	Ph.D	Conference on Advances in Materials and Manufacturing Technology (CAMMT).	2 <sup>nd</sup> April 2004, IITMadras
38.	S.Murugan	Ph.D	Conference on Advances in Materials and Manufacturing Technology (CAMMT).	2 <sup>nd</sup> April 2004, IITMadras.
39.	Anand Ronald.B.	Ph.D	Conference on Advances in Materials and Manufacturing Technology (CAMMT).	2 <sup>nd</sup> April 2004, IITMadras.
40.	M.Kantha Babu	Ph.D.	Conference on Advances in Materials and Manufacturing Technology (CAMMT).	2 <sup>nd</sup> April 2004, IITMadras.
41.	Siva Srinivas.D	Ph.D.	Conference on Advances in Materials and Manufacturing Technology (CAMMT)	2 <sup>nd</sup> April 2004, IITMadras
42.	J.T.Winowlin Japes	Ph.D.	INCARF 2003, New Delhi.	Dec.2003 New Delhi
43.	P.Saravana Kumar	M.S.	Conference on Advances in Materials and Manufacturing Technology.	2 <sup>nd</sup> April 2004, IITMadras

#### 4.10.3. Faculty and their activities:

Faculty:

Name and Qualifications	Major area of specialization
<b>Professor:</b>	
Ajit Kumar Kolar, Ph.D.	Heat transfer, circulating and bubbling fluidized beds, biomass combustion and gasification, renewable energy, Fuel cells
Balabaskaran V., Ph.D	Fluid mechanics - pumps and hydroturbines - design, development and testing, computational fluid dynamics
Ganesan V., Ph.D.	Turbulence studies in IC engines and gas turbines, simulation of IC engine processes, numerical modeling of flow processes
Gopinath K., Ph.D.	Design of test rigs, presses, SPM, process equipment, powder metallurgy and superplastic forming equipment, friction and wear, brakes, clutches, bearings, gears and filters, powder metallurgy, failure analysis and development of new materials
Govardhan M., Ph.D.	Compressors, steam and gas turbines - cascade secondary flows - boundary layers - inlet flow distortion, tip clearance flows, wells turbine, cross flow fans, CFD
Krishnaiah Chetty O.V., Ph.D.	Conventional and unconventional machining, FMS, CIM, Scheduling, Petri Nets

Name and Qualifications	Major area of specialization
Krishna Kumar R., Ph.D.	Non-linear and linear finite elements, Computer Aided Design, Simulation of Manufacturing Processes, Tyre & Vehicle Mechanics, Biomechanics
Krishnamurthy R., Ph.D.	Metal Cutting, Grinding, Unconventional Machining, Ceramics, Composites, CIM, Gear Tribology, Condition Monitoring
Krishnan Balasubramanian, Ph.D.	Non-destructive evaluation, online measurements, materials characterization, wave propagation in solid media
Kumaraswamy S., Ph.D.	Fluid mechanics - pumps and hydroturbines - design, analysis and testing, cavitation in hydroturbo-machines-computer aided design and instrumentation- pumps applications
Madhusudana Rao M., Ph.D.	Machine design, especially design of mechanical handling equipment, pneumatic/hydraulic transportation, three phase system, materials handling system
Mani A., Ph.D.	Solar energy, refrigeration and air conditioning, cryogenic engineering, alternate working fluids, effluent treatment
Nagarajan T., Ph.D.	Robotics, precision gears, pneumatics, medical instrumentation, multi-body dynamics, mechatronics
Narayanasamy K., Ph.D.	Precision engineering, high precision manufacturing, production metrology, surface technology
Prakash M. Maiya, Ph.D.	Refrigeration and air conditioning, absorption cooling and heating systems, desiccant and evaporative cooling, industrial ventilation, drying and effluent evaporation
Pramod S.Mehta, Ph.D.	Engine processes and combustion and emission simulation, soot emission studies, air motion and transport processes studies in engine
Prasad B.V.S.S.S., Ph.D.	CFD in turbo machines, turbine blade cooling, rotor-stator interactions, heat flux measurements, thermal hydraulics
Premananda Shet U.S., Ph.D.	Design of gas oil and solid fuel burners, swirl combustion, flame image analysis, control of combustion generated pollutants, supersonic combustion, thermodynamics, combustion and propulsion
Raju Sethuraman, Ph.D.	Computational mechanics, fatigue and fracture of materials
Ramamoorthy B., Ph.D.	Metrology, Computer Aided Inspection, Vision Applications, Surface Technology, Sensors, Manufacturing Engineering, Quality Control.
Ramesh A., Ph.D.	Performance improvement control of engines, alternative fuels, two stroke engine, engine instrumentation and electronic management
Ramesh Babu N., Ph.D.	Computer aided Manufacturing-CNC, PLC, grinding, unconventional machining processes - LBM, AWJM
Sarit Kumar Das, Ph.D.	Recuperative and regenerative heat exchangers, multiphase heat transfer, thermal properties of nano fluids, computational heat transfer, buoyant jets, nuclear heat transfer
Shunmugam M.S., Ph.D.	Metrology, BTA, Gear Machining, Grinding, EDM, Statistical Quality Assurance, Automation, Computer Aided Manufacturing Systems and Control
Singaperumal M., Ph.D.	Fluid power, electro-hydraulic servo systems, low cost automation, modeling and simulation, mechatronics, MEMS
Siva Prasad N., Ph.D.	Finite element analysis, computer aided design, stress analysis, machine design
Srinivasa Y.G., Ph.D.	Instrumentation, control, active noise control, CNC, microprocessors, electro-hydraulic servo systems, active vibration control
Srinivasa Murthy S., Ph.D.	Refrigeration, thermal energy conservation and heat pumps, solar energy, cryogenic engineering, food processing, hydrogen energy
Sundararajan T., Ph.D.	Droplet combustion, supersonic reacting jet flows, computational fluid dynamics
Venkateshan S.P., Ph.D.	Experimental and numerical heat transfer with and without phase change, free convection and interaction with conduction and radiation, approximate methods, heat transfer in space applications, thermo physical property measurements, instrumentation
Venkatarathnam G., Ph.D.	Cryogenic systems, cryo-coolers, compact heat exchangers, mixed refrigerant systems, natural gas liquefaction

Name and Qualifications	Major area of specialization
Vijayaraghavan L., Ph.D.	Metal Cutting, CAD, Grinding, Condition Monitoring, Composites and Surface Technology
Vijay R.Raghavan, Ph.D.	Fluidized bed applications, thermal treatment of surfaces, design of heat exchangers and cooling towers, measurement of thermal conductivity of insulating materials, heat recovery and conservation
<b>Associate Professor:</b>	
Babu Viswanathan, Ph.D	CFD, high speed reacting flows, high performance computing
Chakravarthy Balaji, Ph.D.	Computational heat transfer, free convection and radiation heat transfer, design and optimization of thermal systems, second law analysis of heat transfer systems, inverse heat transfer, atmospheric radiation, high speed heat transfer.
Gnanamoorthy R., Dr. Eng.	Machine design, design of test machines, fatigue and fracture mechanics, gear and bearings, rolling contact fatigue, failure analysis, tribology, new materials and components, mechanical behaviour of materials
Mayuram M.M., Ph.D	Surface engineering, wear and wear control, thermal sprayed coatings, fatigue and fracture aspects in design and analysis
Muthuveerappan G., Ph.D.	Machine design, vibrations of structures in fluid environments, gear teeth profile and fillet for geometry, stress analysis and design of gears, finite element analysis
Sitaram N., Ph.D.	Turbomachinery / end wall flows, computational fluid dynamics, compressors and turbines, boundary layers, tip clearance flows
<b>Assistant Professor:</b>	
Arunn Narasimhan, Ph.D.	Heat transfer and fluid flow through porous medium, convection heat transfer, phase change material heat sinks manufacturing processes modeling in microlithography, inverse heat conduction problems.
Mallikarjunappa J.M., Ph.D.	Simulation of IC engine processes, Engine design modifications for better performance and low emissions
Shankar Krishnapillai, Ph.D.	Structural vibrations, design optimization, system identification, genetic algorithm
Srinivas Reddy K., Ph.D.	Solar energy, renewable energies, heat transfer, energy environment, energy conservation, energy auditing
Venkataramaniam S., Ph.D.	Reconfigurable Manufacturing Systems, Manufacturing Automation, Manufacturing Supply Chains, Feature-Based Design, Optimization, Scheduling.
<b>Henry Ford Chair Professor:</b>	
Sharma R.P., Ph.D.	Engine design, tribology and emission control
<b>Emeritus Scientist/ Professor:</b>	
Bhaskaran K.A., Ph.D.	Thermodynamics, combustion and propulsion, kinetic modeling of combustion reactions, shock tube studies, soot and pollution control, solid and liquid propellant ignition studies, rocket technology
<b>Scientific Officers/ Engineers:</b>	
Raja Rao S., M.E.	Engineering Drawing, machine drawing, computer graphics

**Short-term Courses/Workshops/Seminars/Symposia/Conferences organized by the faculty members:**

Sl. No.	Coordinator(s)	Title	Period
<b>Conference:</b>			
1.	Prof.S.Srinivasa Murthy Prof.A.R.Balakrishnan	International Symposium on Transport Processes and Interfacial Phenomena in Multi-phase Systems	8 <sup>th</sup> January 2004
2.	Prof.M.S.Shunmugam Prof.L.Vijayaraghavan	National Conference on Advances in Materials and Manufacturing Technology	2.4.2004
<b>Seminar:</b>			
1.	Prof.R.Krishnakumar	One day seminar on usage of CAM software.	3.12.2004
2.	Prof.R.Krishnakumar	Short Term Course on Finite Element Method for Tyres.	June 2003



Sl. No.	Coordinator(s)	Title	Period
3.	Prof.R.Krishnakumar	Short Term Course on Visco Elasticity	Dec.2003
<b>Symposia:</b>			
1	R Gnanamoorthy	Failure Analysis and Design Technology Appreciation Program	4 <sup>th</sup> Dec 2003
<b>Workshop:</b>			
1.	Dr. Ajit Kumar Kolar & Dr. B.V.S.S. Prasad	Biofuel conversion	Dec. 9-11, 2003
2.	Dr. Sarit Kumar Das	Compact Heat Exchangers	Jan. 10, 2004
3.	Krishnan Balasubramaniam	Nondestructive Evaluation – A comprehensive Overview for Managers	31 <sup>st</sup> May 2003
4.	Prof.G.Venkatarathnam	NRB sponsored workshop on "Mixed Refrigerant Cascade Cryogenic Refrigerators and Liquefiers"	16 <sup>th</sup> April 2003
5.	Prof.G.Venkatarathnam Prof.S.Srinivasa Murthy	Workshop on Advanced Energy Systems	9 <sup>th</sup> January 2004
6.	Prof.B.Ramamoorthy & Prof.L.Vijayaraghavan	An AICTE sponsored QIP Short Term Course on "Advances in Manufacturing Technology" was organized	1 <sup>st</sup> –12 <sup>th</sup> Dec. 2003
<b>Short Term Course:</b>			
1.	Dr. Krishnan Balasubramaniam	Ultrasonic Testing	21-22 Nov 2003

Short-term Courses / Workshops / Seminars / Symposia / Conferences / Training attended by the faculty members in Academic institutions and Public Sector Undertakings:

S.No.	Name of faculty	Title	Institution	Period
<b>Workshop:</b>				
1.	Dr. R.P. Sharma	"Engine Tribology" One day Toptech Program	SAE National Conference on Automotive Infotronics	Aug. 22-23, 2003
2.	Dr.Ajit Kumar Kolar	Indo-Swedish Workshop on "Biofuel conversion"	Chalmers University of Technology, Sweden	June 20-27, 2004
<b>Conference:</b>				
1.	Dr.J.M.Mallikarjunappa Mr.T. Chandrasekara Reddy	National Conference on Advances in Mechanical Engineering	JNNCE, 2004, Shimoga	Feb. 12-14, 2004
2.	Dr. J.M. Mallikarjunappa Prof. V. Ganesan Prof. A. Ramesh	First National Conference on Automotive Infotronics	IIT Madras	Aug. 22-23, 2003
3.	Prof. V. Ganesan	XVIII National Conference on I.C. Engines and Combustion	College of Engg. Thiruvananthapuram	Dec. 17-19, 2003
4.	Dr. J. M. Mallikarjunappa	XVIII National Conference on I.C. Engines and Combustion	College of Engg. Thiruvananthapuram	Dec. 17-19, 2003
5.	Pfrof. R.P. Sharma	National Conference on "Tree Borne Oil Seeds for Bio-fuel"	MNES	Oct. 26-27, 2003
6.	Prof. R.P. Sharma	National Conference on "Bio-Fuel"	ITCOT, Chennai	Oct. 10, 2003
7.	Prof. R.P. Sharma	National Conference on "Bio-fuels"	APCOT, Hyderabad	Oct. 6, 2003
8.	Prof. V. Ganesan	ISTE National Conference on Alternate Fuels for Automobiles	IRTT, Erode	March 5, 2004
9.	Prof.M.P.Maiya	21 <sup>st</sup> International Congress of Refrigeration.	Washington DC	17-22 August, 2003.
10.	Prof.G.Venkatarathnam	International Cryogenic Engineering Conf.,	Anchorage, Alaska	22-26 September, 2003
11.	Prof.M.P.Maiya	7 <sup>th</sup> international Conference on Energy efficient healthy buildings.	Singapore	December 7 – 11, 2003,

S.No.	Name of faculty	Title	Institution	Period
12.	Prof.S.Srinivasa Murthy	The 8th Arab International Solar Energy Conference & Regional World Renewable Energy Conference.	Baharain	8-10 March 2004.
13.	Prof.S.Srinivasa Murthy	Seventeenth National Heat and Mass Transfer Conference / Sixth ISHMT - ASME Heat and Mass Transfer Conf.	Kalpakkam	5-7 Jan.2004.
14.	Prof.M.P.Maiya	Seventeenth National Heat and Mass Transfer Conference / Sixth ISHMT - ASME Heat and Mass Transfer Conf.	Kalpakkam	5-7 Jan.2004.
15.	Prof.M.P.Maiya	National Conference on Advanced in Building Construction & Rehabilitation Technology	IIT Kanpur	2-4 March 2004
<b>Seminar:</b>				
1.	Prof.O.V.Krishnaiah Chetty.,	Attended the 3 <sup>rd</sup> National Conference and presented two Technical papers on Precision Engineering.	(COPEN 2003 – 04) CMTI, Bangalore	19-20 Dec.2003
2.	Prof.Ramamoorthy.B.,	Chairman/Co-Chairman on Responsive Supply Chain & Organizational Competitiveness.	in the International Conference	6.12.2003
3.	Prof.Ramesh Babu N.,	Served as a Member, Organizing Committee for the National Conference on Advances in Manufacturing Technology organized.	by the Manufacturing Engineering Section, Dept. of Mech. Engg. IIT Madras on 2 <sup>nd</sup> April 2004	02.04.2004
4.	Prof.Shunmugam M.S.	Served as a Chairman, Organizing Committee for the National Conference on Advances in Manufacturing Technology;	Organized by the Manufacturing Engineering Section, Dept. of Mech. Engg. IIT Madras.	02.04.2004
		Nominated as Advisory Committee Member for the International Conference on Manufacturing and Management-2004".	Vellore Institute of Technology, Vellore.	
		Member, Advisory Committee, International Conference on CAD,CAM Robotics and Autonomous Factories,	IIT Delhi.	
		Member, Advisory Committee, National Conference on Modeling and Analysis of Production Systems,	NIT Tiruchirappalli.	
5.	Prof.Vijayaraghavan L,	Served as a Secretary, Organizing Committee for the National Conference on Advances in Materials and Manufacturing Technology organized by the Manufacturing Engineering Section.	Dept. of Mech. Engg. IIT Madras	2.04.2004.
		Delivered a lecture at Tata Honey Well on NC-CNC Programming and Metal Forming.		28.4.2004

S.No.	Name of faculty	Title	Institution	Period
		Delivered a Lecture on 'Simulation of grinding process'	At Erode Sengunthar Engg. College.	
6.	Dr.S.Venkataramaniah	Served as a Member, Organizing Committee for the National Conference on Advances in Materials and Manufacturing Technology	Organized by the Manufacturing Engineering Section, Dept. of Mech. Engg. IIT Madras.	2.4.2004.
<b>Short Term Course:</b>				
1.	Dr. A. Ramesh Dr. J.M. Mallikarjunappa	ECP short-term course on "Trends in Automotive Engine Technology for IOCL",	Sponsored by ISAT.	Oct. 27-31, 2003

**Special Lectures delivered by the faculty in others Institutions:**

S.No.	Name of the faculty	Topic of Lecture	Venue & Date
1.	Dr. S.K. Das	Nano-fluid	M.I.T. Boston, Apr. 29, 2003
2.	Dr. S.K. Das	Nano-fluid	Argonne National Lab, USA, April 25, 2003
3.	Dr. Ajit Kumar Kolar	Fuel Cells	Sri Venkateswara College, Mar. 6, 2004
4.	Dr. Ajit Kumar Kolar	Fuel Cells	Vellore Institute of Technology, Mar. 11, 2004
5.	Dr. Vijay R. Raghavan	Thermal Management in Electronics	IISc., Bangalore Jan. 2, 2004
6.	Dr. C. Balaji	Optimization of Energy Systems	M.A. College of Engg. Kothamangalam, Kerala Oct. 14, 2003
7.	Dr. C. Balaji	Optimization of Energy Systems	Kanchi Sri Chandraseharendra Saraswathi Viswa Maha Vidayala, Kanchipuram, (Deemed Univ.) Dec. 17, 2004
8.	Dr. C. Balaji	Genetic Algorithms	Arunai Engg. College, Thiruvannamalai, March 02, 2004
9.	Dr. K. Srinivas Reddy	Global Energy Scenario and Role of Renewable Energy	Kanchi Sri Chandraseharendra Saraswathi Viswa Maha Vidayala, Kanchipuram, (Deemed Univ.) Dec. 24, 2003
10.	Dr. K. Srinivas Reddy	Research Opportunities in Energy Engg.	Bannari Amman Institute of Technology, Sathyamangalam, T.N.
11.	Dr. Arunn Narasimhan	Forced Convection Fundamentals and Applications in Porous Media	M.A. College of Engineering, Kothamangalam, Kerala
12.	Dr. Arunn Narasimhan	Thermal Performance of Combination Bake-chill Station used in Microlithography Lithocell	Hindustan College of Engineering and Technology, Chennai
13.	Dr. BVSSS Prasad	Liquid Propulsion Systems: Some Research Investigations at IIT Madras	Andhra University 30.9.2003
14.	Dr. BVSSS Prasad	Wind Tunnel Testing Vs CFD Modeling Techniques	Mahendra Engineering College, Salem, 26.3.2004
15.	Krishnan Balasubramaniam	New Paradigm in NDE	ISNT AGM, July 2003
16.	Krishnan Balasubramaniam	Advanced NDE Methods	Sri Venkateswara Engineering Collage, Nov 2003
17.	Krishnan Balasubramaniam	Advances in Ultrasonic NDE	Anna University, Nov 2003
18.	Dr.V. Ganesan	LPG for Two Wheelers	Pondicherry Engg. College, Sept. 25, 2003

S.No.	Name of the faculty	Topic of Lecture	Venue & Date
19.	Dr. V. Ganesan	CFD: An Overview	JNTU, College of Engineering, Anantapur , Sept. 30, 2003
20.	Dr. V. Ganesan	CFD – An Overview	SAE Colligate Club, Coimbatore, Oct. 11, 2003
21.	Dr. V. Ganesan	Recent Advances in Automotive Technology	CVRDE, Avadi, Chennai, Oct. 27, 2003
22.	Dr. V. Ganesan	Alternate fuel for Two-wheelers	JNTU College of Engg. Oct. 31, 2003
23.	Dr. A. Ramesh	Electronic Control of Diesel Engines	CVRDE, Avadi, Chennai, Oct. 28, 2003
24.	Dr. A. Ramesh	Spark Ignition Engine Management	Combustion Institute India Section, Hyderabad, Oct. 2003
25.	Dr. V. Ganesan	Gaseous Fuels for Automotive Engines	Sri Chandraseharendra Saraswathi Viswa Maha Vidayala, Kanchipuram, Dec. 15, 2003
26.	Dr. A. Ramesh	Diesel Engine Management	Sri Chandraseharendra Saraswathi Viswa Maha Vidayala, Kanchipuram, Dec. 17, 2003
27.	Dr. V. Ganesan	Promising Gaseous Fuels of IC Engines	Sri Sai Ram Engg. College, Chennai, Jan. 22, 2004
28.	Dr. V. Ganesan	Alternative Fuels for IC Engines	MNM Jain Engg. College, Chennai, Jan 29, 2004
29.	Dr. A. Ramesh	Engine Management	Thangavelu Engg. College, Jan. 7, 2004
30.	Dr. V. Ganesan	Promising Gaseous Fuels for Automotive Applications	PSNA College of Engg. Dindigul, Feb. 6, 2004
31.	Dr. A. Ramesh	Diesel Engine Management	Tagore Engg. College, Chennai, Feb 13, 2004
32.	Prof. R.P. Sharma (Henry Ford Chair Professor )	10 Lectures on Engine Design Technology	General Motors R & D Centre, Bangalore, Feb. 13-14, 2004
33.	Prof. R.P. Sharma (Henry Ford Chair Professor )	Bio-diesel	Training Course organized by MNES and Periar College of Engg., Tanjore, Feb. 23-24, 2004
34.	Prof. R.P. Sharma (Henry Ford Chair Professor )	Bio-diesel as Transportation Fuel	Indo Swiss Workshop on Biofuel Conversion, IIT Madras, Dec. 10, 2003
35.	Prof. R.P. Sharma (Henry Ford Chair Professor )	Engine Technology and Emission	Hindustan College of Engg. Feb. 2004
36.	Dr. J.M. Mallikarjunappa	Extended Expansion Engine – An Overview	TTTI, Chennai July 24, 2003
37.	Prof.O.V.Krishnaiah Chetty	Delivered Key Note address at Mech. Drive 2004 "Creativity mental blocks in Manufacturing".	Feb.2004 AITS Rajanpet.
		Delivered a Key Note address at IIIE, Chapter Coimbatore, on "Petri Nets in Simulations" .	April,2004 Coimbatore.
38.	Prof. Krishnakumar.R.	Delivered an Invited talk on "Reliability in Automotive Design". At the Vellore Engineering College	March 2003
		Delivered a Special Lecture on CAD applications in Automotive Industries at Sri.Muthukumaran Institute of Technology, Chennai.	March 2004
39.	Prof. Krishnamurthy.R.	Delivered invited special lectures on various occasions to the following educational institutions/organizations to their scientist/ faculty members	On various dates during 2003-04: CVRDE, Avadi Anna University, Chennai MIT, Chrompet, Velammal Engg. College, Chennai Sona College of Engg. And Tech., Salem Deemed Univ. Kanchipuram NIT , Trichy

S.No.	Name of the faculty	Topic of Lecture	Venue & Date
40.	Prof. Ramamoorthy.B.	Delivered a Special Lecture on "Recent Trends in Automated Manufacturing Systems at the AICTE-ISTE Sponsored STTP "Recent Trends in Automated Manufacturing Systems" RVS College of Engineering and Tech.	15.12.2003 RVS Nagar, Dindigul.
		Special lecture on the Two-days awareness programme on ROMES, at Bannari Amman Institute of Technology.	22 <sup>nd</sup> Nov.2003 Sathyamangalam
41.	Prof. Shunmugam M.S.	Delivered a Key Note Address on "Metrology – Past, Present and Future", at the National Conference on Precision Engineering held at CMTI Bangalore.	19.12.2003 CMTI, Bangalore
		Delivered a special lecture on "Surface Machining" to the CVRDE Technical Personnel on the short term course organized by them.	March'03 CVRDE, Chennai
42.	Prof. Vijayaraghavan L,	Delivered a Key note address on 'Machining of Metal Matrix Composites'.	08.04.2004
43.	Prof. S.Kumaraswamy	Design of pump impellers for better cavitation performance	FCRI, Palghat, 18 <sup>th</sup> Dec. 2003
44.	Prof. V Balabaskaran	CFD applications in Hydroturbines	STC on CFD and some applications, IIT Madras, 26 <sup>th</sup> Feb. 2004
45.	Prof. S.Kumaraswamy	CFD in pumps	STC on CFD and some applications, IIT Madras, 26 <sup>th</sup> Feb. 2004
46.	Prof. U.S.P.Shet	Design Aspects of Eco-friendly Burner Systems during the AICTE-ISTE Two-week Short-Term Training Programme on Energy Prospects for Future: Global Perspective, December 15-27, 2003	December 24, 2003,; venue: Dept. of Mechanical Engineering, Sri Chandrasekharendra Sarawathi Viswa Mahavidyalaya ( Deemed University ) Enathur, Kancheepuram-631 561, Tamil Nadu

#### Visits Abroad by Faculty:

Sl. No.	Name of Faculty	Country visited	Date	Purpose of Visit
1.	Dr. Ajit Kumar Kolar	Sweden	June 22-28, 2003	Research Project
2.	Dr. B.V.S.S.S. Prasad	Sweden	20-6-2003 to 27-6-2003	To attend the Indo-Swedish Workshop on 'Biofuels' at Chalmers University of Technology, Goteborg, Sweden under SIDA Project.
3.	Prof. Krishnan Balasubramaniam	USA	19-07-2003	Participate in the WFNDEC meeting and attend QNDE Conference.
4.	Prof.S.Srinivasa Murthy	Germany	01-05-2003 to 30-06-2003	Indo-German Joint Research Project with University of Karlsruhe
5.	Prof.S.Srinivasa Murthy	Germany	September 2003	Indo-German Joint Research Project with University of Stuttgart
6.	Prof.M.P.Maiya	Germany	28 – 06- 003 to 18-07-2003	Indo-German Joint Research Project with University of Stuttgart
7.	Ramesh Babu N.,	Japan	14 – 23 Feb. 2004	Member of the delegation Participated in the Indo-Japan Seminar on Advanced Manufacturing Systems.

#### Honours and Awards obtained:

Sl. No.	Name of Faculty	Name of Award	Awarded by	Awarded for	Date of Award
1.	Dr.V. Ganesan	UP Govt. National Award	33 <sup>rd</sup> Annual Convention of ISTE	Outstanding work done in specified areas of Engineering and Technology(Book Writing) for the year 2003	27.12.2003

Sl. No.	Name of Faculty	Name of Award	Awarded by	Awarded for	Date of Award
2.	Dr. A. Ramesh	Bhakya Lakshmi Iyengar Award	Alumni Association, IIT Madras	Guiding the best B.Tech. project namely "Hybrid Electric Vehicles"	2003
3.	Dr.O.V.Krishniah Chetty	Certificate of merit	Institution of Engineers (I)	Paper entitled 'Abrasive Water Jet Machining of Black Granite with Garnet Abrasives'	2003

**Books/Monographs authored or co-authored**

S.No.	Name(s) of Faculty	Title	Publisher	Author/Co-author
<b>Books:</b>				
1.	Dr. Raju Sethuraman	Engineering Mechanics	Prentice Hall of India(PHI)	Lakshmana Rao M.S. Siva Kumar Lakshmi Narashimhan
2.	Dr. V. Ganesan	Internal Combustion Engines (II Edition)	Tata McGraw Hill	Nil
3.	Dr. V. Ganesan	Gas Turbines (II Edition)	Tata McGraw Hill	Nil
4.	Dr. V. Ganesan	Internal Combustion Engines (II Edition)	Tata McGraw Hill	Nil
5.	Dr. V. Ganesan	Gas Turbines (II Edition)	Tata McGraw Hill	Nil
<b>Monographs:</b>				
1.	Dr. A. Ramesh	Current Trends in IC Engines Development	Combustion Institute (Indian Section) Dec. 2003	Dr. Promod S. Mehta Mr.R.P. Sharma Dr.G.K. Sharma Mr.L.V. Naik Dr. Ravi Krishna
2.	Dr. R.P. Sharma	"Practical Consideration in Engine Tribology", Paper in Monograph on Current Trends in Engine Design.	Combustion Institute (Indian Section) Dec. 2003	Dr. Promod S. Mehta Mr.R.P. Sharma Dr.G.K. Sharma Mr.L.V. Naik Dr. Ravi Krishna

**Fellowships of Academies and Professional Societies :**

Sl.No.	Name of Faculty	Level	Name of the Academy/Professional Society	Year of Admission
1.	Prof. Krishnakumar.R.	Fellow		2004
<b>ISTE/CSI and others:</b>				
1.	Prof. A.Mani	Fellow	Institution of Engineers	July 2003
2.	Prof.S.Srinivasa Murthy	Fellow	International Energy Foundation	December 2003

**4.10.4. Design and Development Activities:**

- Developed an Electronically Controlled Multi-point Fuel Injection System for a Passenger Car Engine.
- Developed an Incylinder Swirl Meter for I.C. Engines.

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

1. Fretting wear test facility – An experimental set up is designed and developed in the laboratory.
2. A novel abrasive wear tester – The test facility is capable of evaluating the abrasive wear resistance of various materials. A fresh abrasive surface will mate the test material in the test machine.
3. Polymer gear test rig – The test facility permits the evaluation of polymer and light duty gears. The sophisticated test facility permits condition monitoring of several parameters that affect the gear performance.

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

Sl. No.	Name of Equipment	Value (Rs. In Lakhs)
1.	Helium leak detector	> 10.0
2.	Gas chromatograph	> 10.0
3.	Bio Gas Analyzer	1.50
4.	Eddy Current Dynamometer (2 Nos)	8.00
5.	Co-ordinate Measuring Machine	7.70
6.	Micro Hardness Tester	4.80
7.	Purchased under MHRD Project on "Modernisation and Removal of Obsolescence in Thermal Turbomachines Laboratory": Kulite Semiconductor Pressure Transducers.	

Sl. No.	Name of Equipment	Value (Rs. In Lakhs)
8.	70 kW Eddy current dynamometer.	
9.	110 kW A/C variable speed drive for A. C. Motors	
10.	DANTEC Probes and Accessories.	
11.	Microstages and Accessories (including computer for controlling the stages)	
12.	70 kW Eddy current dynamometer.	
13.	110 kW A/C variable speed drive for A. C. Motors	
14.	Set up for Experimental investigations of local flow blockages in simulated fuel sub – assemblies under BRNS Sponsorship: Injection molding machine, Eddy Current NDE System, High Frequency Ultrasonic NDE System	

**Patents awarded:**

**Dr. V. Babu**

1. Particle Impact and Soil Deposition Analysis System and Method for Vehicle Design, US Patent No. 6,529,860, March 4, 2003

**Patents filed:**

1. Prof.G.Venkatarathnam, "Refrigerant Composition for Multistage Refrigeration Systems" July 2003.
2. Filed by M/s. BHEL, for the possession of an Invention titled "A Portable Total Heat Flux Probe". Inventors: Dr. S. P. Venkateshan, Dr. B.V.S.S.S. Prasad and Dr. A. K. Kolar.
3. Prof M S Shunmugam, "A device for reducing backlash in gear drives" (Application No.636/MAS/03 dated 4.8.03)
4. Prof B Ramamoorthy, "Mechanical deflector Method"
5. Prof B Ramamoorthy, "Magnetic Field Method"

**4.10.5. Research and Consultancy :**

**Sponsored Research Projects :**

S.No.	Title	Period	Funding Agency	Amount (Rs. in lakhs)	Co-ordinators
1.	Advanced Biomass Gasification	Upto 31.7.2004	MNES	25.00	Dr.Ajit Kumar Kolar Dr.BVSS Prasad
2.	Biofuel Conversion	2003-2005	SIDA	15.00	Dr.Ajit Kumar Kolar Dr.BVSS Prasad
3.	Nano Fluids	2003-2005	DRDO	21.00	Dr. S.K. Das
4.	Nano Fluids	2004-2006	DST	9.00	Dr. S.K. Das
5.	Boiling in Narrow Channels		ISRO	19.00	Dr.A.R. Balakrishnan / Dr. S.K. Das
6.	Development of a generalized radiative transfer model including scattering for retrieval of geophysical parameters from microwave remote sensing observation from satellites	Feb. 2002 to Feb 6, 2004	SAC ISRO	10.35	Dr. S.P. Venkateshan Dr. C. Balaji
7.	Development of Computer Aided Instructional Module for Design and Optimization of Energy Systems	2003-2004	CCE, IIT Madras	1.20	Dr. C. Balaji
8.	Prevention of catastrophic failure in Gas Industrial System	2 years	DST	9.60	Prof.Y.G.Srinivasa
9.	Design and development of self Guided Vehicle with Embedded system controller	2 years	DST	15.38	Prof.Y.G.Srinivasa
10.	Establishment of Combustion Diagnostics and High Speed Turbo machinery Laboratory	5 Years	DST	185.00	Faculty members of ICE & TTM Laboratories
11.	Transient Natural Convection and Stratification in Cryogenic Propellant Tanks	2 Years	ISRO-IITM (LPSC, Trvm.)	10.50	Dr. B.V.S.S.S. Prasad Dr.S.SrinivasaMurthy Dr.G. Venkatarathnam

S.No.	Title	Period	Funding Agency	Amount (Rs. in lakhs)	Co-ordinators
12.	Advanced Biomass Gasification	4 Years	MNES	61.50	Prof. A. K. Kolar Prof. BVSSS Prasad
13.	Performance and Stall Margin Improvements in an Axial Flow Compressor by Means of Forward Swept Blades	2 Years	ARDB	7.20	Dr. N. Sitaram Dr. M. Govardhan
14.	Diffusers for Energy Efficient Centrifugal Compressors	3 Years	CSIR	5.00	Dr. N.Sitaram Dr. M. Govardhan
15.	Turbine Rotor Stator Interactions Including Effects of Film Cooling	3 Years	ARDB	9.00	Dr. N. Sitaram Dr. B.V.S.S.S. Prasad
16.	Performance Improvements of Centrifugal Compressors by Squealer Tips.	3 Years	CSIR	5.50	Dr. N. Sitaram
17.	Investigations of Subsonic Impulse and Reaction Turbine Cascades	3 ½ Years	MHRD	10.00	Dr. M. Govardhan Dr. N. Sitaram
18.	Modernisation and Removal of Obsolescence in Thermal Turbomachines Laboratory	2 years	MHRD	15.00	Dr. M. Govardhan Dr. N. Sitaram
19.	Sintered Gear Development and Behavior	3 Years	AICTE	3.00	Dr.R Gnanamoorthy
20.	Artificial Orthopedic Implants – Reliability	3.4 Years	MHRD	10.00	Dr.R Gnanamoorthy Mr.M. Kamaraj
21.	Polymer Composite gears	3 Years	DST	12.3	Dr. R Gnanamoorthy Dr.S K Malhotra
22.	Development of an Advanced Ultrasonic NDE Methods for Imaging of Tight Cracks in Thin Shells	2001-2003 (2 Years) Completed	ISRO-VSSC	8.22	Dr.Krishnan Balasubramaniam Mr. G. Jothinathan
23.	Health Monitoring of Composite Structures using Ultrasonic Guided Wave Methods.	2001-2004 (3 Years) Ongoing	ADA	50.82	Dr.Krishnan Balasubramaniam
24.	Development of NDE Techniques for Bond Interface Evaluation in Rocket Motor	2002-2004 (2 Years) Ongoing	ISRO - SHAR	13.26	Dr.Krishnan Balasubramaniam
25.	Smart Structural Concepts for guided Wave Evaluation of Composites with Embedded Polymer Film Transducers	2002-2005 (3 Years) Ongoing	ARDB	3.53	Dr.Krishnan Balasubramaniam Prof. B.S. Prabhu
26.	Development of high power ultrasonic transducer for NDE of thick concrete structures	2002-2004 (2 Years) Ongoing	DST	13.37	Dr.Krishnan Balasubramaniam, Dr. G. Makandeyalu, Dr. V.S. Murthy
27.	NDE Technology Development for Infrastructure Asset Management	2003-2006 (3 Years) Ongoing	DST	49.00	Dr.Krishnan Balasubramaniam
28.	Development of Advanced NDE Techniques for Enhanced Sensitivity, Reliability and Reduced Inspection Time for Detection and Characterization of Defects in Nuclear Components	2003-2006 (3 Years) Ongoing	BRNS	154.38	Dr.Krishnan Balasubramaniam
29.	Transient natural convection and stratification in cryogenic propellant tanks	2 years	ISRO – IITM Cell	10.465	Prof.S.Srinivasa Murthy Prof.BVSSS Prasad Dr.G.Venkatarathnam Dr.K.Ramamurthy (ISRO)
30.	Development and testing of metal hydrides for environmentally friendly energy conversion	2 years	Department of Science & Technology - German Academic Exchange Service	3.00	Prof.S.Srinivasa Murthy M.P.Maiya



S.No.	Title	Period	Funding Agency	Amount (Rs. in lakhs)	Co-ordinators
31.	Development of novel metal hydride reactors for environment friendly energy conversion devices	3 years	Ministry of Non-Conventional Energy Sources	27.00	Prof.S.Srinivasa Murthy Prof.B.Viswanathan M.P.Maiya
32.	Development and characterisation of metal hydrides for environment friendly energy use	3 years	Indo-German Collaborative Research Project	5.00	Prof.S.Srinivasa Murthy Prof.B.Viswanathan M.P.Maiya
33.	Development of desiccant assisted air conditioner for low humidity applications	3.5 years	Ministry of Human Resource Department	10.00	M.P.Maiya Prof.S.Srinivasa Murthy
34.	Vapour compression heat pump chiller	2 years	Kirloskar McQuay Pvt.Ltd., Pune	15.00	Prof.S.Srinivasa Murthy Dr.M.P.Maiya Prof.A.R. Balakrishna
35.	Development of a mixed refrigerant cyrocooler for electronic cooling	3 years	ISRO - IITM Cell	21.00	Prof.S.Srinivasa Murthy Prof.G. Venkatarathnam
36.	Utilisation of ocean thermal energy for desalination	2 years	NIOT	3.50	Prof.A. Mani Prof.S.Kumaraswami
37.	Demonstration of Solar Heat Driven Metal Hydride Based water pump	3 years	MNES	23.87	Prof.S.Srinivasa Murthy Prof.M.P.Maiya
38.	Ynthesis and Evaluation of Hydrogen Absorbing Alloys by Mechanical Alloying	3 years	MNES	20.00	Prof.S.Srinivasa Murthy Prof.M.P.Maiya
39.	Absorption Characteristics of Carbon Materials	2	MNES	25.31	Prof.S.Srinivasa Murthy Prof.B.Viswanathan
40.	Environment Friendly Hydrocarbon based Heat Pump Chiller Systems	2	MHRD	12.00	Prof.S.Srinivasa Murthy Prof.G.Venkatarathnam
41.	Application of Numerical Prediction of Flows Through Swirlers	2000-2003	Aeronautical R & D Board	8.86	Dr. V. Ganesan
42.	Fuel Nozzle Modelling	2002-2005	Aeronautical R & D Board	7.47	Dr. V. Ganesan
43.	Development of High Performance Bio-gas Vegetable Oil Dual Fuel Engine	30.1.2003 to 29.1.2006	Ministry of Non-conventional Energy Sources	18.00	Dr. A. Ramesh Dr. B. Nagalingam
44.	Development of a mixture Injection System for Improved Performance and reduced emissions in two-stroke SI Engines	1.4.2003 to 30.9.2005	Ministry of Human Resources and Development	10.00	Dr. A. Ramesh Dr. V. Ganesan Dr. B. Nagalingam
45.	Offline path planning of cooperative manipulators in a work cell environment	2000-2003	DST	16.52	Dr.N.Ramesh Babu Dr.Koshy Varghese
46.	Machinability Characteristics of Al Alloy Reinforced with SiC particulates	2001-2002	DST	8.00	Dr.L.Vijayaraghavan Dr.R.Krishnamurthy
47.	Computer Simulation of Friction Welding Process	2002-2003	DMRL	4.95	Dr.R.Krishna Kumar
48.	Transient Finite Element Analysis to Determine the characteristics of a Tyre	2001-2003	JK TYRE	15.00	Dr.R.Krishna Kumar
49.	Machining of Non-metallic Disc using improved non-conventional machining	2002-2003	ISRO	3.00	Dr.O.V.Krishniah Chetty Dr.N.Ramesh Babu
50.	A Study on the Performance of Tools with Nano-coatings on Machining of Hard Materials	2004-2005	ARDB	9.68	Prof.B.Ramamoorthy Dr.M.S.Ramachandra Rao
51.	Modeling and simulation of gun control system using virtual prototyping method.	2003-2004	MHRD		Prof.M.S.Shunmugam

## Industrial Consultancy projects:

S.No.	Name of Faculty	Title	Industry	Amount (Rs. In Lakhs)
1.	Dr. S.K. Das	CFD Analysis of Radiator for Heavy Duty Diesel Engine	Apollo Heat Exchangers Pvt. Ltd., Bombay	0.40
2.	Dr. N. Sitaram Dr. BVSSS Prasad	Calibration of Digital Manometer & Thermometer	BHEL, Ranipet	0.10
3.	Dr. BVSSS Prasad Dr. YVSS Sanyasiraju	CFD Analysis for Improving Flush Efficiency of Parry Ware Toilets	EID Parry (India) Ltd.	3.50
4.	Dr. BVSSS Prasad Dr. M. Ramakrishna	CFD Analysis of Air Flow for a Rotating Wheel-Drum Assembly	Wheels India Limited	2.00
5.	Dr. BVSSS Prasad Dr. A. K.Kolar	CFD Analysis of the Fluidized Bed in IGCC Gasifier	BHEL, Trichy	4.50
6.	Dr. M. Govardhan	Fabrication and Calibration of 5 hole Probes	BHEL R&D, Hyderabad	1.00
7.	Krishnan Balasubramaniam	Ultrasonic Immersion C-Scan Testing	Covanta Samalpatti Operation (P) Ltd.	0.36
8.	Krishnan Balasubramaniam	Ultrasonic C-Scan Evaluation of Steel Samples	TATA Steel,	0.10
9.	Prof.M.P. Maiya Prof.BVSSS Prasad	Design and Calibration of Orifice Plate for Filter Test Set-up	Air Breeze(I) pvt. Ltd., Chennai	0.15
10.	Dr. A. Ramesh	Spark Ignition Engine Controller Development	Harita Infoserve Ltd., Bangalore	0.20
11.	S. Kumaraswamy	Analysis of Bhingarh Mini hydel project	Best and Crompton Engg., Chennai	0.10
12.	S. Kumaraswamy (Prof.S. Mohan , Civil Engg. Dept. is the coordinator of the project)	Design of water treatment plant for Mine 1-A	NLC, Neyveli	2.50

## RBIC Projects:

S.No.	Name of Faculty	Title	Industry	Amount (Rs. In Lakhs)
1.	Dr. S.P. Venkateshan Dr. C. Balaji	Development of a Heat Transfer Model for the Active Cooling of a Hypersonic Technology Demonstration Vehicle Engine"	DRDL, Hyderabad	8.80
2.	Dr. S.K. Das	Consultancy and Technical Study on Compact Cooling System for AFVs	CVRDE (DRDO)	5.00
3.	Dr. S.K. Das /Dr. Krishnan Balasubramanian.	Modeling and Residual-Life Assessment of Composite Barrel	ARDE, Pune	5.00
4.	Dr. B.V.S.S.S. Prasad	CFD Analysis of Secondary Air Systems for Kaveri Engine	GTRE	5.00
5.	Dr. B.V.S.S.S. Prasad	Development of a Computer Module of the Network Analysis of Secondary Air System.	GTRE	4.80
6.	Dr. Y.V.S.S.S. Raju Dr. B.V.S.S.S. Prasad	Determination of Heat Transfer Coefficient for the Nozzle Guide Vanes and Blades	GTRE	3.40

S.No.	Name of Faculty	Title	Industry	Amount (Rs. In Lakhs)
7.	Dr. B.V.S.S.S. Prasad Dr. N. Sitaram	Rotor-Stator Interactions for Three Stages of a Compressor.	GTRE	5.00
8.	Dr. B.V.S.S.S. Prasad Dr. N. Sitaram	Conjugate Heat Transfer in the Vicinity of Compressor Disks.	GTRE	3.40
9.	Krishnan Balasubramaniam	Development of Data registry and Data Analysis algorithms for NDE Inspection of Large Area Aircraft Structures	US Airforce Research Lab./ Universal Technology Corporation, USA	70.00
10.	Krishnan Balasubramaniam	Development of a Stress Gradient Profiler for Metallic Component using Ultrasonic Guided Wave Inversion	US Airforce Research Lab., Universal Technology Corporation, USA	12.00
11.	Krishnan Balasubramaniam	Nanoceramics Inspection and Nonlinear Experiments	GE India Technology Centre Pvt. Ltd	12.45
12.	Krishnan Balasubramaniam	Development of Digital Ultrasonic Technique for Bon Inspection in Tubular Structures	DRDL, Hyderabad.	4.90
13.	Krishnan Balasubramaniam	Ultrasonic A,B&C-Scan Algorithm Development.	Mahindra Intertrade Limited/TATA Steel	3.24
14.	Krishnan Balasubramaniam	Evaluation of Structural Integrity of Tubular Composite Structure using Ultrasonic NDE	ARDE (Armament R&D Establishment), Pune	3.89
15.	Krishnan Balasubramaniam	Modeling and Residual Life Assessment Studies for Composite Tubes.	ARDE (Armament R&D Establishment), Pune	4.97
16.	Prof.S. Srinivasa Murthy Prof.G. Venkatarathnam	Design of Multi-stream cryogenic heat exchangers	DRDL	5.0
17.	Dr. V. Ganesan	Flow Field Studies and Optimization of a Short Gas Turbine Combustor under Isothermal and Reacting Conditions using Fluent Code	GTRE, Bangalore	4.95
18.	Dr. V. Ganesan	Optimization of Fuel Manifold Position in after Burner Configuration and Parametric Studies using Fluent Code.	GTRE, Bangalore	4.95
19.	Dr. A. Ramesh Dr. V. Ganesan Mr. N. Achuthan	Indigenous Development of Engine Controller	CVRDE, Avadi, Chennai	23.00
20.	Dr. A. Ramesh	Evaluation of the Royal Enfield A350 Motor Cycle Engine	Royal Enfield, Chennai	1.50

#### Retainer Consultancy:

S.No.	Name of Faculty	Title	Industry	Amount (Rs. In Lakhs)
1.	Dr. B.V.S.S.S. Prasad		BHEL, Trichy.	-
2.	Prof.A. Mani	Performance improvement of aqua-feed plant	Godrej Agro-vet Ltd, Chennai	Rs.5000/-
3.	Prof.B.Ramamoorthy Prof.M.S.Shunmugam	Improving efficiency of plant	Godrej Agrovvet, Ambattur	0.5
4.	Prof.M.S.Shunmugam Prof.B.Ramamoorthy Prof.N.Ramesh Babu	Expert Opinion Report	(Police Department)	2.5 lakhs

#### Exchange programme with other Universities:

- Two students in the Product Design Dual degree program (Mr. Gokul Swamy and Mr. R. Jagannathan) spent the summer at Michigan State University, USA, working in the area of Nondestructive Evaluation.

- Indo-German project on "Adaptive Control of Abrasive Water Jet Cutting Process with Soft Computing Approaches" (August 2002 – August 2005)

Value of Project : Euro 99,400

Co-ordinators : Prof. N.Ramesh Babu, IIT Madras

Prof.Dr.Ing.Hartmut Louis, Univ. of Hannover, Germany

Funding Agency: Volkswagen Foundation, Germany

- Indo-Japan Student Exchange Programme : IIT Madras and Osaka Prefecture University, Japan

Student Name : J.Ram Kumar

Guide : Prof.R.Krishnanmurthy

- Mr. Hans Peter Klein of the University of Stuttgart, Germany visited R & AC Laboratory during 2003 under DLR project

#### Journal Editorial Boards:

S.No.	Name of Faculty	Level	Journal
1.	Dr. M. Govardhan	Member of the Editorial Board	Journal of Thermal Sciences
2.	Dr.Raju Sethuraman	Paper reviewer	International Journal of Fracture
S.No.	Name of Faculty	Level	Journal
3.	Dr.S. Srinivasa Murthy	Co-Chairman	International Dictionary of Refrigeration (Airconditioning & Heat Pumps Section)
4.	Dr. V. Ganesan	Member	Indian Journal of Engg. and Material Science

#### Research Publications:

Total Number of publications in Refereed National Journals	:	6
Total Number of publications in Refereed International Journals	:	33
Total Number of presented in National Conferences	:	93
Total Number of publications in International Conferences	:	51

#### In Refereed National Journals:

- N K Ramakrishna Naidu, S Ganesh Sundara Raman and R Gnanamoorthy, Fretting Fatigue Behaviour of Aluminum Alloy 6061 T6 under plane bending, Trans Indian Inst Metals, Vol. 56 , No. 5, October 2003, p 513 – 520.
- Sunil V Unaune and Ganesan, V. , "Flow Field Studies in an Afterburner", Journal of Institution of Engineers, India, Vol. 84, pp 165-170.
- Ramkumar, M. and Ganesan, V., "Analysis of non-reacting flow in an aircraft gas turbine engine afterburner model using finite volume method", Indian Journal of Engg. And Materials Sciences, Vol. 10, 2004, pp 341-352.
- Sunil V. Unaune and Ganesan, V., "Analysis of reacting flows in an aero-engine Afterburner using Computational Fluid Dynamics, Indian Journal of Engineering and Material Sciences, India, Vol. 11, pp 31-37.
- N. Rajesh and N. Ramesh Babu, "A Study on Wear behaviour of 6063-T6 Aluminium alloy subjected to Water Jet Peening", Journal of the Institution of Engineers (India) Vol. 84, pp: 19-22, 2003
- G. Raja Singh Thangadurai, B.S. Subhash Chandran, V. Babu and T. Sundararajan, Numerical Investigations of the Intake Flow Characteristics for a Ramjet Engine with and without Heat Addition in the Combustor, Defence Science Journal, 54, 1, 2004.

#### In Referred International Journals:

- 'Finite Element Based Evaluation of Stress Intensity Factors for Interactive Semi-Elliptic Surface Cracks', International Journal of Pressure Vessel and Piping, v-80, pp843-859, (2003),(Co-Authors -G. Siva Shankara Reddy and I. Thanga Ilango).

2. 'Evaluation of Notch root Elasto-Plastic Stress State for General Loadings Using Elastic Solutions', International Journal of Pressure Vessel and Piping, Accepted for publication, In press(2004),(Co-Author S. Viswanadha Gupta).
3. 'Pseudo Elastic Analysis of Material Non-Linear Problems Using Element Free Galerkin Method', International Journal of the Chinese Institute of Engineers, In press (2004),(Co-Author Ch. Sridhar Reddy).
4. Senthil Kumar, M., Ramesh, A. and Nagalingam, B., "Use of Hydrogen to Enhance the Performance of a Vegetable Oil Fuelled Compression Ignition Engine", International Journal of Hydrogen Energy, Vol, 28, Paper No. HE 1555, 2003, pp 1143-1154.
5. Senthil, Kumar, M., Ramesh, A. and Nagalingam, B., "An Experimental Comparison of Methods to useMethanol and Jatropa Oil in a Compression Ignition Engine", International Journal of Biomass & Bio Energy, Vol. 25, 2003, pp 309-318.
6. J. M. Issac, N. Sitaram and M. Govardhan, "Performance and Static Pressure Distribution on the Diffuser Walls of a Centrifugal Compressor using Different Types of Diffusers", Proceedings of the Institution of Engineers, Part A: Journal of Power and Energy, Vol. 217, No. 5, pp. 547-558, 2003.
7. Balaji, C and Herwig, H., "The Use of ACFD Approach in Problems Involving Surface Radiation and Free Convection", Int. Journal of Comm. Heat and Mass Transfer, Vol.30, No. 2, 2003, pp 251-59.
8. Krishnan, A.S., Balaji, C., and Venkateshan, S.P., "A Synthetic Approach to Parameter Estimation in Multi-mode Heat Transfer", Int. Communications in Heat and Mass Transfer, Vol. 30, No.4, 2003, pp. 515-524
9. Anil Kumar Sharma and Balaji, C., "A Numerical Study of Natural Convection from a localized heat source in the Lower Plenum of a Fast Breeder Reactor under Failed Conditions", Int. J. Heat and Mass Transfer, Springer-Verlag, Online, Oct. 25, 2003.
10. Sarit K. Das, Nandy Putra, P., Thiesen and Roetzel, W., "Temperature Dependence of Thermal Conductivity Enhancement for Manofluids", Jl. Of Heat Transfer, Trans ASME, Vol. 125, 2003, pp. 567-574.
11. Srinivas Reddy, K.S. Manish Ranjan, "Solar Resource Estimation using Artificial Neural Networks and Comparison with other Correlation Models", Energy Conversion and Management, Vol. 44, 2003, pp 2519-2530.
12. Sarit K. Das, Nandy Putra and Wilfried Roetzel, "Pool Boiling of Nano-fluids on Horizontal Narrow Tubes", Int. Journal of Multi-Phase Flow, Vol. 29, 2003, pp. 1237-1247.
13. Hrishikesh E. Patel, Sarit K. Das, Sundararajan, T., Sreekumaran Nair, A., Beena George and Pradeep, "Thermal Conductivities of Naked and Monolayer Protected Metal Mano-particle Based Nano-fluids: Manifestation of Anomalous Enhancement and Chemical Effects", Applied Physics Letters, Vol. 83, No. 14, 2003, pp 2931-2933
14. Nandya Putra, Wilfried Roetzel and Sarit K. Das., "Natural Convection of Mano-fluids", Heat and Mass Transfer, Vol. 39, 2003, pp 775-784.
15. Narasimhan, A. and Lage, J.L., "Temperature Dependent Viscosity Effects on the Thermohydraulics of Heated Porous Medium Channel Flows", Journal of Porous Media, Vol. 6, 2003, pp 149-158.
16. Narasimhan, A. and Ramanan, N., "Simulation Studies and Experimental Verification of the Performance of a Litho-cell Combination Bake-chill Station", Jl. of Microlithography, Microfabrication and Microsystems, Vol. 3, No.2, 2004, pp 1537-1646.
17. Kevin Abraham, M.P.Maiya And S.Srinivasa Murthy; Analysis of a metal hydride cold storage module; Int. J of Hydrogen Energy, Vol.28, No.4, 2003, pp. 419 – 427
18. U.A.Rajendra Prasad, M.P.Maiya And S.Srinivasa Murthy; Parametric studies on a heat operated metal hydride based water pumping system; Int. J of Hydrogen Energy, Vol.28, No.4, 2003, pp. 429-436
19. Kevin Abraham, M.P.Maiya And S.Srinivasa Murthy; Performance analysis of a single stage four bed metal hydride cooling system: Part A: Influence of mass recovery ; Int. J of Thermal Sciences, Vol.42, 2003, pp.71-77.
20. Kevin Abraham, M.P.Maiya And S.Srinivasa Murthy; Performance analysis of a single stage four bed metal hydride cooling system: Part B: Influence of heat recovery ; Int. J of Thermal Sciences, Vol.42, 2003, pp. 79-84.
21. R. Saravanan and M.P. Maiya, Experiments on Bubble Pump Operated H<sub>2</sub>O - LiBr Vapour Absorption Cooler, *Applied Thermal Engineering*, 23, pp.2383 – 2397 (2003).

22. B.Rakhesh, G.Venkatarathnam, And S.Srinivasa Murthy; Experimental studies on a heat pump operating with R22, R407C and R407A: Comparison from an exergy point of view.; Trans. ASME: J. Energy Resources Technology, Vol. 125, June 2003, pp 101- 112
23. B.Rakhesh, G.Venkatarathnam, And S.Srinivasa Murthy; Performance comparison of HFC227 and CFC114 in compression heat pumps; Applied Thermal Engineering, Vol.23, 2003, pp. 1559-1566
24. Kevin Abraham, M.P.Maiya And S.Srinivasa Murthy; Performance analysis of a single stage four bed metal hydride cooling system: Part C: Influence of heat and mass recovery.; Int. J of Thermal Sciences, Vol.42, 2003, pp. 1021-1027.
25. S.Sajid Ahmed And S.Srinivasa Murthy; Analysis of a novel metal hydride cycle for simultaneous heating and cooling; Renewable Energy, Vol.29 (4), 2003, pp. 615 – 631
26. U.A.Rajendra Prasad, M.P.Maiya And S.Srinivasa Murthy; Metal hydride water pumping system for low head-high discharge applications; Int. J of Hydrogen Energy, Vol.29, No.5, 2004, pp.501-508.
27. Srithar, K. and Mani, A., 'Comparison between simulated and experimental performance of an open solar flat plate collector for treating tannery effluent', International Communications in Heat and Mass Transfer, Vol. 30, pp505, 2003
28. Sesha Girish, G.V.S. and Mani, A., 'Analysis of forced convective evaporation system for tannery effluent (Soak liquor)', International Communications in Heat and Mass Transfer, Vol. 30, pp.727-736, 2003
29. Sesha Girish, G.V.S. and Mani, A., 'Numerical simulation of forced convective evaporation system for tannery effluent', International Journal of Heat and Mass Transfer, Vol..47, pp.1335-1346, 2003
30. Selvaraju, A. and Mani, A., 'Analysis of an ejector with environment friendly refrigerants', International Journal – Applied Thermal Engineering, Vol.24, pp.827-838, 2003
31. Srithar, K. and Mani, A., 'Analysis of a single cover FRP flat plate collector for treating tannery effluent (Soak liquor)', International Journal – Applied Thermal Engineering, Vol..24, pp.873-883, 2003
32. C. Shyam Sunder, G. Baskar, V. Babu and David Strenski, Parallel Performance of the Interpolation Supplemented Lattice Boltzmann method, Lecture Notes in Computer Science, LNCS 2913, Springer, 2003
33. T.K. Ganesh Anavardham, B. Umesh Chandra, V. Babu, S.R. Chakravarthy and S. Panneerselvam, Experimental and numerical investigation of confined unsteady supersonic flow over cavities, Aeronautical Journal (accepted for publication)

#### In Proceedings of National Conference:

1. R Ramesh And R Gnanamoorthy, Fretting Wear Failures in Bearing Steel En31 Mated Against Structural Steel En 24, Presented at The National Conf on Machines & Mechanisms to be held at IIT Delhi, Dec 2003.
2. S Senthilvelan And R Gnanamoorthy "Condition Monitoring And Failure Analysis Of Nylon And Nylon Glass Filled Polymer Gears" Presented at The National Conf on Machines Mechanisms to be held At IIT Delhi, Dec 2003.
3. A multi-frequency eddy current inversion method for characterizing depth profiles in materials, Krishnan Balasubramaniam and Veeraraghavan Sundararaghavan, presented at NDE2003, Tiruvananthapuram, Dec 2003
4. On-line monitoring of welds using guided waves, Ezhil J. C.V., Krishnamurthy, K. Prasad Rao, Krishnan Balasubramaniam, presented at NDE2003, Tiruvananthapuram, Dec 2003
5. Automated defect sizing algorithm (ESIT and PSCT) for TOFD imaging of defects in thin sections, G. Bhaskaran, Gokul Samy, Krishnan Balasubramaniam, C. V. Krishnamurthy, C. Lakshmana Rao, G. Jothinathan and B. C. Bhaumick, presented at NDE2003, Tiruvananthapuram, Dec 2003
6. Rapid Estimation Of Elastic Moduli Of Plates Using Ultrasonic Immersion Measurements, S. Siva Shashidhara Reddy, Krishnan Balasubramaniam, C. V. Krishnamurthy, M. Shankar and J.Vishnuvardhan, presented at NDE2003, Tiruvananthapuram, Dec 2003
7. A multi-frequency eddy current inversion method for characterizing water jet peened aluminum alloys, Veeraraghavan Sundararaghavan, Krishnan Balasubramaniam, and Ramesh Babu, presented at the 30th Annual Review of Progress in Quantitative Nondestructive Evaluation (QNDE) held in Green Bay, Wisconsin, from July 27<sup>th</sup> through August 1 2003

8. Structural Health Monitoring of Anisotropic Layered Composite Plates using Guided Ultrasonic Lamb Wave Data, Mahadev Prasad, S. Jagannathan, Krishnan Balasubramaniam, and Krishnamurthy C V, presented at the 30th Annual Review of Progress in Quantitative Nondestructive Evaluation (QNDE) held in Green Bay, Wisconsin, from July 27<sup>th</sup> through August 1 2003
9. A 2-D Inverse Heat Conduction Formulation For Determination Of Heat Source Characteristics From Thermal Images, Naveen V Nair, Krishnan Balasubramaniam and Sarit K Das, presented at the 30th Annual Review of Progress in Quantitative Nondestructive Evaluation (QNDE) held in Green Bay, Wisconsin, from July 27<sup>th</sup> through August 1 2003
10. Ultrasonic Benchmark Problems- Numerical and Experimental Simulations, Krishnamurthy C V, and M. Shankar and Krishnan Balasubramaniam, presented at the 30th Annual Review of Progress in Quantitative Nondestructive Evaluation (QNDE) held in Green Bay, Wisconsin, from July 27<sup>th</sup> through August 1 2003
11. Eddy Current Benchmark Problem 3 - Optimisation of Pipe Inspection probe Design, Veeraraghavan Sundararaghavan<sup>1</sup>, and Krishnan Balasubramaniam, presented at the 30th Annual Review of Progress in Quantitative Nondestructive Evaluation (QNDE) held in Green Bay, Wisconsin, from July 27<sup>th</sup> through August 1 2003
12. A Novel Inversion Algorithm for the Determination of Stress Gradients using Ultrasonic Raleigh Wave Dispersion, Prabhu Rajagopalan, Krishnan Balasubramaniam, Krishnamurthy C V, and M. Shankar, presented at the 30th Annual Review of Progress in Quantitative Nondestructive Evaluation (QNDE) held in Green Bay, Wisconsin, from July 27<sup>th</sup> through August 1 2003
13. A multi-frequency eddy current inversion method for characterizing depth profiles in materials, Krishnan Balasubramaniam and Veeraraghavan Sundararaghavan, presented at NDE2003, Tiruvananthapuram, Dec 2003
14. On-line monitoring of welds using guided waves, Ezhil J. C.V., Krishnamurthy, K. Prasad Rao, Krishnan Balasubramaniam, presented at NDE2003, Tiruvananthapuram, Dec 2003
15. Automated defect sizing algorithm (ESIT and PSCT) for TOFD imaging of defects in thin sections., G. Bhaskaran, Gokul Samy, Krishnan Balasubramaniam, C. V. Krishnamurthy, C. Lakshmana Rao, G. Jothinathan and B. C. Bhaumick, presented at NDE2003, Tiruvananthapuram, Dec 2003
16. Rapid Estimation Of Elastic Moduli Of Plates Using Ultrasonic Immersion Measurements, S. Siva Shashidhara Reddy, Krishnan Balasubramaniam, C. V. Krishnamurthy, M. Shankar and J.Vishnuvardhan, presented at NDE2003, Tiruvananthapuram, Dec 2003
17. S. S. Suneesh, B. V. S. S. S. Prasad and N. Sitaram, "Unsteady Aerodynamic Analysis of a Transonic Compressor Stage: Effect of Blade Pitch ratio and Rotor Speed", Proc. of the 30<sup>th</sup> National Conference on Fluid Mechanics and Fluid Power, pp. 629-636, Dec. 11-13, 2003, Surathkal, India.
18. J. M. Issac, N. Sitaram and M. Govardhan, "Effect of Diffuser Vane Height on the Performance of a Centrifugal Compressor", Proc. of the 30<sup>th</sup> National Conference on Fluid Mechanics and Fluid Power, pp. 586-594, Dec. 11-13, 2003, Surathkal, India.
19. B.V.N. Ramakumar and B.V.S.S.S. Prasad "A Combined CFD and Network Approach for the Simulation of Flow Systems", Proc. of the 30<sup>th</sup> National Conference on Fluid Mechanics and Fluid Power, pp. 586-594, Dec. 11-13, 2003, Surathkal, India.
20. J. M. Issac, N. Sitaram and M. Govardhan, "Effect of Diffuser Vane Height on Diffuser Wall Static Pressure Distribution in a Centrifugal Compressor", Proceedings of the 55<sup>th</sup> AGM of the Aeronautical Society of India, Dec. 17 & 18, 2003, Bangalore, India.
21. S. S. Suneesh, B. V. S. S. S. Prasad and N. Sitaram, "Effect of Axial Spacing on the Rotor/Stator Interaction in an Axial Compressor", Proc. of the 6<sup>th</sup> Annual CFD Symposium, August 11 to 13, 2003, Bangalore, India.
22. Suyambazhahan, Sundararajan, T. and Sarit Kumar Das, "Numerical Simulation of Flow and Thermal Oscillations in Non-isothermal Turbulent Multiple Jets", Proc. XVII National and VI ISHMT/ASME Heat and Mass Transfer Conference, IGCAR, Kalpakkam, Jan. 5-7, 2004, pp. 110-116.
23. Premchandran, B. and Balaji, C., "Conjugate Heat Transfer from Vertical Channels and Uniform Heat Generating Finite Thick Plates", Proc. XVII National and VI ISHMT/ASME Heat and Mass Transfer Conference, IGCAR, Kalpakkam, Jan. 5-7, 2004, pp. 47-53.
24. Singh, S.N. and Venkateshan, S.P., "Interaction of Natural Convection and Surface Radiation in a Cavity with Open Top and Partial Opening on One Side", Proc. XVII National and VI ISHMT/ASME Heat and Mass Transfer Conference, IGCAR, Kalpakkam, Jan. 5-7, 2004, pp 54- 61.

25. Dibakar Rakshit and Balaji, C., "Heat Transfer and Thermodynamic Optimization of a Convecting Rectangular Channel", Proc. XVII National and VI ISHMT/ASME Heat and Mass Transfer Conference, IGCAR, Kalpakkam, Jan. 5-7, 2004, pp. 729-735.
26. Sharma, A.K. Balaji, C., Das, S.K., Punitha, G. and Kannan, S.E., "Effect of Chimney Diameter on Natural Convective Heat Transfer from a Volumetric Heat Generating Flat Circular Plate Placed in a Dished End Cavity", Proc. XVII National and VI ISHMT/ASME Heat and Mass Transfer Conference, IGCAR, Kalpakkam, Jan. 5-7, 2004, pp. 573-578.
27. Conference on advances in manufacturing technology (AMT 2003) Department of internal leakage analysis in precision hydraulic component. Proceedings of national Somashekhar S. Hiremath, M.Singaperumal, M.and Krishnakumar.R Solid modeling and Mechanical Engineering NSS College of Engineering, Palghat.15-16 Feb. 2003, Paper No.91 pp 1-11.
28. Somashekhar, S. Hiremath., Singaperumal, M. Material sensitivity in design hydraulic components. Proceedings of the conference on Materials and Robotics. Process Instrumentation and Inspection Technologies/. Dec.15-16 2003 SERC Chennai. P (71-C75)
29. Somashekhar S. Hiremath, M.Singaperumal, and Krishnakumar.R Fluid –structure interaction through finite element method: Actuator dynamics. Proceedings of the third national conference on precision engineering. December 19-20 2003, Control Manufacturing technology Institute Bangalore, Paper No.10 82-80.
30. Somashekhar S. Hiremath, M.Singaperumal, and Krishnakumar.R Frequency response of critical components of a hydraulic Servo valve. Proceedings of the 11<sup>th</sup> National Conference on Machines and Mechanisms (NaComm-2003) Dec.18-19 2003, Department of Mechanical Engineering. Indian Institute of Technology Delhi. New Delhi- 110 0116. paper No. mec.011, PP 319-326.
31. G. Satheesh Kumar, Y.G. Srinivasa, T. Nagarajan (2003) Vibration Isolation using a Multi-Axis Robotic Platform , 11<sup>th</sup> National Conference on Machines and Mechanisms (NacoMM-2003) IIT Delhi, December 18-19.
32. G. Satheesh Kumar, Prof. T. Nagarajan, Prof. Y.G.Srinivasa (2003) A Review of Stewart Platform In Vibration Isolation Applications, International Conference on CAD,CAM, Robotics and Autonomous Factories (Incarf-2003),IIT Delhi, Feb.23-28.
33. K.B.Sudharsan, T. Nagarajan, A Robot vision system for identification of defective Technologies for Nuclear Fuel cycle (2003) C-109-C114. Dec.15-16,SERC Chennai.
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37. Kevin Abraham, M.P.Maiya And S.Srinivasa Murthy,; An approach to estimation of cycle times of coupled metal hydride beds; Seventeenth National Heat and Mass Transfer Conference / Sixth ISHMT - ASME Heat and Mass Transfer Conf., Kalpakkam, 5-7 Jan.2004.
38. M.P.Maiya, Philipp Schonberger and Ajay Kumar, Performance of a Solar Hot Water Operated Liquid Desiccant Cooler, ACRECONF 2003, International Conference on Emerging Technologies in Airconditioning and Refrigeration, September 10 – 12, 2003, New Delhi.
39. Ganesan, V. and Suresh Kumar, J., " A Numerical Study on S.I. Engine Air Intake System,Proc. XVIII National Conf. on I.C. Engines and Combustion, College of Engg., Thiruvananthapuram, Dec. 17-19, 2003, pp 225-231.
40. Rajkumar, M. and Ganesan, V., "Effect of Inlet Conditions on the performance of Aircraft afterburners", Proc. XVIII National Conf. on I.C. Engines and Combustion, College of Engg., Thiruvananthapuram, Dec. 17-19, 2003, pp 321-327.
41. Mallikarjunappa, J.M. and Ganesan, V., "Performance Evaluation of Extended Expansion Spark Ignition Engine – Numerical and Experimental Investigations", Proc. XVIII National Conf. on I.C. Engines and Combustion, College of Engineering, Thiruvananthapuram, Dec. 17-19, 2003, pp 17-27.



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2. Sarit K. Das., "Heat Transfer in Nano-fluids", presented at the Material Research Society (MRS), Spring Meeting, San Francisco, USA, April 21-25, 2003.
3. Naveen V. Nair, Krishnan Balasubramanian Sarit K. Das, "A 2-D Inverse Heat Conduction Formulation for Determination of Heat Source Characteristics from Thermal Images", Presented at the 30<sup>th</sup> Annual Review of Progress in Quantitative Nondestructive Evaluation (QNDE)\_held in Green Bay, Wisconsin, USA, July 27 through Aug. 1, 2003 (Session 15).
4. Somashekhar S. Hiremath, M.Singaperumal, M.and Krishnakumar. R. FE approach – Electro mechanical-fluid modeling of jet pipe Electrohydraulic Servovalve, International workshop on fluid power and power transmission. University of Bath U.K. Paper NoP003/002/2003 P.53-64.
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6. Somashekhar S. Hiremath, M.Singaperumal, M.and Krishnakumar. R FE Approach: Role of fluid properties in actuator dynamics. Third SAE International Conference o Automotive and fuel Technology. 16-19 January 2004. India Habitat Centre. Delhi. India. Paper No.2004-28-0009.

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8. Tarun Kumar Khurana, B.V.S.S.S. Prasad, S. Srinivasa Murthy and K. Ramamurthi, "The Effect of Circumferential Ribs on Thermal Stratification in a Liquid Hydrogen Tank", Proc. of the 6<sup>th</sup> ISHMT – ASME Heat and Mass Transfer Conference and 17<sup>th</sup> National Heat and Mass Transfer Conference, IGCAR, Kalpakkam, January 5 –7, 2004.
9. S. Prasanth Kumar, B.V.S.S.S. Prasad, A. K. Kolar, R. Vijayashree, "Convective Thermal Analysis of a Temperature Sensitive Magnetic Switch", Proc. of the 6<sup>th</sup> ISHMT – ASME Heat and Mass Transfer Conference and 17<sup>th</sup> National Heat and Mass Transfer Conference, IGCAR, Kalpakkam, January 5 –7, 2004.
10. R Gnanamoorthy, "Processing and Properties of in situ niobium aluminide intermetallic", International Conference on Non Ferrous Metals – 2003, Varanasi, p. 141-149, July 2003.
11. N K Ramakrishna Naidu, S Ganesh Sundara Raman, and R Gnanamoorthy, 'Plane Bending Fretting Fatigue Behavior of an Aluminium Alloy (6061-T6)', International Conference on Non Ferrous Metals – 2003, Varanasi, p. 151-159, July 2003.
12. S. Senthil Velan and R Gnanamoorthy 'Reinforced Polymer Gear Fatigue And Failure Analysis', Presented at the International Conference on Creep, Fatigue and Creep-Fatigue to be held during Oct.8-10 at IGCAR, Kalpakkam.
13. R Ramesh and R Gnanamoorthy 'Fretting Wear Or Surface Treated High Strength Structural Steels' Presented at the International Conference on Advances in Surface Treatment: Research & Applications to be held at Hyderabad, November 2003.
14. R Gnanamoorthy and J Krishnakumar 'Rolling Contact Fatigue Behavior Of Surface Treated Sintered Steels' Presented at the International Conference on Advances in Surface Treatment: Research & Applications to be held at Hyderabad, November 2003.
15. A multi-frequency eddy current inversion method for characterizing water jet peened aluminum alloys, Veeraraghavan Sundararaghavan, Krishnan Balasubramaniam, and Ramesh Babu, presented at the 30<sup>th</sup> Annual Review of Progress in Quantitative Nondestructive Evaluation (QNDE) held in Green Bay, Wisconsin, from July 27<sup>th</sup> through August 1 2003.
16. Structural Health Monitoring of Anisotropic Layered Composite Plates using Guided Ultrasonic Lamb Wave Data, Mahadev Prasad , S. Jagannathan, Krishnan Balasubramaniam, and Krishnamurthy C V, presented at the 30<sup>th</sup> Annual Review of Progress in Quantitative Nondestructive Evaluation (QNDE) held in Green Bay, Wisconsin, from July 27<sup>th</sup> through August 1 2003
17. A 2-D Inverse Heat Conduction Formulation For Determination Of Heat Source Characteristics From Thermal Images, Naveen V Nair, Krishnan Balasubramaniam and Sarit K Das, presented at the 30<sup>th</sup> Annual Review of Progress in Quantitative Nondestructive Evaluation (QNDE) held in Green Bay, Wisconsin, from July 27<sup>th</sup> through August 1 2003
18. Ultrasonic Benchmark Problems- Numerical and Experimental Simulations, Krishnamurthy C V, and M. Shankar and Krishnan Balasubramaniam, presented at the 30<sup>th</sup> Annual Review of Progress in Quantitative Nondestructive Evaluation (QNDE) held in Green Bay, Wisconsin, from July 27<sup>th</sup> through August 1 2003.
19. Eddy Current Benchmark Problem 3 - Optimisation of Pipe Inspection probe Design, Veeraraghavan Sundararaghavan<sup>1</sup>, and Krishnan Balasubramaniam, presented at the 30<sup>th</sup> Annual Review of Progress in Quantitative Nondestructive Evaluation (QNDE) held in Green Bay, Wisconsin, from July 27<sup>th</sup> through August 1 2003.
20. A Novel Inversion Algorithm for the Determination of Stress Gradients using Ultrasonic Raleigh Wave Dispersion, Prabhu Rajagopalan, Krishnan Balasubramaniam, Krishnamurthy C V, and M. Shankar, presented at the 30<sup>th</sup> Annual Review of Progress in Quantitative Nondestructive Evaluation (QNDE) held in Green Bay, Wisconsin, from July 27<sup>th</sup> through August 1 2003
21. P.Muthukumar, Kevin Abraham, U.A.Rajendra Prasad, M.Prakash Maiya & S. Srinivasa Murthy ; Screening of Metal Hydrides for Engineering Applications; Proc. 16<sup>th</sup> International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems; ECOS2003, Copenhagen, Denmark, 30 June - 2 July, 2003, pp. 93-100.
22. Syed Sajid Ahmed & S.Srinivasa Murthy ; Combined Heat Transformation, Heat Pumping and Refrigeration using Metal Hydrides ; Proc.16<sup>th</sup> International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems; ECOS2003, Copenhagen, Denmark, 30 June - 2 July, 2003, pp.101-108.

23. P.Muthukumar, M.Prakash Maiya & S. Srinivasa Murthy; Parametric studies on a metal hydride storage system; 21st International Congress of Refrigeration, Washington DC, 17-22 August, 2003.
24. G.Venkatarathnam, P.Senthil Kumar & S.Srinivasa Murthy; Experimental studies on fast cool down mixed refrigerant cascade refrigerators; 21st International Congress of Refrigeration, Washington DC, 17-22 August, 2003.
25. S. Srinivasa Murthy, M.Prakash Maiya & Kevin Abraham; Metal hydride based cooling systems: Review of some recent studies at IIT Madras; Proc. Vth Minsk International Seminar on Heat Pipes, Heat Pumps and Refrigerators, Minsk, Belarus, 8-11 September 2003, pp. 328 - 339.
26. G.Venkatarathnam, P.Senthil Kumar & S.Srinivasa Murthy; Performance of a mixed refrigerant cascade refrigerator; Proc. Vth Minsk International Seminar on Heat Pipes, Heat Pumps and Refrigerators, Minsk, Belarus, 8-11 September 2003, pp. 478 - 483.
27. G.Venkatarathnam, P.Senthil Kumar & S.Srinivasa Murthy; Performance of a Throttle Cycle Refrigerator with Nitrogen-Hydrocarbon and Argon-Hydrocarbon Mixtures; International Cryogenic Engineering Conf., Anchorage, Alaska, 22-26 September, 2003
28. S.Srinivasa Murthy, M.Prakash Maiya & P.Muthukumar; Comparison of some metal hydrides for hydrogen storage; The 8th Arab International Solar Energy Conference & Regional World Renewable Energy Conference, Baharain, 8-10 March 2004.
29. M.P.Maiya and K.Arasappan, Performance of Zeolite – Water Modular Adsorption Air-conditioner, Accepted in ICCR'2003, International Conference on Cryogenics and Refrigeration, October 28 – November 1, Hangzhou, China.
30. M.P.Maiya, Studies on Gas Circuit of Diffusion Absorption Refrigerator, Accepted in 21<sup>st</sup> IIR International Congress of refrigeration, August 17 – 22, 2003, Washington, DC, USA.
31. P Rajendra Prasad, B Shaji Mohan and M.P Maiya, Self-Regenerating Liquid Desiccant – Vapour Compression Hybrid Air Conditioning System, Healthy Buildings 2003: Energy efficient healthy buildings, Vol. 2, pp. 713-718, December 7 – 11, 2003, Singapore.
32. Senthil Kumar, M, Ramesh, A., and Nagalingam, B., "A comparison of the Different Methods to Improve Engine Performance while using Jatropha Oil as the Primary Fuel in a Compression Ignition Engine", Proc. of the Int. Conf. on Energy and Environmental Technologies for Sustainable Development, Jaipur, Oct. 8-10, 2003.
33. Balakrishna Reddy, B., Ramesh, A., Mannivannan, P.V. and Krishna Vasudevan, "Studies on an Electronic Governor with a Stepper Motor Actuator for a Diesel Engine", Proc. of Third Int. Conference on Automotive and Fuel Technology, IIT Delhi, Jan. 16-18, 2004, pp. 392-396.
34. Ramesh, A, Le Corre, O. and Tazerous, "An Experimental Study of Cyclic Variations in a Lean Burn Natural Gas Fuelled Spark Ignition Engine", Proc. of the ASME International Fall Technical Conference, Pennsylvania, USA, September 2003.
35. L.V.Mohan & M.S.Shunmugam, "Computer simulation of helicoids surface generation", Proc.Int.Conf. CAD-CAM, Robotics and Autonomous Factories, IIT Delhi, Aug. 2003.
36. Shajan Kuriakose, D.Srikanth & M.S.Shunmugam, "Probabilistic model of wire-electro discharge machining for prediction of cutting velocity", Proc.Int.Conf. on CAD-CAM, Robotics and Autonomous Factories, IIT Delhi Aug. 2003.
37. K.Lingadurai & M.S.Shunmugam, "Shape distortion introduced by standard electrical, envelope and Gaussian filtering techniques", e-Proc.Int.Conf. CAD, CAM, Robotics and Autonomous Factories, IIT Delhi, Aug. 2003.
38. Venkataramanaiah, S and Rohit Bhatnagar (2004): "Comparative evaluation of efficiency measures in CMS", International Conference on Responsive Supply Chains (RSC-2004), January 2004, CIT, Coimbatore.
39. Xiong, M.H., Tor, S.B., Rohit Bhatnagar and Venkat, S.R. (2004): "A DSS model for profit maximization of customer enquiry evaluation at manufacturing stage for SMEs", SMA Annual Symposium, January 2004, NTU, Singapore.
40. Rohit Bhatnagar and Venkataramanaiah, S (2003): "Alternative approaches for design of CMS", INFORMS Conference, October 2003, Atlanta, USA.
41. Venkataramanaiah, S and Rohit Bhatnagar (2003): "A model for contingent manpower planning: Insights from a high clockspeed industry", SMA Annual Symposium, Nanyang Technological University, January 2003, Singapore

42. Xiong, M.H., Tor, S.B., Rohit Bhatnagar and Venkat, S.R. (2003): "Framework to managing customer enquiries for SMEs", *SMA Annual Symposium, Nanyang Technological University* January 2003, Singapore
43. P.Govindan, B.Dhanasekar, B.Ramamoorthy, "Geometric Search Technique for Surface Roughness Evaluation Using Machine Vision", 8<sup>th</sup> International Symposium on Measurement and Quality Control in Production, October 12<sup>th</sup> 15, 2004, Germany.
44. Deva Prasad, S., C. Rajendran and O.V. Krishnaiah Chetty, (2004) "A Multi-Objective Genetic Algorithm for Permutation Flowshop Scheduling to minimize Makespan, Total Flowtime and Total Tardiness of jobs", International Conference on Responsive Supply Chain and Organizational Competitiveness (RSC-2004) – A Technology Watch, Coimbatore Institute of Technology, Coimbatore, India.
45. O.V.Krishniah Chetty and M.Sarveswar Reddy, "On improving the performance of AS/RS using genetic Algorithm –Progress in Material Handling Institute USA, 2003.
46. J.T.Winowlin Jappes, Dr.B.Ramamoorthy and Dr.P.Kesavan Nair "Effect of parameters on crystallinity of electroless Ni-P coating", 2<sup>nd</sup> International Conference on Manufacturing, ICM-2002, Dhaka, Bangladesh. pp 487
47. J.T.Winowlin Jappes, Saha, B.Ramamoorthy and P.Kesavan Nair, Influence of pretreatment of particles on wear behaviour of electroless Ni-B-SiC composite coating, INCARF 2003, New Delhi.
48. Senthil Kumar, R, Mani, A and Kumaraswamy S., 'Utilisation of ocean thermal gradient for desalination', Proc. of COT 2003, Intel. Conf. on Coastal and Ocean technology, 2003, pp.101-108.
49. V. Raghavan, V. Babu and T. Sundararajan, Transient analysis of droplet burning in convective environment, 18<sup>th</sup> Symposium of Combustion Processes, Institute of Thermal Technology, Silesia, POLAND, 2003.
50. V. Raghavan, V. Babu and T. Sundararajan, Numerical modeling of effects of buoyancy and ambient temperature on quasi-steady droplet burning, 6<sup>th</sup> ASME/SHMT Heat and Mass Transfer Conference, Kalpakkam, INDIA, 2004.
51. S. Abdul Raheem and V. Babu, Numerical Simulations of Unsteady Flows in Rocket Motors, 10<sup>th</sup> AIAA/CEAS Aeroacoustics Conference, Manchester, UK, May 2004.

#### Distinguished Visitors to the Department:

S.No.	Name of the Visitor and Designation	Purpose of Visit	Date of Visit
1.	Dr. Bo Leckner, Chalmers University of Technology, Goteborg, Sweden	March 22-28, 2003	To review the progress of SIDA Project on "Advanced Technology for Combustion of Bio-mass"
2.	Dr. K. Murugesan Post-Doctoral Research Fellow Dept. of Civil Engineering, National Taiwan University, Taipei, Taiwan	March 16, 2003	To give seminar on the topic on "Solution of Navier-Stokes Equations using Global Matrix Free Finite Element Scheme"
3.	Prof.Rama B. Bhat, University of Concordia, Canada.	23 – 07 - 2003	Guest Lecture on Thermo Acoustic Techniques
4.	Prof.L.L.Vasiliev, 29 A.V.Luikov Heat and Mass Transfer Institute, Minsk, Belarus.	December 2003 - 20 January 2004	Prof.A.Ramachandran Chair professor.
5.	Prof.Dr.-Ing. M. Groll, IKE, University of Stuttgart, Germany.	1 - 13 January 2004	Indo – German collaborative Project
6.	Prof.D.Ing.L.R.Oellrich, ITTK, University of Karlsruhe, Germany.	January 3 -11, 2004	Indo – German collaborative Project
7.	Sri.R.V.Perumal Director, VSSC Trivandrum	1.12.2004	Delivered invited talk
8.	Dr.V.C.Venkatesh, Professor, Universiti Teknologi Malaysia Malaysia.	Oct.2003	Guest Lecture
9.	Dr.H.Chandrasekaran Professor Swedish Institute for Mateals Research Drottning Kristinas 48 SE-114 28 Stockholm, Sweden.	2.4.2004	Delivered invited talk
10.	Prof.K.A.Padmanabhan Vice Chancellor South Asia International Institute Hyderabad-500 029	2.4.2004	Delivered invited talk

S.No.	Name of the Visitor and Designation	Purpose of Visit	Date of Visit
11.	Prof.V.Radhakrishnan Director Research Amirtha Institute of Technology Coimbatore.	2.4.200	Delivered invited talk.
12.	Dirk Pefer Research Scientist University of Hannover Hannover, Germany		Delivered a talk on Water Jet Machining.

#### 4.10.6. Other Activities:

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

1. Secretary, Indian Society for Heat and Mass Transfer, 1998 - date.
2. Coordinating Scientist, XVII National VI ISHMT / ASME Conference.
3. Reviewer, I Mech E (U.K.).
4. Reviewer, Journal of Thermal Engineering (U.K.).
5. Reviewer, Heat and Mass Transfer – International Journal (Germany).
6. Reviewer, World Conference of Fluid Mechanics, Thermodynamics and Heat Transfer.
7. Life Member – Instrument Society of India.
8. Member, Society of Fluid Mechanics and Fluid Power.
9. Vice Chairman, GATE, 2003 – 2004.

##### Dr. M. Govardhan:

1. Successfully completed the job of organising the Joint Entrance Examination 2003 (JEE 2003).
2. (JEE 2003).
3. Appointed as Chief Vigilance Officer for the period 2003 – 2004.
4. Member, Institution of Engineers (India).

##### Dr. N. Sitaram:

1. Head, Thermal Turbomachines Laboratory, May 1, 2001 – till date.
2. Reviewer, I. Mech. E (U. K.)
3. Reviewer, National Conference on Fluid Mechanics and Fluid Power.
4. Life Member, National Conference on Fluid Mechanics and Fluid Power & Aeronautical Society of India.
5. Senior Member, AIAA.
6. Member, Institution of Engineers (India).

##### O.V.Krishnaiah Chetty

1. Member of the Organizing Committee for the International Conference on Operations Research for Development [ICORD 2002] organized by Anna University.
2. Member of the National Advisory Committee for the National Seminar on 'World Class Manufacturing' during February 2003 organized by the Department of Mechanical and Production Engineering, Amrita Institute of Technology and Science, Coimbatore
3. International Advisor to the 2003 American Waterjet Conference sponsored by Waterjet Technology Association, USA. The Conference was held during Aug. 17 – 19, 2003 at Houston, USA.

##### Krishnakumar.R

1. Member Board of Governors, NIT Calicut
2. Expert Member of the AICTE committee on design of curriculum.
3. Principal Co-ordinator to set up a Centre of Excellence for Tyre & Vehicle Mechanics.
4. Coordinator, Center for Finite Element Analysis and Design.
5. Coordinator, IIT – BHEL initiative on Advanced Engineering and IT.
6. Group Coordinator, Computational Engineering, IIT Madras

**Ramamoorthy.B**

1. Expert Member of the AICTE committee for the purpose of screening of the project proposals received by the Council under MODROB/TAPTEC/R&D schemes for the year 2003-2004.
2. Expert Member of the AICTE committee for the scheme of Career Award for Young Teachers.
3. Member of Board of Academic Studies of Thyagaraja Engineering College: Madurai, PSG Technology Coimbatore, Madras Institute of Technology, Chennai.
4. Reviewer for Technical paper for International Journals including American Society of Manufacturing Engineering (ASME), USA and International Journal of CAD/CAM, Seoul (South Korea).
5. Ph.D. Examiner of Bharathiyar University, Bharathidasan University, University of Mysore and Andhra University.
6. Member of selection committee of Union Public Service Commission, New Delhi.
7. Member, NBA and visited Colleges / Universities.
8. Audit Committee to evaluate the question papers and valued answer scripts of the Autonomous Examinations in B.E (Mechanical Engg. Branch) held in Nov./Dec. 2003.
9. Expert in the Board of Selection for recruitment of Professor/Lecturer in Mechanical & Manufacturing Engg. Annamalai University.

**Shunmugam M.S.**

1. Member, REACH Monitoring Committee, TIFAC-CORE, Product Design & Optimization and Collaborative Product Commerce PSG College of Technology, Coimbatore.
2. Member, School Board, School of Engineering and Technology, Indira Gandhi National Open University, New Delhi.
3. Chairman for Project Review & Steering Group (PRSG) set up on WebNC- Internet based Collaborative Design & Manufacturing System for Intelligent CNC Machining Indian Institute of Technology (IIT), Bombay by MHRD.
4. On the request of BEL, Prof.Shunmugam and Prof.Sivaprasad came out with an idea to introduce an error purposely to minimize the backlash. This also resulted in a compact and high stiffness gearbox. Two gearboxes with 2 and 3 stage reduction were realized for Rs.7.0 lakhs, whereas the import would have costed BEL anywhere between Rs.20 to 25 lakhs.
5. Reviewer: International Journal of Production Research.
6. Reviewer: Institution of Mechanical Engineers (London).
7. Reviewer: American Society for Manufacturing Engineering.

**Ramesh Babu.N.**

1. Reviewer – International Journal of Production Research.

**Vijayaraghavan L**

1. Member, Board of Faculty of Engineering and Technology of Annamalai University, Annamalai Nagar from June 2002.

**V. Babu**

1. Introduction to High Performance Computing, Lectures on Business and Engineering, *Tata Consultancy Services*, Madras, India, Mar. 2003
2. Aerodynamics and Aeroacoustics of Automobiles, Lecture given at **Fluent India**, Pune, India, Mar. 2003
3. High Performance Computing, Lecture given at **Fluent India**, Pune, India, Jul. 2003

**Dr. J.M. Mallikarjunappa**

1. Coordinator for NPTEL Project of MHRD to develop Video and Web Courses

**Dr. J.M. Mallikarjunappa, Prof. T. Sundararajan and Prof. U.S.P. Shet**

1. Developing Web and Video courses for "Applied Thermodynamics"

**Mr. R.P. Sharma**

1. Contributed 4 chapters on "Bio-fuels" in Planning Commission Report 2003



## 4.11 DEPARTMENT OF METALLURGICAL AND MATERIALS ENGINEERING

### 4.11.1 Introduction:

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

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

### New Name:

President of India in his capacity as the Visitor of IIT Madras has approved the change of name of the Department of Metallurgical Engineering as Department of Metallurgical & Materials Engineering" from 12<sup>th</sup> March 2003 onwards.

### 4.11.2 Academic Programmes:

#### Students on Roll:

Programme	I Year	II Year	III Year	IV Year	V Year & others	Total
B.Tech.	31	25	25	26	-	107
Dual Degree	5	7	5	4	5	26
M.Tech.	15	15	-	-	-	30
M.S.	12	7	6	2	1	28
Ph.D.	14	19	8	4	9	54
<b>Total</b>	<b>77</b>	<b>73</b>	<b>44</b>	<b>36</b>	<b>15</b>	<b>245</b>

#### Names of Student/Scholar attended Conferences/Seminars and Symposia Abroad/India:

Sl. No.	Name of the Student/Scholar	Programme	Name of the Conference/Seminar/Symposia	Date and Venue
1	Anupkumar Keshri	M.S.	International Heat Treat 2004	Jan. 9-10, 2004, Chennai.
2	S Shankar	B.Tech	-do-	-do-
3	T Venugopal	Ph.D.	-do-	-do-
4	B Vamsi Krishna	Ph.D.	-do-	-do-
5	N Ramesh Babu	Ph.D.	-do-	-do-
6	K Venkateswaran	Ph.D.	International Conference on Advances in Surface Treatment	Nov. 3-6, 2003, Hyderabad
7	N Ramesh Babu	Ph.D.	-do-	-do-
8	N Kishore Babu	Ph.D.	4 <sup>th</sup> Conference in Creep, Fatigue and Creep-Fatigue Interaction.	Oct. 8-10, 2003 Kalpakkam
9	KR Sriraman	M.S.	Annual Tech. Meeting NMD	14-16 Nov, 2003 Kolkatta.
10	KR Sriraman	M.S.	National Symposium on Electrochemical Science & Tech.	July 2003, Bangalore
11	R Narayanan	Ph.D.	-do-	-do-
12	R Narayanan	Ph.D.	Annual Tech. Meeting, NMD	14-16, Nov., 2003, Kotkatta.
13	K Suresh Kumar	M.S.	-do-	-do-
14	K Srinivasan	M.S.	-do-	-do-
15	K Srinivasan	M.S.	Conference of Research Scholars in Material Science & Engineering	Aug. 30-31, 2003, Kharagphur.
16	P Jawahar	Ph.D.	National Conference on Composites and National Seminar on Aerospace Structure	Sep. 5-6, 2003 Bangalore
17	S Karthik	B.Tech	15 <sup>th</sup> IASTED International Conference on Parallel and Distributed Computing Systems PDCS – 2003	Nov. 3-5, 2003 USA

## 4.11.3. Faculty and their Activities:

## Faculty

Name and Qualification	Major area of specialization
<b>Professors:</b>	
Achar, D.R.G. Ph.D. (IIT Madras) Gokularathnam, C.V. Ph.D. (Florida)	Welding Technology, Failure Analysis, Corrosion, Industrial Metallurgy Physical Metallurgy, X-ray Diffraction, Powder Diffraction, Powder Metallurgy, Advanced Ceramics, SEM and TEM
Guha, B Ph.D. (IIT Madras)	Fatigue & Fracture of Welded Joints, Application of FEM/CAD in the area of Welding Technology.
Kesavan Nair, P. Ph.D. (IIT Madras) Paramanand Singh, Ph.D. (IIT Bombay)	Physical Metallurgy, X-ray Diffraction, Materials Science and Technology Powder Metallurgy, Ceramics, Composites and Materials Science
Pathak, S.D. Ph.D. (IIT Madras)	Materials Science and Technology, Mechanical Behaviour, Mechanical Metallurgy, Mechanical Testing, Fatigue, Fracture Mechanics
Prasad Rao, K. <b>[Head]</b> Ph.D. (IIT Madras)	Joining Materials, Surface Technology, Nano Technology, Powder Metallurgy
Prasanna Kumar, T.S. Ph.D. (IIT Madras)	Metallurgical Process Modeling, Steel Plant Automation and Off-line Simulators, Metal Casting
Raghavan, S. Ph.D. (IISc Bangalore)	Process and Extractive Metallurgy, Thermodynamics, Solid Electrolyte Chemical Sensors, Hot Corrosion
Seshadri, S.K. Ph.D., (Imperial College, London)	Chemical Metallurgy, Surface Technology, Corrosion
Venugopal, P. Ph.D. (IIT Madras)	Solid State Joining of Dissimilar P/M Metals, Metal Forming Processes, Press Tool Design, Hammers and Presses, Cold Extrusion of Materials
<b>Associate Professor:</b>	
Bhattacharya, S.S. Ph.D. (IIT Madras)	Superplasticity and High Temperature Behaviour, Metal Forming
Harikumar K.C. Ph.D. (IIT Delhi)	Computational Thermochemistry, Phase Diagrams, CALPHAD
<b>Assistant Professors:</b>	
Atreya, S Ph. D (University of Alabama, USA)	Transport phenomena in process metallurgy, stability theory, Ferrous production metallurgy, Metal Casting.
Balasubramanian, M. Ph.D. (IIT Madras) Ganesh Sundara Raman, S. Ph.D. (IIT Madras)	Processing and Characterization of Composite Materials, Ceramic Processing Mechanical Behaviour, High Temperature Deformation, Fatigue, Fracture Mechanics, Structure – Property Correlation
Kamaraj, M. Ph. D. (IIT Madras)	Mechanical Behaviour, Creep, High Temperature Materials, Life Assessment, Surface Engineering
Prathap Haridoss Ph.D. (Univ. of Wisconsin, USA) Raghunatha Rao, B. Ph.D. (IIT Madras)	Fuel Cells, Rechargeable Batteries, Electrochemistry, Materials Characterization Materials Technology, Heat Treatment, Failure Analysis
Sampath, V. Ph.D. (IISc, Bangalore)	Materials Technology & Science, Composite Materials, Physical Metallurgy, Surface Modification

Name and Qualification	Major area of specialization
Sampath Kumar TS Ph.D. (IISc, Bangalore)	Biomaterials, Surface Sciences, Analytical Instrumentation.
Uday Chakkingal Ph.D. (Rensselaer Poly Inst., USA)	Materials Processing and Characterization, Aluminium Alloys, Surface Coatings
<b>Emeritus Professor:</b> Dr S Sundarasan Ph.D (IIT Madras)	Metal Joining, Welding Metallurgy, Mechanical Behaviour
<b>Visiting Faculty:</b>	
Dr M Nageswara Rao	Metallurgy & Materials Sciences
Dr P Rodriguez AICTE-INAE Visiting Faculty	Nuclear Metallurgy, Mechanical Metallurgy
<b>Scientific Officers:</b>	
Annamalai, S. M.S. (IIT Madras)	Metal Forming, Forming of P/M Components & Material Testing
Jothinathan, G. M.Tech. (IIT Madras)	NDT, Metal Casting, Electro Met., Corrosion, Ceramics

**Short Term Courses/Workshops/Seminars/Symposia/Conferences organized by the faculty members:**

Sl. No.	Co-ordinators	Title	Institution	Period
<b>Workshop/Courses:</b>				
1	Prof K Prasad Rao & Mr G Jothinathan	Welding Technology and Inspection	IIT Madras	28.4.2003 to 8.5.2003
2	Prof K Prasad Rao & Mr G Jothinathan	Thermomechanical Processing	IIT Madras	7.11.2003
3	Dr V Sampath	Advances in Heat treatment technologies	IIT Madras	10.11.2003
4	Prof K Prasad Rao & Mr G Jothinathan	Materials Testing and Corrosion	IIT Madras	17.10.2003 to 19.10.2003
5	Prof K Prasad Rao & Mr G Jothinathan	Welding Technology and Inspection	IIT Madras	December 2004
6	Prof K Prasad Rao Prof K Gopinath (ME) Mr G Jothinathan	Advanced Materials & Processes for Aerospace Applications	IIT Madras	January 2004
7	Prof K Prasad Rao & Mr G Jothinathan	Welding Automation	IIT Madras	19.2.2004
8	Dr M Balasubramanian & Dr P Alagusundara –Murthy	An intensive workshop on fibre reinforced thermoset plastics	IIT Madras	21-26, July 2003.

**Special Lectures delivered by the Faculty in other Institutions:**

Sl. No.	Name of Faculty	Topic of Lecture	Venue and Date
1.	Prof K Prasad Rao	Metallurgy for non Metallurgist	Coimbatore 26 & 27.4. 2003
2.	Dr M Kamaraj	"Surface Treatment for Protection and Wear" in Metallurgy for non Metallurgist	Coimbatore 26 & 27.4.2003.
3.	Dr M Balasubramanian	Metal Matrix Composites	Annamalai University Chidambaram 27.5.2003

Sl. No.	Name of Faculty	Topic of Lecture	Venue and Date
4.	Dr M Kamaraj	Creep behaviour of Metallic Materials in Testing and Characterization of Engg Materials (TCEM-2003)	RRL, Trivandrum 14-18 July 2003
5.	Dr M Kamaraj	High Temperature Fatigue, in Testing and Characterization of Engg Materials (TCEM-2003)	RRL, Trivandrum 14-18 July 2003
6.	Prof DRG Achar	Modelling of Phase Changes in Superalloys using Thermocalc and Dictra.	IIM Kalpakkam & IGCAR Metallurgy Colloquium Kalpakkam. 26.7.2003.
7.	Prof P Venugopal & Prof K Prasad Rao	Modern Sheet Metal Forming Analysis and Technology and Advances in Metal Joining.	HAL Academy, Bangalore 04 <sup>th</sup> and 5 <sup>th</sup> Nov 2003.
8.	Prof DRG Achar	Computational Modelling of Engineering Materials Design. (AMTP-2003)	Bagalkot, Karnataka 22-23 December 2003.
9.	Prof K Prasad Rao	Current Trends in Joining Applications	Mathrusree College of Engg. Hyderabad 24.12.2003
10.	Dr M Balasubramanian	Metal Matrix Composites	Annamalai University Chidambaram 3.1.2004.
11.	Prof K Prasad Rao	Advances in Joining Technologies and Applications.	Vasavi College of Engineering Hyderabad 23.1.2004
12.	Prof P Venugopal	New Trends on Net Shape Forming	CVRDE, Avadi. 25.2.2004
13.	Dr Atreya & Prof K Prasad Rao	Steel Melting, Rolling & Annealing and Corrosion.	Ford Company, Chennai. 29.1.2004
14.	Prof DRG Achar	Welding Processes in the Welding of Stainless and Carbon Steels.	IIW Chennai Chapter 13-15 <sup>th</sup> Oct. 03
15.	Prof K Prasad Rao	On role of scandium in aluminum welding at the National Welding Seminar	Indian Welding Society Bhopal 5 <sup>th</sup> Nov., 2003.
16.	Prof D.R.G.Achar	Modelling of Phase Formation and Inter diffusion Processes during high Temperature Service of MCrAlY Coated Turbine Materials Using Thermocalc and Dictra.	Inst. for Materials and Processes for Energy Systems, Research Centre Juelich, Germany, 28.05.2003.
17.	Prof D.R.G.Achar	Erfahrungen mit Thermocalc an Dictra Auf dem Gebiet der Bondcoat der Phasenbestimmung und Diffusion.	Thermocale Anwendertreffen und Schulung, Aachen, Germany, 12.06.2003.
18.	Prof. D.R.G.Achar	Computational Phase Modelling and Diffusion Interactions in Turbine Materials.	ASM International and IIM Chennai Chapters, Chennai, 12.09.2003.

#### Visits Abroad by Faculty:

Sl. No.	Name of Faculty	Country Visited	Date	Purpose of visit
1.	Dr SS Bhattacharya	Germany	21.6.2003	Indo-German Project

#### Honours and Awards obtained:

Sl. No.	Name of Faculty	Name of Award	Awarded by	Awarded for	Date
1.	Prof K Prasad Rao & Dr TS Sampath Kumar	Best Poster Award	International Conference on Advances in Surface Treatment: Research and Applications.	The best poster presentation	Nov. 3-6, 2003.
2.	Dr Uday Chakkingal	Second Prize in the Metal Science	Indian Institute of Metals	The best Oral presentation	Nov. 14-16, 2003.

## 4.11.4 Research and Consultancy:

## Sponsored Research Projects:

Sl. No	Title	Period	Funding Agency	Amount (Rs. In lakhs)	Coordinator(s)
1.	Modernisation of Powder Metallurgy and Ceramics Laboratory	2003 – 2005	MHRD	10.00	Dr Paramanand Singh
2.	Life Enhancement through Surface Engineering of Ti-6Al-4V under Fretting.	2003 – 2006	MHRD	10.00	Dr S Ganesh Sundara Raman and Dr SD Pathak
3.	Nanomaterials and nanotechnology	2003 – 2006	DST	105.00	Dr K Prasad Rao
4.	Cost Effective Weld Seam Tracking and Adaptive Control using Optical Sensors and Neural Networks	2003 – 2006	DST	14.50	Dr K Prasad Rao Dr M Kamaraj
5.	Improvement of Mechanical properties of 2219 N-alloy Welds	2003 – 2006	ISRO	14.95	Dr K Prasad Rao Dr M Kamaraj
6.	Effect of pulsed current and Arc Oscillation welding techniques on the Fatigue Behaviour of Ti-6Al-4V and Inconel 718 welds	2003 – 2006	DRDO	19.96	Dr G S Raman & Dr SD Pathak
7.	Applicability of equal channel angular extrusion to the processing of aluminium alloys	2003 – 2006	DST	19.83	Dr Uday Chakkingal Dr P Venugopal Dr SS Bhattacharya
8.	Development of sol-gel protective coating on metals	2002 – 2005	UGC	3.31	Dr M Balasubramanian
9.	Fretting Fatigue Behaviour of a Structural Steel	2002 – 2005	DST	7.68	Dr GS Raman
10.	Sol-gel processing of advanced ceramic fires	2002 – 2005	MHRD	8.00	Dr M Balasubramanian & Dr.PAlagusundaramoorthy
11.	Production and Characterization of Carbon Nano-tubes	1999 – 2002	NBB	20.25	Dr P Kesavan Nair
12.	Study of Crack Initiation and Propagation in Nuclear Components under LCF	2001 – 2004	AERB	11.39	Dr Uday Chakkingal and Dr R Devanathan
13.	Improvement of Corrosion Resistance of Al alloys by Surface Modification	2001 – 2004	MHRD	10.50	Dr K Prasad Rao
14.	Pre and Post Deformation Studies on Superplastically Formed Ti-6Al-4V	2001 – 2004	ISRO-IITM	7.16	Dr SS Bhattacharya Dr GS Raman
15.	Studies on the Superplastic Deformation Behaviour of Nanocrystalline Ceramics	2001 – 2003	Indo – German	--	Dr SS Bhattacharya Dr SD Pathak
16.	Studies on Natural Fibre Reinforced Polymer Composites	2001 – 2003	Indo – German	--	Dr SK Malhotra Dr M Balasubramanian
17.	Studies on Ni-B-Si <sub>3</sub> N <sub>4</sub> Composite Coatings	2001 – 2004	CSIR	9.57	Dr SK Seshadri
18.	Development of Constitutive Models of Smart Materials	2001 – 2004	NPSM	24.50	Dr MS Sivakumar Dr V Sampath

## 4.11.5. Industrial Consultancy Projects:

Sl. No.	Name of Faculty	Title	Industry	Amount (in Rs.)
1.	Dr. K. Prasad Rao	Rust Problem in TRVV export socket – Opinion & Discussion	M/s. Rane (Madras) Limited, Chennai – 42	20000/-

Sl. No.	Name of Faculty	Title	Industry	Amount (in Rs.)
2.	-do-	Testing of the Import Samples	Office of the Commissioner of Customs, Tuticorin – 04	15000/-
3.	-do-	Testing of the Import Samples	Office of the Commissioner of Customs, Tuticorin – 04	15278/-
4.	-do-	Microstructural Study – Boiler Tube	M/s. Tube Investments of India Ltd., Chennai – 54	96000/-
5.	-do-	Microstructural Study – Boiler Tube	M/s. Betz Engg. & Technology Zone, Chennai – 88	5000/-
6.	-do-	Investigation of Broken wheel disc	M/s. Southern Railway, Loco Works, Chennai – 23	75000/-
7.	-do-	Examination of steel slabs and blooms	M/s. Sabari Exim Private Ltd., Chennai – 02	15000/-
8.	-do-	West test ASTM G-65	Schwing Stetter India) Pvt. Ltd., Kancheepuram Dt.	35317/-
9.	-do-	Testing of components for residual stresses	M/s. Sundaram Fasteners Ltd., Chennai – 50	16000/-
10.	Dr. P. Venugopal	Expert Opinion on the process of Cold Extrusion	Office of Central Excise, Chennai – 34	19320/-
11.	Dr. S.K. Seshadri	Microscopic examination of six samples in different manufacturing stages for corrosion studies	M/s. The South India Surgical Company Lintied, Chennai – 89.	14000/-
12.	Dr. S.D. Pathak	Fatigue Testing	M/s. Tube Investments of India Ltd., Chennai – 54	92593/-
13.	-do-	Fatigue behaviour of two tubes	-do-	18518/-
14.	-do-	Fatigue Testing of Tubes	-do-	37037/-
15.	-do-	Fatigue Test	-do-	37037/-
16.	Dr. C.V.Gokulathnam	Morphology of Pharmaceutical formulations	M/s. Shasun Chemicals & Drugs Ltd., Chennai – 17	5985/-
17.	-do-	SEM and XRD of Drugs	-do-	9376/-
18.	-do-	Testing of Calcium Carbonate Samples	M/s. New Bharath Chemicals, Madurai – 01	2850/-
19.	-do-	Microspheres formulation	M/s. VEL's College of Pharmacy, Chennai – 117	1995/-
20.	-do-	Morphology of Pharmaceutical formulations	-do-	1995/-
21.	-do-	Testing of Taxonomy of Copepods	The New College, Chennai – 14	1995/-
22.	-do-	SEM – Morphology of Micropheres of Verapanil	Miss Prabha A. Singh, Chennai – 34	2992/-
23.	-do-	SEM Study of porcelain Samples	M/s. W.S. Industries, Chennai – 116	8977/-
24.	-do-	SEM Study	-do-	3000/-
25.	-do-	SEM Analysis	WSI, Trichy	2992/-
26.	-do-	Analysis of nanotubes	Loyola College, Chennai – 34.	997/-
27.	-do-	SEM Analysis	Tamilnadu Dental College and Hospital, Chennai – 03	5985/-
28.	-do-	-do-	-do-	3990/-
29.	-do-	Study of SEM of Analysis teeth	M/s. Lakshmi Card Clothing Manufacturing Co. Pvt. Ltd., Coimbatore – 37	12000/-
30.	-do-	Brakeage of Rocket Shafter at the teeth	M/s. Rane (Madras) Ltd., Chennai – 42	3000/-

Sl. No.	Name of Faculty	Title	Industry	Amount (in Rs.)
31.	-do-	SEM analysis of fractured surface of composites	M/s. Crescent Engg. College, Vandalur, Chennai	1945/-
32.	-do-	SEM Studies of Electro procelein	M/s. Modern Insulators Limited, Rajasthan	5833/-
33.	-do-	SEM analysis of porcelain samples	M/s. W.s. Industries (India) Ltd., Chennai	2917/-
34.	-do-	Microscopy of Drugs	M/s. VEL's College of Pharmacy, Chennai	2037/-
35.	-do-	Testing of Microstructure analysis on Porcelain Samples	M/s. Modern Insulators Ltd., Rajasthan	2900/-
36.	-do-	Scanning Electorn Microscopy of Cylinder Engine Block	M/s. Ennore Foundries Ltd., Chennai – 57	15000/-
37.	-do-	Fractography work	M/s. Tube Products of India, Chennai – 01	3000/-
38.	-do-	Testing of Microstructure Exam.	M/s. W.s. Industries (India) Ltd., Chennai – 116	6000/-
39.	-do-	-do-	-do-	6000/-
40.	-do-	Morphology of spheres	CLRI, Chennai – 20	1944/-
41.	-do-	Analysis of Recording Tape	M/s. Bayer TPU (P) Ltd., Chennai – 02	3000/-
42.	-do-	SEM Microstructure analysis on our Porcelain samples	M/s. Modern Insulators Ltd., Rajasthan	9000/-
43.	-do-	SEM Biologic charger on the chemically treated root surface	Meenakshiammal Dental College, Chennai – 95	8000/-
44.	-do-	SEM Analysis of Drug samples	M/s. Shasun Chemicals and Drugs, Ltd., Chennai – 42.	3000/-
45.	-do-	SEM Analysis of Refecoxib samples	-do-	6000/-
46.	-do-	SEM Analysis of drugs samples	Metha College, Chennai	3000/-
47.	-do-	Microstructure examination	M/s. W.s. Industries (India) Ltd., Chennai – 116	3000/-
48.	-do-	Marphology drugs	M/s. Shasun Chemicals & Drugs Ltd., Chennai – 42.	3000/-
49.	-do-	Study of Micro Spheres	VELs College of Pharmacy, Chennai – 43	2917/-
50.	-do-	Microstructure examination	M/s. W.S. Industries (India) Ltd., Chennai – 116	9000/-
51.	-do-	SEM Analysis of Teeth	Tamilnadu Dental College & Hospital, Chennai	4000/-
52.	-do-	Project work	Anna Univ., Chennai - 25	926/-
53.	-do-	Study of Phosphate coating by SEM	Brakes India Ltd., Chennai – 28	2981/-
54.	-do-	SEM Analysis of electro porcelain samples	M/s. W.S. Industries (India) Ltd., Chennai – 116	15000/-
55.	-do-	Thesis work (SEM Study)	Dr. M. Senthilkumar, 77, MMC Men's Hostel, Chennai – 03	2981/-
56.	-do-	SEM Testing	Dept.of Geology, Madras Univ. Chennai – 25	4630/-
57.	-do-	SEM Testing	-do-	4630/-
58.	Dr. P. Kesavan Nair	Stress Analysis on worm wheel	M/s. Madras Engg. Industries Pvt. Ltd., Maraimalaingar	7875/-
59.	-do-	Failure Analysis on Boiler Feed Pump Shaft	M/s. Lanco Infratech Ltd., Chennai - 17	20000/-

Sl. No.	Name of Faculty	Title	Industry	Amount (in Rs.)
60.	-do-	X-Ray analysis on two drug samples	M/s. Shasun Chemicals & Drugs Ltd., Chennai – 42	6800/-
61.	-do-	X-Ray analysis on a Nitrided sample	M/s. TVS Autolec Ltd., Chennai -	4000/-
62.	-do-	X-Ray analysis on three samples	M/s. Orchid Chemicals & Pharmaceuticals Ltd., Alathur	15000/-
63.	-do-	X-Ray analysis on Three Drugs Samples	M/s. Shasun Chemicals & Durgs Ltd., Velachery – 42.	30600/-
64.	-do-	Tetin gof Green Electrial Porcelain body (unfired ceramic) powder for XRD Analysis	M/s. W.S. Industries (India) Ltd., Chennai – 116	5000/-
65.	-do-	Concrete samples Phase analysis	M/s. Krishna Consultants, Nandanam, Chennai - 35	5000/-
66.	-do-	Residual Stress Analysis of Shotpeened worm wheel	M/s. Madras Engg Industries Pvt. Ltd., Maraimalainagar	115889/-
67.	-do-	Concrete samples – Phase analysis	M/s. Krishna Consultants, Nandanam, Chennai – 35	10000/-
68.	-do-	X-ray residual stress analysis on three suspension springs	M/s. Stumpp Schuele and Somappa Ltd., Chennai	116677/-
69.	-do-	X-ray analysis of Olanzapine	M/s. Shasun Chemicals and Drugs Ltd., Chennai – 42.	6800/-
70.	-do-	Stress analysis on worm shaft	M/s. Madras Engg. Industries Pvt., Ltd., Maraimalainagar	44100/-
71.	-do-	XRD analysis – Cefoperazone sodium and Cofixime samples	M/s. Orchid Chemicals and Pharmaceuticals Ltd., Chennai-86	30000/-
72.	-do-	X-ray analysis on Ranitidine	M/s. Shasun Chemicals & Drugs Ltd., Chennai – 42.	30600/-
73.	-do-	X-ray analysis on a Nitride samples	M/s. TVS Autolec Ltd. Chennai - 77	4000/-
74.	-do-	Testing of stress analysis on gears	M/s. Mahindra and Mahindra Ltd., Mumbai – 101	50077/-
75.	-do-	Stress Analysis on worm shaft	M/s. Madras Engg. Industries pvt. Ltd., Maraimalainagar	27050/-
76.	Dr. B. Guha	Fatigue testing of manual slack adjusters	M/s. Madras Engg. Industries Pvt. Ltd., Chennai – 58	100465/-
77.	-do-	-do-	-do-	117150/-
78.	-do-	-do-	-do-	46150/-
79.	-do-	-do-	-do-	71000/-
80.	-do-	-do-	-do-	71000/-
81.	-do-	-do-	-do-	106500/-
82.	-do-	-do-	-do-	106500/-
83.	Dr. B. Raghunatha Rao	Micro structural analysis	M/s. Cylinder Liners Agencies Pvt. Ltd., Chennai	8000/-
84.	-do-	Testing of serious breakdown on main line optimization trap gear box output shaft	M/s. Saint-Gobain Glass India Ltd., Nungambakkam, Chennai – 34	30000/-
85.	-do-	Testing of failure analysis of sheet metal cracks	M/s. Root industries Ltd., Coimbatore – 06	15000/-
86.	-do-	Testing of Drive Shaft – Failure Analysis	M/s. Royal Enfield, Chennai – 19	30000/-
87.	-do-	Testing of Archorage cone assembly	M/s. Scott Wilson Kirkpatrick (I) Pvt. Ltd., Chennai – 67	45000/-
88.	-do-	Analysis of Pseude Ephedrine Hcl	M/s. Malladi Drugs and Pharmaceuticals Ltd. Chennai – 97	10000/-



Sl. No.	Name of Faculty	Title	Industry	Amount (in Rs.)
89.	-do-	Failure Analysis of the Foundation bolt of MGC motor	M/s. Chennai Petroleum Corporation Ltd., Chennai – 68	30000/-
90.	-do-	Failure analysis of a crank gear steel casting	M/s. Larsen & Toubro Ltd., Chennai – 89	60000/-
91.	-do-	Investigation of Broken wheel disc	M/s. Southern Railway, Loco Works, Chennai - 23	75000/-
92.	-do-	Examination of steel salbes and blooms	M/s. Sabari Exim Private Ltd., Chennai – 02	15000/-
93.	-do-	Microstructure Photos of anchorage assembly	M/s. Larsen & Toubro Ltd., Chennai – 02	4630/-
94.	-do-	Metallurgical studies	M/s. Devon Machine Private Ltd., Chennai – 98	9000/-
95.	-do-	Optical Microscope Exam.	M/s. Ragas Dental College and Hospital, Chennai – 119	5000/-
96.	-do-	Failure Analysis of Oil Ring	M/s. Chennai Petroleum Corporation Ltd., Chennai – 68	20000/-
97.	-do-	Metallurgical Tet and Failure Analysis	M/s. ST-CMS Electro Company Pvt. Ltd., Chennai – 18	32000/-
98.	-do-	Microstructure analysis and mechanical testing of fractured SG Iron	M/s. Madras Engg. Industries Pvt. Ltd., Maraimalainagar	27000/-
99.	Dr. M. Kamaraj	Metallurgical Tests of failed inlet valve on ESN 20947 Wartsila Vasa laV32LN	M/s. Wartsila India Limited, Chennai – 15	18400/-
100.	-do-	Microstructure analysis and mechanical testing of fractured SG Iron	M/s. Madras Engg. Industries Pvt. Ltd., Maraimalainagar	27000/-
101.	-do-	Fatigue Testing of manual slack adjusters	M/s. Madras Engg. Industries Pvt. Ltd., Chennai – 58	100465/-
102.	-do-	Firing of Ceramic blocks	M/s. Formas India Ltd. Kancheepuram Dt.	6000/-
103.	-do-	Fatigue Testing of Manual Slack adjuster	-do-	117150/-
104.	-do-	-do-	-do-	46150/-
105.	-do-	-do-	-do-	71000/-
106.	-do-	-do-	-do-	71000/-
107.	-do-	-do-	-do-	106500/-
108.	-do-	West test ASTM G-65	M/s. Schwing Stetter (India) Pvt. Ltd., Kancheepuram	35317/-
109.	Dr. Prathap Haridoss	Stress Analysis on worm shaft	M/s. Madras Engg. Industries Pvt. Ltd., Maraimalainagar	28350/-
110.	-do-	-do-	-do-	44625/-
111.	-do-	X-ray analysis on Gabapentin Crude samples	M/s. Shasun Chemicals and Drugs Ltd., Chennai – 42	10200/-
112.	-do-	Residual stress analysis on inset-rings	M/s. India Pistons Ltd. Chennai – 11	12000/-
113.	-do-	Residual Stress analysis on lead springs	M/s. Jai Parabolic Springs Ltd., Singaperumal Koil	8000/-
114.	-do-	Residual stress analysis on rocker arm lever	M/s. TVS – Autolec Limited Chennai – 77	4000/-
115.	-do-	Residual compressive stress levels on a leaf spring	M/s. Jai Parabolic Springs Ltd., Singaperumal Koil	8000/-
116.	-do-	Residual Stress measurement of aluminium alloy	M/s. India Pistons Limited Kancheepuram Dt.	8000/-

Sl. No.	Name of Faculty	Title	Industry	Amount (in Rs.)
117.	-do-	Residual stress analysis on leaf springs	M/s. Jai Parabolic Springs Ltd., Singaperumal Koil	16000/-
118.	-do-	Stress analysis on worm shafts	M/s. Madras Engg. Industries Ltd., Maraimalainagar	14875/-
119.	-do-	(a) X-ray analysis on Cycloserine (b) X-ray analysis on Ranitidine	M/s. Shasun Chemicals and Drugs Ltd., Chennai – 42.	10200/-
120.	-do-	X-ray analysis on Ranitidine Hcl	-do-	3400/-
121.	-do-	Residual stress analysis on tube intersections	M/s. TI Cycles of India Ltd., Chennai – 53	12000/-
122.	-do-	Residual stress measurement of connecting rod	M/s. Ashok Leyland, Chennai	194400/-
123.	-do-	Characterization of samples by TEM	M/s. Carborundum Universal Ltd., Chennai – 19	23800/-
124.	-do-	Residual stress analysis on (a) Brake Drum (b) Clutch Plate Casting	M/s. Sri Bhavani Castings Ltd., Kakinada	4000/-
125.	-do-	X-ray analysis on Air-drier deposit	M/s. Sundaram Clayton Ltd., Chennai – 50	4000/-
126.	-do-	Stress analysis on worm shafts	M/s Madras Engg. Industries Pvt. Ltd., Maraimalainagar	54400/-
127.	-do-	Stress analysis on shot peened gears	M/s. Tractors and Farm Equipment Ltd., Chennai – 34	40000/-
128.	-do-	Stress analysis on worm shafts	M/s. Madras Engg. Industries Pvt. Ltd., Maraimalainagar	17000/-
129.	-do-	X-ray analysis on six samples	M/s. Orchid Chemicals and Pharmaceuticals Ltd. Chennai.	
130.	-do-	X-ray analysis on Renitidine Hydrochloride	M/s. Shasun Chemicals and Drugs Ld., Cuddalore	3400/-
131.	-do-	Residual stress analysis on Camroller shoe	M/s. Betz Engineering and Technology Zone, Chennai – 88	4000/-
132.	-do-	Residual stress analysis on two leaf springs	M/s. Jai parabolic Springs Ltd., Singapurumal Koil	32000/-
133.	-do-	X-ray analysis on Zepraside Hcl	M/s. Shasun Chemicals and Drugs Ltd., Chennai – 42.	6800/-
134.	-do-	X-ray analysis on Zepraside Hcl	-do-	20400/-
135.	-do-	X-ray analysis on Ranitidine Hcl	-do-	6800/-
136.	-do-	X-ray analysis on Renitidine Hcl	-do-	3400/-
137.	-do-	Stress analysis on worm shafts	M/s. Madras Engg. Industries Pvt. Ltd., Maraimalainagar	34000/-
138.	-do-	Residual stress analysis on Inset reings	M/s. India Pistons Ltd. Chennai - 11	14400/-
139.	-do-	Residual stress analysis on cam roller	M/s. Betz Engineering and Technology Zone, Chennai – 88	4000/-
140.	-do-	Residual Stress analysis on inset-ring	M/s. India Pistons Ltd., Chennai – 11	3600/-
141.	-do-	Stress analysis on work shafts	M/s. Madras Engg. Industries Pvt. Ltd., Maraimalainagar	27200/-
142.	-do-	Residual stress analysis on cam roller shaft	M/s. Betz Engineering and Technology Zone, Chennai – 88	4000/-
143.	-do-	X-ray analysis on Cycloserine	M/s. Shasun Chemicals and Drugs Ltd., Pondichery	3400/-

Sl. No.	Name of Faculty	Title	Industry	Amount (in Rs.)
144.	-do-	Residual stress analysis on inset-ring	M/s. India Pistons Ltd., Chennai – 11	3600/-
145.	-do-	Stress analysis on worm shafts	M/s. Madras Engg. Industries Pvt. Ltd., Maraimalainagar	30600/-
146.	-do-	X-ray analysis on Galbapentin USP RS and Ranitidine Hcl – Blended	M/s. Shasun Chemicals and Drugs Ltd., Cuddalore.	6800/-
147.	-do-	Stress analysis on worm shafts	M/s. Madras Engg. Industries Ltd., Maraimalainagar	40800/-
148.	-do-	Residual stress analysis	M/s. Jai Parabolic Springs Ltd., Singaperumal Koil	8000/-
149.	-do-	Residual stress analysis on inset-ring	M/s. India Pistons Ltd., Chennai – 11	15552/-
150.	-do-	X-ray analysis on Cycloserine	M/s. Shasun Chemicals and Drugs Ltd., Pondichery	3400/-
151.	-do-	X-ray analysis on Cycloserine	M/s. Shasun Chemicals and Drugs Ltd., Cuddalore	10200/-
152.	-do-	X-ray analysis on 2 drug samples	M/s. Shasun Chemicals and Drugs Ltd., Chennai	6800/-
153.	-do-	X-ray analysis on 3 drugs samples	-do-	10200/-
154.	-do-	X-ray analysis on 3 drugs samples	-do-	10200/-
155.	-do-	Residual stress analysis on a shaft	M/s. TVS Atuolect Ltd., Chennai – 77	4000/-
156.	-do-	Residual Stress analysis on two leaf springs	M/s. Jai Parabolic Springs Ltd., Singaperumal Koil	24000/-
157.	-do-	Stress analysis on work gears	M/s. Madras Engg. Industries Pvt. Ltd., Maraimalainagar	27200/-
158.	-do-	Residual Stress analysis on two leaf springs	M/s. Jai Parabolic Springs Ltd., Singaperumal Koil	21600/-
159.	-do-	Residual stress analysis on three leaf springs	-do-	28800/-
160.	-do-	X-ray analysis on 2 drugs samples	M/s. Shasun Chemicals and Drugs Ltd., Chennai – 42	6800/-
161.	-do-	Stress analysis on worm gears	M/s. Madras Engg. Industries Pvt. Ltd., Maraimalainagar	20400/-
162.	-do-	X-ray analysis on 2 ceramic samples	M/s. Sundaram Brake Linings Ltd., Chennai – 50	10000/-
163.	-do-	X-ray analysis	M/s. Sundaram Brake Linings Ltd., Chennai – 50	10000/-
164.	-do-	Stress analysis of worm gears	M/s. Madras Engg. industries Pvt. Ltd., Maraimalainagar	30600/-
165.	-do-	X-ray analysis on 2 samples	M/s. Shasun Chemicals and Drugs Ltd., Pondicherry	6800/-
166.	-do-	X-ray analysis on 3 drug samples	-do-	10200/-
167.	-do-	X-ray analysis	M/s. Shasun Chemicals and Drugs Ltd., Chennai – 42	17000/-
168.	-do-	X-ray analysis on 3 drugs samples	-do-	10200/-
169.	-do-	Stress analysis on worm gears	M/s. Madras Engg. Industries Pvt Ltd., Maraimalainagar	23800/-

## RBIC Projects:

Sl. No.	Name of Faculty	Title	Industry	Amount (Rs. in lakhs)
1.	Dr. M Balasubramanian.	Development and characterization of aluminium matrix composites for tracked vehicle application.	CVRDE, Chennai.	4.5
2.	Dr M Kamaraj Prof. K Prasad Rao	Performance Evaluation of Ball Valve coatings.	M/s Audco India Ltd. Chennai.	2.97
3.	Prof TS Prasannakumar	Improving Service Life of Cast Iron Dies for Cast Iron Auto Components	Breaks India Foundry Division, Sholingur	4.5

## Research Publications

No. of papers published in Refereed National Journals	..	3
No. of papers published in Refereed International Journals	..	13
No. of papers presented in National Conferences	..	24
No. of papers presented in International Conferences	..	21

## In Refereed National Journals:

1. Ramakrishna Naidu, N. K. and Ganesh Sundara Raman, S., 'Fretting Fatigue Limit of Aluminium Alloy 6061-T6, *Trans. IIM*, 56, 559-563, 2003.
2. Ramakrishna Naidu, N. K., Ganesh Sundara Raman, S. and Gnanamoorthy, R. Fretting fatigue behaviour of aluminium alloy 6061-T6 under plane bending, *Trans. IIM*, 56, 513-520, 2003.
3. Electrodeposited Ni-B alloy films: preparation and structural aspects. K.Krishnaveni, T.S.N. Sankaranarayanan and S.K.Seshadri Transactions of Indian Institute of Metals, 2003 (August), vol. 56 (4), 341-346

## In Refereed International Journals

1. Balla Vamsikrishna, P. Venugopal and K. Prasada Rao, Inferences on plastic properties and coefficient of friction during simultaneous compression deformation of dissimilar sintered powder metallurgical preforms, *Materials Science and Technology*, 1 March 2004, vol.20, no. 3, pp. 323-334.
2. Ganesh Sundara Raman, S. and Kitsunai, Y., Fatigue Crack Growth Behaviour of A533B Steel in Pressurized Water at 288°C and 28°C, *Engg. Failure Analysis*, 11/3, 293-303, 2004.
3. Ganesh Sundara Raman, S. and Radhakrishnan, V. M., Low Cycle Fatigue Life: Dependence on Test Mode. *J Mater. Engg. and Performance*, 13 (1) Feb., 88-92, 2004.
4. Formation and characterization of borohydride reduced electroless nickel deposits T.S.N.Sankaranarayanan and S.K.Seshadri, *Journal of Alloys and Compounds*, 2004, vol. 298, 197-205.
5. Effect of weld metal chemistry and heat input on the structure and properties of duplex stainless steel welds .Muthupandi, P.Bala Srinivasan, S.K.Seshadri and S.Sundaresan *Materials Science and Engineering*, 2003, vol. A358, p-16
6. Electroless Ni-P/Ni-B duplex coatings- preparation and evaluation of microhardness, wear and corrosion resistance T.S.N.Sankaranarayanan, K. Krishnaveni and S.K.Seshadri *Materials Chemistry and Physics*, 2003, vol. 82(3), 771-779.
7. Tribological characteristics of nickel based composite coatings C.S. Ramesh and S.K. Seshadri *Wear*, 2003, vol. 255, 893-902
8. Electroless Ni-P composite coatings J.N.Balaraju, T.S.N.Sankaranarayanan and S.K.Seshadri *Journal of Applied Electrochemistry*, 2003, vol. 33, 807-816
9. Achar D.R.G., Reddy A.A., and Guha B. Finite Element Analysis in Pulsed GTA Weldments, *Materials Science Forum*, Vols. 426-432 (2003) p.3995-4000.
10. P. Johan Singh, B.Guha and DRG Acjar. Fatigue tests estimation of crack initiation and propagation lives of AISI 304L butt-welds with reinforcement intact, *Engineering Failure Analysis*, Vol. 10, Issue 4, August 2003, p.383-393.

11. P. Johan Singh, DRG Achar and B.Guha., Fatigue life prediction for stainless steel welded plate CCT geometry based on Lawrence's local-stress approach, *Engineering Failure Analysis*, Vol.10, Issue 6, December 2003, pages 655-665.
12. P. Johan Singh, B.Guga and DRG Achar, "Fatigue life prediction for AISI 304L butt welded joints having different bead geometry using local stress approach", *Science and Technology of Welding and Joining*, Vol.8. No.4, 2003, p 303-308.
13. P. Johan Singh, DRG Achar, G.Thomas and B Guga, Monitoring Fatigue Crack Initiation and Propagation in Cruciform Joints using Resistance-type Gages, *Journal of Testing and Evaluation*, Vol.32, No.1, Jan.2004, p.40-45.

#### In Proceedings of National Conferences

1. Johan Singh, D.R.G. Achar and S.L. Mannan, "Fatigue Life Estimation of welded Joints -A Two Stage Propagation Approach", 4th Conference on Creep, fatigue and Creep-Fatigue interaction, Oct. 8-10, 2003, IGCAR, Kalpakkam.
2. Ganesh Sundara Raman, S. and Kitsunai, Y., Fatigue Crack Growth Behaviour of A533B Steel in High Temperature Water Environment, *ibid*.
3. Ramakrishna Naidu, N. K. and Ganesh Sundara Raman, S., Effect of Surface Modification on Fretting Fatigue Resistance of Al-Mg-Si (6061) Alloy, *ibid*.
4. Venkateswaran, P., Singh, P. K., Ganesh Sundara Raman, S. and Pathak, S. D., Fatigue Crack Growth Studies on SA 333 Gr. 6 Steel Weldments with Emphasis on Short Crack Regime, *ibid*.
5. Kishore Babu, N., Ganesh Sundara Raman, S., Srinivasa Murthy, C. V. and Madhusudhan Reddy, G., Effect of Welding Techniques on the High Temperature Tensile Properties of Ti-6Al-4V, *ibid*.
6. M. Kamaraj, K. Serin, M. Kolbe, K. Neuking and G. Eggeler, Creep Deformation of the superalloy singlecrystal CMSX-4, *ibid*.
7. S. Sundaresan, Shaju K. Albert, M. Sireesha and M. Kamaraj, Stress Rupture Behaviour of Transition Joints between Modified 9Cr-1Mo steel and 316 LN, *ibid*.
8. Satya Devi, M. S. Sivakumar and S. S. Bhattacharya, Very Low Cycle Fatigue Behaviour of a Commercial Stainless Steel, *ibid*.
9. Ramakrishna Naidu, N. K. and Ganesh Sundara Raman, S., Effect of Contact Pressure on Fretting Fatigue Behaviour of an Aluminium Alloy (6061-T6), 57<sup>th</sup> Annual Technical Meeting, IIM, November, 2003.
10. Venkateswaran, P., Singh, P. K., Ganesh Sundara Raman, S. and Pathak, S. D., Prediction of stress levels to achieve desired fatigue lives of SA 333 Gr 6 steel welds in presence of short cracks based on Kitagawa Approach, *ibid*.
11. Kishore Babu, N., Ganesh Sundara Raman, S., Srinivasa Murthy, C. V. and Madhusudhan Reddy, G., Influence of Electron Beam Oscillation on the Structure and Mechanical Properties of Ti-6Al-4V Welds, *ibid*.
12. P. Jawahar and M. Balasubramanian, Thermoset polymer clay nanocomposites, ISAMPE National Conference on Composites & National Seminar on Aerospace Structures, Bangalore, Sep. 5-6, 2003.
13. Anodic oxide coating on Ti-6Al-4V for bio-implant application R.Narayanan and S.K.Seshadri
14. Presented at Second National Conference on Quality Control in Metallurgical Industries, Coimbatore, 5-6 December 2003
15. Preparation of graphite supported Pt-Ru electrocatalyst and effect of catalyst loading on hydrogen electrooxidation for PEMFC K.Suresh Kumar, Prathap Haridoss and S. K. Seshadri
16. Presented at NMD-ATM 2003, Kolkata, 14-16 November 2003
17. Synthesis and characterization of electrodeposited nickel tungsten alloys K R Sriraman, S Ganesh Sundara Raman and S K Seshadri Presented at NMD-ATM 2003, Kolkata, 14-16 November 2003
18. Anodic oxide coating on Ti-6Al-4V – Corrosion in Physiological solution R.Narayanan and S.K.Seshadri, Presented at NMD-ATM 2003, Kolkata, 14-16 November 2003
19. Electrodeposited Ni-B coatings: formation and evaluation of hardness and wear resistance, K Krishnaveni, T S N Sankaranarayanan and S K Seshadri Presented at NMD-ATM 2003, Kolkata, 14-16 November 2003

20. Electrodeposited Ni-W alloy films: Preparation and evaluation of corrosion resistance, K.R.Sriraman, M.Palaniappa, S.Ganesh Sundararaman and S K Seshadri, Presented at Annual Technical Meeting of the Electrochemical Society of India (NSEST-2003), IISc, Bangalore, July 2003
21. Corrosion of anodic oxide coating on Ti-6Al-4V in simulated body fluid Partho Mukherjee, R.Narayanan and S K Seshadri, Presented at Annual Technical Meeting of the Electrochemical Society of India (NSEST-2003), IISc, Bangalore, July 2003
- A. Satya Devi, M.S. Sivakumar and S.S. Bhattacharya, "Some Studies on the Behaviour of Commercial Stainless Steel under Very Low Cycle Fatigue Loading with Tensile Mean Stresses" National Conference on Materials Processing and Failure Analysis, June 19-20, 2003, Tiruchirappalli.
22. K. Praveen and S.S. Bhattacharya, "Pre- and Post -Deformation Behaviour of Superplastically Deformed Ti-6Al-4V" Annual Technical Meeting, National Metallurgists' Day Celebrations, Nov. 14-18, Kolkata.
23. K. Srinivasan and S.S. Bhattacharya, "On the High Temperature Deformation Behaviour of Commercially Pure Aluminium Processed by a Cyclic Extrusion and Upsetting Route", Conference of Research Scholars in Materials Science & Engineering, Aug. 30-31, Kharagpur.
24. K. Srinivasan and S.S. Bhattacharya, "On the Development of an Ultra-fine Grain Structure in Commercially Pure Aluminium by a Cyclic Extrusion and Upsetting Route", Annual Technical Meeting, National Metallurgists' Day Celebrations, Nov. 14-18, Kolkata.
25. DRG Achar, L.Singheiser and W.J.Quadackers, Computational Modelling of Engineering Materials Design, Invited Paper Presented at the National Conference on Advances in Materials and Their Processing (AMTP) – 2003, 22-23 December, 2003, Basaveshwar Engineering College, Bagalkot, Karnataka, India.

#### In Proceedings of International Conferences

1. P John Singh, SL Mannan and DRG Achar, Fatigue Life Extension in AISI 304L Stainless Steel Weldments using Deep Cryogenic Treatment, International Heat Treat 2004, Chennai, Jan. 9 – 10, 2004.
2. Anup Kumar Keshri, Uday Chakkingal and Paramanand Singh, Effect of HT on characteristics of Cu-Al-Ni shape memory alloys, *ibid*.
3. K Srinivasan, SS Bhattacharya On the Sursulf Treatment of some plain carbon steels, *ibid*.
4. TS Prasanna Kumar and B Raghunatha Rao, Mathematical Modeling of Heat Transfer Coefficients during Quenching Heat Treatment, *ibid*.
5. S Shankar, R Rastogi, K Srinivasa Rao, K Gurumoorthy, M Kamaraj, K Prasad Rao and Darrius Gnanaraj Solomon, Effect of heat treatment on wear and corrosion behaviour of Aluminum bronze alloy, *ibid*.
6. Ramesh Babu, K Prasad Rao and TS Sampathkumar, Heat Treatment of Nano Hydroxyapatite Ceramics by Microwave Processing, *ibid*.
7. B Vamsi Krishna, P Venugopal and K Prasad Rao, Influence of Heat Treatment on the Interface Microstructure and Weld Strength of Solid State Joints of Dissimilar P/M Preforms, *ibid*.
8. GD Janakiram and K Prasad Rao, Effect of post weld HT variations on the microstructure of Inconel 718 GTA welds made using constant current and pulsed current, *ibid*.
9. Koteswara Rao, M Kamaraj and K Prasad Rao, Thermomechanical treatment 2219 Al alloy welds, *ibid*.
10. T. Venugopal, B S Murthy and K Prasad Rao, Sintering of Cu-Al<sub>2</sub>O<sub>3</sub> Nano-Composite Fabricated by Ball Milling, *ibid*.
11. K Gurumoorthy, M Kamaraj and K Prasad Rao, Sliding wear behaviour of Ni-base hardfacing alloys, International conference on advances in surface treatment: Research & Application, November 3-6, 2003 Hyderabad, India.
12. K Venkateswaran, M Kamaraj and K Prasad Rao, Wear behaviour of PM Fe-based composite reinforced with mechanically alloyed Fe<sub>3</sub>Al Intermetallic particles, International conference on advances in surface treatment: Research & Application, November 3-6, 2003 Hyderabad, India.
13. K Krishnaveni, T S N Sankaranarayanan and S K Seshadri, Borohydride reduced electroless Ni-B coatings: Their role in surface engineering, International Conference on Advances in Surface Treatment: Research & Applications, organized by society for Advancement of Heat Treatment & Surface Engineering (SAHTSE), Hyderabad, November 3-6, 2003.

14. M Palaniappa and S K Seshadri, Tribological behaviour of electroless Ni-W-P deposits, *ibid.*
15. Pavan Kumar, S. Karthik, A. Muthukaruppan and S.S. Bhattacharya, "Development of an ANN controlled Genetic Algorithm for the Numerical Validation of a Model for Superplastic Deformation" Proceedings of the 15<sup>th</sup> IASTED International Conference on Parallel and Distributed Computing Systems, PDCS-2003, November 3-5, 2003, Marina del Rey, California, USA, Ed. T. Gonzalez, Acta Press, Vol II, 941-946.
16. K. Srinivasan, S.S. Bhattacharya and P. Venugopal, "Some Studies on the Severe Plastic Deformation of Commercial Aluminium by a Cyclic Extrusion - Upsetting Route", International Conference on Non-Ferrous Materials, July 4-6, 2003, Varanasi, India, Eds. R.N. Prasad, S N. Ojha, Vakil Singh, T.R. Mankhand and J.P. Pathak, pp. Tech-12/1-11.
17. Manu Mathai and S.S. Bhattacharya, "On the Superplastic Deformation Behaviour of an Aluminium Alloy", International Conference on Advances in Materials & Processes for Industrial Applications, September 25-27, 2003, Pune, India, Tech. Vol., ASM International Pub., pp. 43-49.
18. Satya Devi, S.S. Bhattacharya and M.S. Sivakumar, "A Damage Mechanics Based Model for the Life Prediction of Stress Controlled Very Low Cycle Fatigue of Stainless Steel", International Conference on Low Cycle Fatigue, September 9-11, 2003, Berlin, Germany.
19. Kranthi Kumar, M. Winterer, H. Sieger, S.S. Bhattacharya and H. Hahn, "Chemical Vapour Synthesis and Sintering of Nanocrystalline Titania, European Congress on Advanced Materials and Processes, EUROMAT 2003, September 1-5, Lausanne, Switzerland.
20. DRG Achar, Munoz Arroyo, L.Singheiser and W.J.Quadackers, Modelling of Phase Distributions in MCrAlY Coatings and Their Interactions with Nickel Based Alloys, Presented at the International Conference on THERMAL PROCESS MODELLING AND COMPUTER SIMULATION (ICTPMCS), Nancy, France, March 31-April 2, 2003.
21. Achar DRG., Reddy A.A., and Guha.B. Finite Element Analysis in Pulsed GTA Weldments, Invited Paper presented at the International Conference on PROCESSING & MANUFACTURING OF ADVANCED MATERIALS – THERMEC '2003, July 7-11, 2003, Leganes, Madrid, Spain.

#### Distinguished Visitors to the Department:

Sl. No.	Name of the Visitor & Designation	Date of Visit	Purpose of visit
1.	Dr Chokkalingam Senior Research Associate Case Advanced Power Institute Case Western Reserve University, Cleveland.	24.4.2003	Interact with Faculty and deliver a lecture
2.	Dr Srinivasan Chandrasekar Centre for Materials Processing & Tribology School of Industrial Engineering Purdue Univeristy.	14.7.2003	"
3.	Mr V Pari Indian Society for Non Destructive Testing Chennai.	8.8.2003	"
4.	Dr MS Seshadri Chief Metallurgical Engineer Lennox Industries Inc.Dallas, Texas, USA.	22.8.2003	"
5.	Prof PM Prasad NFTDC, Hyderabad.	10.9.2003	"
6.	Dr V Srinivasan Scientist, MMD, IGCAR, Kalpakkam	19.9.2003	"
7.	Mr SR Balasubramaniam Balaji Alloys Ltd., Chennai.	26.9.2003	"
8.	Dr CG Krishnadas Nair Former Chairman, HAL Bangalore	13/2/2004	"
9	D: Seetharam Das Materials Science Division Indira Gandhi Centre for Atomic Research Kalpakkam.	8.3.2004	"
10.	Dr TS Srivatsan Professor University of Akron Arkon, Ohio, USA	19.3.2004	"
11.	Dr RK Dayal IGCAR, Kalpakkam	31.3.2004	"

#### 4.11.6 Other Activities:

1. Dr TS Sampathkumar served as the chief judge of the Jawaharla Nehru Science Exhibition (cluster level) held on 5.8.2003 at the KV, Ashok Nagar, Chennai. 16 KVS participated and about 60 exhibits were displayed.
2. Atomic Force Microscope which was obtained under a DST Project on nano-technology was installed shortly.
3. Dr M Balasubramaniam served as Examiner for the M.E. project viva voce examination at the Department of Metallurgical Engineering, National Institute of Technology, Tiruchirappalli on 13.1.2004.
4. The Director has nominated Dr SK Seshadri, Professor, Department of Metallurgical and Materials Engineering as the Dean (Administration) for a period of two years with effect from the forenoon of 22.01.2004.
5. Dr Placid Rodriguez, AICTE-INAE Visiting Professor, Department of Metallurgical and Materials Engineering delivered the many lectures on "Dislocations and Plastic Deformation during January – April 2004.
6. IIM Chennai Chapter and the faculty members of the Dept. were involved in the organisation of a Conference on Materials, Robotics, Processes and Instrumentation related to Nuclear Fuel Cycle held at SERC, Chennai during 15 and 16<sup>th</sup> December organised by INS and IIM Kalpakkam Chapter. Prof. K. Prasad Rao delivered an invited talk.
7. ASM Materials Education Foundation Board of Trustees, and the AET LeaderShape Selection Committee have selected Mr. Krishna Iyengar as one of the six students for the LeaderShape Institute this summer.
8. Prof. K. Prasad Rao inaugurated the three day National Seminar on "Manufacturing Strategies for the Twentyfirst Century" organized by Production Engg. Dept. of Govt. Engineering College, Thrissur, Kerala on 26th Nov. He talked on the topic "Materials for the 21<sup>st</sup> Century".
9. Prof. K. Prasad Rao was the UGC expert to review the project "Centre for Advanced Study-Phase II" carried out by the Dept. of Metallurgy, IISC, Bangalore during 20-21 November at Bangalore.
10. Prof. K. Prasad Rao has been elected as the Chairman of Indian Welding Society. Prof. D. R. G. Achar has been invited to be a Patron of the Indian Welding Society.
11. Prof. DRG Achar returned from Germany after serving two years as a Guest Scientist at the Research Centre Juelich, Germany.
12. Prof. DRG Achar served as an expert member in the Faculty of the National Institute of Technology, Tiruchirappalli.

#### QUIZ:

The department of Metallurgical and Materials Engineering and the Indian Institute of Metals (IIM) Chennai Chapter conducted the preliminaries of Prof Brahm Prakash Memorial Materials Quiz 2003 for +1 and +2 students of Science Stream on 23<sup>rd</sup> August (Saturday) at 9.00 a.m. Dr S Ganesh Sundara Raman and Dr Uday Chakkingal were the co-ordinators. About 101 students from 19 schools in Chennai participated in the event. Six students were selected to represent IIM Chennai Chapter in the National level Prof Brahm Prakash Memorial Materials Quiz 2003 held in Kalpakkam in October 2003.

All India Materials (AIM) Quiz 2004 was conducted on 18<sup>th</sup> January 2004 at IIT Madras. ASM International Chennai Chapter, IIT Madras Student Chapter of ASM International and IIT Chennai Chapter organized the programme. Five institutions, viz. (1) Indian Institute of Technology, Bombay, Mumbai, (2) National Institute of Technology, Warangal, (3) Mahatma Gandhi Institute of Technology, Hyderabad, (4) PSG College of Technology, Coimbatore and (5) Anna University, Chennai nominated their students. The host institute, IIT Madras fielded one team. So there were six teams participating in the quiz. Each team had three students. Prof SK Seshadri was the quizmaster and Dr Prathap Haridoss assisted him. Dr S Ganesh Sundara Raman co-ordinated the programme.

#### INTERNATIONAL CONFERENCE:

An International Conference on Heat Treatment " International Heat Treat 2004" was organized by ASM International, IIM Chennai Chapter, Madras Metallurgical Society and Tamil Nadu Small Scale Heat Treatment Industries Association during 9-10 January 2004 at Hotel Savera, Chennai. Faculty members Prof K Prasad Rao, Mr G Jothinathan, Dr M Kamaraj, Dr S Ganesh Sundara Raman, Dr TS Sampathkumar were part of the organizing committee.



## 4.12 DEPARTMENT OF OCEAN ENGINEERING

### 4.12.1. Introduction:

The Department of Ocean Engineering (OED) was established in 1977. It offers B.Tech. (Ocean Engineering), Dual Degree (Naval Architecture and Ocean Engineering), M.Tech. (Ocean Engineering), M.S. and Ph.D. programmes. The major areas of teaching and research at the Department are :

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

### 4.12.2. Academic programmes:

#### Students on Roll:

Programme	I Year	II Year	III Year	IV Year	V Year & others	Total
B.Tech	18	19	20	18	2	77
Dual Degree	4	4	6	4	4	22
M.Tech	12	6	-	-	-	18
M.S.	13	9	9	4	-	35
Ph.D	10	5	5	8	4	32
<b>Total</b>	<b>57</b>	<b>43</b>	<b>40</b>	<b>34</b>	<b>10</b>	<b>184</b>

#### Names of student/scholar attended Conference/Seminar and Symposia Abroad/India:

Sl.No.	Name of the Student	Programme	Name of the Conference/ Seminar/Symposia	Date & venue
<b>Conference:</b>				
1	Ms. K. Vijayalakshmi	Ph.D	International Conference on Coastal and Ocean Technology	December 10-12, 2003 NIOT Chennai
2	Mr. E. Vijayakrishna Rapaka	Ph.D	International Conference on Coastal and Ocean Technology	December 10-12, 2003 NIOT Chennai
3	Mr. T. Rajesh Kannah	Ph.D	International Conference on Coastal and Ocean Technology	December 10-12, 2003 NIOT Chennai
4	Mr. K. Praveen Reddy	M.S	International Conference on Coastal and Ocean Technology	December 10-12, 2003 NIOT Chennai
5	Mr. R. Balaji	Ph.D	International Conference on Coastal and Ocean Technology	December 10-12, 2003 NIOT Chennai
6	Mr. N. Darga Kumar	Ph.D	Indian Geotechnical Conference	December 13-20, 2003 IIT Roorkee
7	Mr. P. Dinakar	Ph.D	ICFRC 2004	January 8-10, 2004 L&T Chennai
8	Mr. P. Dinakar	Ph.D	Advances in Concrete through Science and Engineering	March 21-24, 2004 Evanston Illinois, USA
<b>Seminar:</b>				
1	Mr. K. Muthukumaran	Ph.D	COPEDEC VI	September 15-19, 2003 Colombo Sri Lanka
2	Mr. M.G. Muni Reddy	Ph.D	COPEDEC VI	September 13-19, 2003 Colombo, Sri Lanka
3	Mr. R. Balaji	Ph.D	COPEDEC 2003	September 15-19, 2003
4	Mr. M.G. Muni Reddy	Ph.D	ICS 2004	March 14-19, 2004 ITAJAF, Brazil

## 4.12.3. Faculty and their activities:

## Faculty:

Name and Qualifications	Major Area of Specialization
<b>Professors:</b>	
S.K. Bhattacharyya, Ph.D. (IIT, Madras)	Computer aided structural analysis, Analysis of motion characteristics of floating bodies, Model studies
K. Ganesh Babu, Ph.D. (IIT, Madras)	Analysis and design of ocean structures, Behaviour of materials in Ocean Environment
V.G. Idichandy, Ph.D.(IIT, Madras)	Experimental techniques, Instrumentation, Analysis and testing of structural models and prototypes
J.S. Mani, Ph.D.(IIT, Madras)	Coastal Engineering, sediment transport
S. Narasimha Rao, Ph.D.(IISc.)	Marine Geotechnical engineering, Foundation Engineering, Dredging
K. Rajagopalan, Ph.D.(IIT, Madras)	Computer aided analysis, Design of ship, underwater and offshore structures, Reinforced and pre-stressed concrete structures
V. Sundar, Ph.D.(IIT, Madras) [Head]	Wave Structure Interaction, Coastal Erosion & Shore Protection, Fluid Flow Problems
SP.Subramanian, Ph.D.(IIT, Madras)	Geological oceanography, Engineering geology
R. Sundaravadivelu, Ph.D. (IIT, Madras)	Computer aided analysis design, Experimental studies of Coastal and Offshore Structures, Port and Harbour structures
C.P. Vendhan, Ph.D., (IIT, Kanpur)	Offshore structures, Dynamics of floating systems, finite element modeling
<b>Associate Professors:</b>	
V. Anantha Subramanian, Ph.D., (IIT, Madras)	Naval Architecture, Ship model testing
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. Neelamani, Ph.D. (IIT, Madras)	Hydrodynamics, Wave structure interaction, Wave energy and coastal engineering problems
S. Surendran, Ph.D. (Yokohama National Univ., Japan)	Ship motion Dynamics, Structural Dynamics, Non-linear Dynamics
<b>Assistant Professors:</b>	
S.A. Sannasiraj (IIT Madras)	Breaking wave simulation and its dynamics, Wind-wave generation and data assimilation, Wave-Structure interaction
K. Murali (IIT Madras)	Computational Hydrodynamics, Hydro-elasticity, Fluid-Structure interaction, High end computing.

## Short-term courses/Workshops/ Seminars/ Symposia/ Conferences Organized by the Faculty Members:

Sl.No.	Coordinator(s)	Title	Period
<b>Conference:</b>			
	Prof. K. Ganesh Babu	Indo-US Workshop / Seminar on "Use of HVFA Concrete and the Environmental Effects"	January 6-7, 2004
<b>Symposia:</b>			
	Prof. V. Sundar and Prof. R. Sundaravadivelu	"Foundation Engineering in Soft Marine Clays"	1 <sup>st</sup> December 2003.

## Short term courses/Workshops/Seminars/Symposia/Conferences/Training attended by the faculty in Academic Institutions and public sector undertakings:

Sl. No	Name of Faculty	Title	Institution	Period
<b>Seminar:</b>				
1	Prof. R. Sundaravadivelu	Deep Foundation for infrastructure projects	IIT Madras	8 to 12 December 2003

Sl. No	Name of Faculty	Title	Institution	Period
<b>Conference:</b>				
2	Prof. R. Sundaravadivelu	National Conference on Professionalisation of Engineers	India Habitat Centre, New Delhi	30.5.2003 to 01.06.2003
3	Prof. S. Narasimha Rao	International Conference on "Problematic Soils"	Nottingham, UK	28.07.2003 to 30.07.2003
4	Prof. V. Sundar, Prof. R. Sundaravadivelu Dr. S.A. Sannasiraj	"Sixth International Conference on Coastal and Port Engineering in Developing Countries"	Lanka Hydraulic Institute Colombo, Sri Lanka	15.09.2003 to 19.09.2003
5	Prof. SP Subramanian	International Ocean Institute Board and Planning Council Meetings and Pacem in Maribus 2003	Kiev, Ukraine	22.10.2003 to 30.10.2003
6	Prof. J.S. Mani	"Integrated Coastal Zone Management for Chennai, India" at the 30 <sup>th</sup> Pacem in Maribus	Kiev, Ukraine	27.10.2003 to 30.10.2003
7	Prof. C.P. Vendhan	National Symposium on Acoustics	ARAI, Pune	October 2003
8	Prof. J.S. Mani	International conference on Coastal and Ocean Technology	NIOT, Chennai	10-12 <sup>th</sup> Dec '03
9	Prof. J.S. Mani	HYDRO 2003	CWPRS, Pune	26-27 <sup>th</sup> Dec'03

**Special Lectures Delivered by the Faculty in other Institutions:**

Sl.No.	Name of Faculty	Topic of Lecture	Venue and Date
1.	Prof.R.Sundaravadivelu	Coastal protection with Groin work in Kanyakumari District	Kanyakumari 18 <sup>th</sup> and 19 <sup>th</sup> October 2003
2.	Prof.R.Sundaravadivelu	Coastal Management in Chilika lake (Anna University)	Anna University November 2003
3.	Prof. V. Sundar	Training Course on "Coastal Erosion, Protection and coastal zone management"	National water academy, Pune, 03.11.03 to 04.11.03
4.	Prof. S. Narasimha Rao	(a) Earthquake resistant design of foundations (b) Use of stone columns in storage tanks	M.A. College of Engg., Kothamangalam, Kerala December 3-4, 2003
5.	Prof. V. Sundar	Coastal Erosion and Protection	Anna University, 05.12.03
6.	Prof. V. Sundar, HoD	Cause of Coastal Erosion, shore/coast and sea defense methods – Application along Indian Coast	International Conference on Coastal and Ocean Technology held at NIOT, Chennai during December 10-12, 2003
7.	Prof.R.Sundaravadivelu	Training programme Coastal protection work in Kanyakumari District	21 <sup>st</sup> and 22 <sup>nd</sup> February 2004 Kanyakumari
8.	Dr. S. Surendran	Studies on roll dynamics of ship	Advance Ship Engg., and Research Centre, Pusan National University, S. Korea - 19.1.2004
9.	Dr. S. Surendran	Strength of ships	Sri Venkateswara College of Engg., 20.2.2004
10.	Prof. J.S. Mani	Over view of coastal hydro dynamics and case study	ICMAM, DOD February 3, 2004
11.	Prof. V. Sundar	Cause of Coastal Erosion, shore/coast and sea defense methods – Application along Indian Coast	ICMAM, DOD, Govt. of India, Pallikaranai, 04.02.2004

## Visits abroad by Faculty:

Sl. No	Name of Faculty	Country visited	Date	Purpose of visit
1	Prof. S. Narasimha Rao	Nottingham, UK	28.07.2003 - 31.07.2003	Attended the "International Conference on "Problematic Soils"
2.	Prof. V. Sundar	Germany	02.06.2003 - 20.07.2003	Visiting Professor to Univ. of Wuppertal, invited by DAAD, Germany
3.	Prof. V. Sundar Prof. R. Sundaravadivelu Dr. S.A. Sannasiraj	Sri Lanka	15.09.2003 - 19.09.2003	Presented papers and chaired technical sessions in COPEDEC VI
4.	Prof. SP Subramanian	Kiev, Ukraine	22.10.2003 - 30.10.2003	International Ocean Institute Board and Planning Council Meetings and Pacem in Maribus 2003
5.	Prof. J.S. Mani	Kiev, Ukraine	27.10.2003 - 30.10.2003	"Integrated Coastal Zone Management for Chennai, India" at the 30 <sup>th</sup> Pacem in Maribus
6.	Prof. S.K. Bhattacharya	Canada	2003-2004	Visiting Professor National Research Council and University of New Foundland Canada
7.	Dr. S. Neelamani	Kuwait	2003-2004	Research Scientist at Kuwait Inst. for Scientific Research Kuwait
8.	Dr. S. Surendran	Pusan National University, Pusan, Korea	Dec 2003 - Jan 2004	Visiting Professorship

## Honours and Awards obtained:

Sl.No	Name of Faculty	Name of Award	Awarded by	Awarded for	Date
1.	Prof. S. Narasimha Rao	Terzaghi's award	India Concrete Institute and Institute of Consulting Engineers	For meritorius work in Marine Geotechnical	9 <sup>th</sup> November 2003
2.	Prof. V. Sundar	Member of the Executive Committee	Asia Pacific Division of International Association of Hydraulic Research		2002-2004

## 4.12.4. Design and Development Activities

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

- Designed a special type of caisson supported diaphragm wall for a few berths in Vizag Oharour by Prof. S. Narasimha Rao.

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

S.No.	Name of Equipment	Value (Rs.in lakhs)
1.	Hp Compaq Computer (2 Nos) (Dr. SS)	0.80
2.	HP DJ 1220C (Printer) (Dr. SS)	0.22

## 4.12.5. Research and Consultancy:

## Sponsored Research Projects:

Sl. No.	Title	Period	Funding Agency	Amount (Rs.in lakhs)	Co-ordinators
1.	Development of predictive modes for long and short term coastal change	18.03.02 17.03.05	DST New Delhi	9.42	Prof. J.S. Mani
2.	Modernisation of Instrumentation Laboratory	01.04.02 31.03.04	MHRD New Delhi	12.00	Prof. VG Idichandy Prof. CP Vendhan
3.	Studies on Energy Dissipating Sloped Seawalls as Shore Protection Structures	01.04.02 30.09.05	MHRD, New Delhi	12.00	Dr. S. Neelamani

Sl. No.	Title	Period	Funding Agency	Amount (Rs.in lakhs)	Co-ordinators
4.	Studies on Tidal Inlets along East Coast of India	03.01.03 02.01.06	Department of Ocean Development	45.60	Prof. J.S. Mani
5.	Augmentation of research facilities	2003-07	Dept. of Science and Technology	117.00	Head, OED
6.	Design of Light Catamaran for Testing Applications	April' 03 April' 04	National Institute of Ocean Technology	4.48	Dr. V. Anantha Subramanian
7.	Hydrodynamic Model Studies and Applicability of Rans Solvers for Ship Control	3 years	Naval Research Board	26.69	Dr. V. Anantha Subramanian Dr. K. Murali
8.	Development of Coastal Protective Measure Structure in Tamilnadu	March 04 March 06	Indian National Committee on Hydraulic Research Ministry of Water Resources New Delhi	17.88	Prof. J.S. Mani

#### Industrial Consultancy Projects:

Sl No	Name of the Investigator	Title of the Assignment	Address of the Client	Amount (Rs.in lakhs)
1.	Prof. S Nararasimha Rao	Mr. C. George Stephen Dept. of Space Nellore Dist.,	Geotechnical consultancy work for the proposed new solid propellant plant for SFG at SHAR	0.90
2.	Dr. V.G. Idichandy	Proof Pressure Testing of Air Bottles	TEAM Chennai - 48	0.24
3.	Dr. VS Raju	Consultancy services for Songo Project	L&T Saki Vihar Mumbai	0.20
4.	Dr. V.G. Idichandy	Strain Gauge Measurement on Titanium Air Bottles	Bharat Heavy Plate & Vessels Ltd., Vizag - 530012	2.61
5.	Dr. V. Sundar Dr. K. Ananthanarayanan	Sea Erosion on the Northern side of Sriharikota Island preventive measures	SHAR Sriharikota	6.00
6.	Dr. VS Raju	Review of damage of Heavy load out facility and repair / rehabilitation scheme at Hazina for L&T	M/s L&T Ltd ECC Construction Division Chennai - 89	0.48
7.	Dr.R Sundaravadivelu	Construction of Deep water wharf at Hut Bay in Little Andaman	Manickam & Sons Andaman 744 102	0.50
8.	Dr.R Sundaravadivelu	Construction of deep water wharf at Campbell Bay in Great Nicobar Islands	M/s RDS Project Ltd., Chennai - 4	0.80
9.	Prof. S. Narasimha Rao	Soil Investigation for the Construction of proposed prison complex at Puzhal	Tamil Nadu Police Housing Corporation Chennai -10	0.40
10	Dr R Sundaravadivelu	Construction of RMS wall for the protection of IRE Land at Manavala-kuruchi	Mr. KP Srinivasan M.K. Plant Manavala-kuruchi	1.90
11	Dr R Sundaravadivelu	Upgradation of existing facilities for the Inland Water Transport Sector	Directorate of Inland Water Transport, Orissa	0.75
12	Dr R Sundaravadivelu	Proof checking of Design and drawing of shuttering and support arrangement for ROB	Navayuga Engg., Co., Ltd Visakha-patnam	1.00
13	Dr. S. Narasimha Rao	Soil Investigation of OTM ACCN at Chennai	M/s Garrison Engineer Chennai - 2	0.20

SI No	Name of the Investigator	Title of the Assignment	Address of the Client	Amount (Rs.in lakhs)
14	Prof. K. Ganesh Babu	Rehabilitation and associated works	M/s Deeksha Consultants Pvt Ltd Chennai - 34	4.00
15	Dr.R Sundaravadivelu	Computation of Dredging Quatity for Kalijai (Extn.)	Chilika Development Authority Bhubaneshwar	3.58
16	Dr.R Sundaravadivelu Dr. V. Sundar	EIA Report for Jetty at Bassein Port	M/s Good Earth Maritime Chennai - 17	1.50
17	Prof. S Narasimha Rao	Soil Investigation for Police Station and Quarters	Exe. Engineer TN Police House Co Ltd Chennai - 10	3.00
18	Prof. V. Sundar Dr. K. Ananthanarayanan Dr. S.A. Sannasiraj	Sea Erosion - anti sea Erosion work coastline North of Royapuram fishing harbour near Ennore	P.W.D Palar Basin Circle, WRO Chepauk Chennai - 5	6.00
19	Dr. V. Anantha Subramanian	Powering Estimation for Yachts with Tunnel	Dubain International Reinforced Plastics, Dubai, UAE	2.50
20	Dr. R Sundaravadivelu	Deepening of Eastern Dock Arm	Mangalore Port Trust Mangalore	9.00
21	Dr. V. Sundar	Design of Breakwaters for Krishna-patnam Port	Navayuga Engg., Co Ltd Vizag 530016	0.50
22	Dr. V. Sundar Dr. SA Sannasiraj	Construction of a fisher Harbour at Mahe Pondichery State - model studies	Harbour Engg., Dept., Govt. of Kerala	4.50
23	Dr. VG Idichandy	Proof Pressure Test for DRDL Tanko	KCP Ltd Chennai - 17	0.75
24	Dr. S Narasimha Rao	Proof checking and drawings pertaining to a bridge in Visakapatnam	Vax Consultants Pvt Ltd Chennai - 17	0.25
25	Dr. VG Idichandy Mr. M. Santhanam	Vibration measurements on the foundation of fan Motor assembly unit at Kothevadam Thermal Power Station, Khammam	APGENCO Hyderabad 500080	0.25
26	Dr. R Sundaravadivelu Dr. Alagusundaramurthy	Proof checking of design for covered shed at DGNP, Vizag	Simple Concrete Piles (India) Ltd Calcutta 700 087	0.75
27	Dr. R Sundaravadivelu	Analysis and design of salt unloading jetty at Bassein Part	Good Earth Maritime Ltd Chennai - 17	3.00
28	Dr. R Sundaravadivelu	Proof checking of Design of the bridge across River Krishna near Vijayawada	Navayuga Engg., Ltd Chennai - 8	6.00
29	Dr. R Sundaravadivelu	Monitoring the construction of bridge over Palar canal	Chilika Development Authority Orissa	0.75
30	Dr. R Sundaravadivelu	Extension of salt export jetty at Jakhav	Good Earth Maritime Chennai - 17	4.00
31	Prof. R Sundaravadivelu Prof. V. Sundar Dr. K. Ananthanarayan	Pre cost concrete blocks for use in Marine Environment in the break water at the outer Arm and East Quay at Chennai Port Trust	Chennai Port Trust Chennai - 1	2.50
32	Prof. V. Sundar Dr. S.A. Sannasiraj	Design review and certification of Design aspects - Sea Protection works along Ennore expressway	Tamil Nadu Road Development Company Ltd Chennai - 8	3.50
33	Prof. R Sundaravadivelu Prof. SR Gandhi Dr. P Alagusundaramoorthy	Preparation of technical feasibility report for setting up an Impounded dock and its allied facilities for the coast of veera/sanged at Kandla Port Trust	Kandla Port Trust Gujarat 370201	15.00

Sl No	Name of the Investigator	Title of the Assignment	Address of the Client	Amount (Rs.in lakhs)
34	Prof. R Sundaravadivelu Dr. V.A. Subramanian Dr. S.A. Sannasiraj Dr. K. Ananthanarayanan	Goa Shipyard Modernisation Plan	Goa Shipyard Ltd Goa- 403802	1.85
35	Dr. V. Sundar Dr. S.A. Sannasiraj	Construction of a Fishery Harbour at Chenvathur – Model Studies	Harbour Engg., Department TVM - 9	3.75
36	Dr. V. Sundar Dr. S.A. Sannasiraj	Model studies for the proposed fishery Harbour at Chetturai	Harbour Engg., Department TVM - 9	3.65
37	Dr. R. Sundaravadivelu Dr. Alagusundaramoorthy Dr. S.R. Gandhi Dr. S.A. Sannasiraj	Construction of Slipway at Malpe Mangalore	M/s Tebusa Shipyard Ltd., Chennai	2.00
38	Dr. V. Anantha Subramanian	Resistance and powering analysis for high speed YACHT	M/s GAZTEC Dubai	2.00
39	Prof. C.P. Vendhan	Design verification of water tanks on Jacket Platform for slash loads	M/s Veldel Engineers & Contractors Bangalore - 25	0.90
40	Prof. V.G. Idichandy	Proof testing and stress analysis of Missile Components	M/s Ventura Engineers Chennai - 44	3.90
41	Prof. S. Narasimha Rao	Report for a Bridge at Krishria	M/s VPC Concrete & Geotechnologies Vizag – 13	0.10
42	Dr. V. Sundar Dr. S.A. Sannasiraj	Model study / Wave flume study under normal and storm condition	M/s Afcons Infrastructure Ltd Mumbai - 53	6.50
43	Dr. R. Sundaravadivelu Dr. K. Murali Dr. S.R. Gandhi	Preparation of Report for locating the proposed dry dock No.III	Andaman Harbour Works Port Blair 744101	0.25
44	Dr. R. Sundaravadivelu Dr. A. Boominathan	Vibration measurement in bulk berth and service berth at JNPT	J.N. Port Trust Mumbai 400707	2.00
45	Dr. R. Sundaravadivelu	Modernisation of West Quay Berths – Proof check of inhouse design	Chennai Port Trust Chennai	0.40
46	Prof. S. Narasimha Rao	Earthwork embankment in Taramani – Velachery area	Metropolitan Transport project (Railways) Chennai - 8	0.60
47	Prof. S. Narasimha Rao	Seismic survey at Bellery	Gec Marine Consultants Chennai – 20	0.27
48	Prof. S. Narasimha Rao	Bearing capacity evaluation for shallow foundation for fly over	L&T Ramboll Consulting Engineers Chennai - 35	0.25
49	Prof. V. Sundar Dr. S.A. Sannasiraj	Review of the design of Groynes for the sea protection works of EMRIP project	TNRDC Chennai - 8	1.75
50	Prof. S. Narasimha Rao	Review of the civil foundation for 1.5MW wind turbine	Sri. G.A. Raju 7C Surya Towers SP Road Secunderabad Hyd-500 003	0.30
51	Prof. S. Narasimha Rao	Report for foundation for VTPS	VPC Concrete & Geotechnologies	0.10
52	Dr. S. Narasimha Rao	Foundation Consultancy for Villupuram division Police Office	Tamil Nadu Police Housing Corp., Villupuram	0.25
53	Dr. V. Anantha Subramanian	Drag analysis and computation for Pilot Launch	Vijai Marine Services Goa – 403 802	2.00
54	Dr. S. Narasimha Rao Dr. V. Sundar	Mudslides studies and Engineering analysis for submarine pipelines in KG Offshore Area	IEOT ONGC Parvel 410 221	15.00

Sl No	Name of the Investigator	Title of the Assignment	Address of the Client	Amount (Rs.in lakhs)
55	Dr. V. Sundar Dr. K. Ananthanarayanan Dr. K. Murali	Hydrographic survey of Nizampatnam	Good Earth Maritime Ltd., Chennai – 17	2.75
56	Dr. R. Sundaravadivelu Dr. V. Sundar	Survey and design for construction for groin at Vathikuppam and construction of shore protection wall at Pillacharady	Mr. Er. V. Perumal PWD Pondicherry	1.50
57	Dr. V. Anantha Subramanian Dr. K. Murali	Resistance and flow investigation on tanker with sponsors	Henderson Intl. LLC Al Jaday Duabi	3.00
58.	Prof. R. Sundaravadivelu	Bridge across Ryyes canal in Vijaywada	Mr. V. Nagabhushnam & Co Hyderabad - 4	0.50
59.	Prof. S. Narasimha Rao	Road over bridge at Pallavaram Chennai	M/s V. Manickam Engineers (P)Ltd Chennai - 40	0.10
60	Prof. R. Sundaravadivelu Dr. K. Anantha Narayanan	DPR for development of minor ports at Kothapatnam near Ongole and at Bheemunipatnam near Vizag	Mr. S. Madhan Good Earth Maritime Ltd Chennai - 32	5.00
61	Prof. R. Sundaravadivelu Dr. K. Anatha Narayanan	Development of Gangoli Port	Ms. S. Madhan Good Earth Maritime Ltd Chennai – 32	2.50
62	Prof. R. Sundaravadivelu Dr. K. Anantha Narayanan	Construction of Dry Dock No. III for Mainland Island ship at Bambooflat in Port Blair	Andaman Harbour Works Port Blair 744101	12.00
63	Prof. V. Sundar Prof. R. Sundaravadivelu	Suggesting comprehensive plan and design by conducting mathematical and physical model studies for the minor commercial and fisheries Harbours in Karnataka state	Dept. of Ports and Inland Water Transport Karwar	5.00
64	Prof. V. Sundar	Vizhinjam Fishery Harbour Project – Siltation on the mouth of wharf at Vizhinjam	Harbour Engg., Dept., Trivandrum	0.15
65	Prof. S. Narasimha Rao	Stability study of Multi storeyed Building	Reliance Engg., Associates Chennai – 97	0.75

#### Exchange Programme with other Universities:

Student Exchange Programme with Hochschule, Bremen

#### Research Publications:

No. of papers published in Refereed National Journals	..	3
No. of papers published in Refereed International Journals	..	15
No. of papers presented in National Conferences	..	7
No. of papers presented in International Conferences	..	27

#### In Refereed National Journals:

1. Hema Latha, K, Narasimha Rao. S and Surendran. S (2003). "Influence of Load inclination on Pullout capacity of pile groups in clays". Geotechnical Engg for Infrastructural development, Dec 18-20, 2003, IIT Roorkee, PP. 133-136.
2. Darga Kumar. N, Narasimha Rao. S. and Sundar. V, "Studies on earth pressures in model caisson embedded in marine clay". Geotechnical Engg for Infrastructural Development, Dec 18-20, 2003, Roorkee, PP. 153-156.
3. Ramajeyathilagam, C.P. Vendhan (2003), Underwater explosion damage of ship hull panels; Defence Science Journal, 53, pp 393-402

#### In Refereed International Journals:

1. M. Rambabu, V. Sundar and S. Narasimha Rao "Measurement of Scour around a pile – A simplified Instrumentation" Journal of IEEE, Ocean Engineering. Div. Jan-Feb '2003.



2. A. Vijayakumar, S. Neelamani and S. Narasimha Rao, "Wave Pressures and uplift forces on scour around submarine pipe line in clayey soil" *Journal of Ocean Engg.*, Pergamon, Feb 2003, Vol. 30, PP. 271-295.
3. M. Rambabu, S. Narasimha Rao and V. Sundar "Current Induced Scour around a vertical pile in cohesive soil", *Journal of Ocean Engg.*, May 2003, Vol. 30, PP. 893-920.
4. G. G. Moses, S. Narasimha Rao and P. Narayana Rao "Undrained strength behaviour of a cemented Marine Clay under Monotonic and Cyclic loading", *Journal of ocean Engineering*, October 2003, Vol. 30, PP. 1765-1789.
5. G. G. Moses and S. Narasimha Rao "Degradation in cemented marine clay subjected to cyclic compressive loading", *Journal of Marine Georesources and Geotechnology*, 2003, Vol. 21, PP. 37-62.
6. V.G.S.T. Ramakrishna and S. Narasimha Rao, "Laterally Loaded Pile Bents in Marine clay", *Geotechnical Engg.*, *Journal of SEA geotechnical society*, April 2003, PP. 1-11.
7. Sundar, V., Balaji, R. and Sankar Reddy, B. "Hydrodynamic Characteristics of Floating and Fixed Skirt Breakwaters In Waves", *Oceanic International JI*, Vol. 7, No.1, 2003, pp 46-62.
8. Sundar, V. and Roopsekhar, K.A. ' Comparison of Pressures and Forces On Pipelines Normal and Parallel To Wave Direction Near a Sloping Bed', *Oceanic Intl. JI*, 2003, Vol.7, No.2, pp65-89.
9. Sannasiraj, S.A., Sundar, V. and Sundaravadivelu, R. " Motion Responses Of A Long Floating Structure In A Directional Wave Field", *Oceanic Intl. JI*, Vol 7, No. 2, 2003, pp 108-121.
10. Sundar V., Roopsekhar, K.A., Schlurmann, T. and Mahmoud, R.A. "Probability Distribution of Wave Forces on Pipelines Near a Sloping Boundary Parallel and Normal to Wave Direction", *Coastal Engineering Journal (JSCE)*, Vol. 46, No.1, March 2004, pp 93-117
11. Mani J.S., Numerical study on coastal defence system and related management strategies, *Journal of Natural Hazard*, March 2004
12. Surendran, S, Numerical simulation of ship stability for dynamic environment, *Ocean Engineering*, Vol.30, No. 10, July 2003
13. V.I. Beena, V. Anantha Subramanian, Parametric studies on seaworthiness of SWATH ships, *Science Direct, Ocean Engineering* 30 (2003) 1077-1106
14. V. Anantha Subramanian, Narayana Gururajan, Parametric Studies on Motion Behaviour of High Speed Planing Catamarans, *Ship Technology Research* 51 (2004), 3-8
15. Sundar V and Subba Rao, B.V.V. "Hydrodynamic characteristics of quadrant front face pile supported breakwater", *Journal of Waterways, Port Coastal and Ocean Engg.*, division of ASCI, Jan-Feb 2003, Vol. 129, pp22-33

#### **In Proceedings of National Conferences:**

1. V.Sundar, R.Sundaravadivelu, G.Ganesh and K.A. Roopsekhar. "Numerical Model Study for Coastal Protection works at Kanyakumari District, Tamil Nadu" *Proc. National Seminar on Harbour Structures*, IIT Madras, Chennai, Feb 2003, pp131-140.
2. Dargakumar, N., Narasimha Rao, S. and Sundar, V. " Studies on Earth Pressures In Model Caissons Embedded In Marine Clay" *Indian Geo Technical society*, 18-28 Dec 2003, IIT Roorkee
3. Prof.R.Sundaravadivelu "Behaviour of berthing structures in soft marine clay during dredging" symposium on foundation Engineering in soft marine clays Dept of Ocean Engineering, IIT Madras pp 87 – 100 1<sup>st</sup> December 2003
4. Prof.R.Sundaravadivelu and Prof.S.R.Gandhi "Introduction to Port and Harbour Structures" A Shorterm course on Deep Foundation for infrastructure Projects Department of Civil Engineering IIT Madras (December 2003)pp Rsv 1-17
5. K.Muthukkumaran, Prof.R.Sundaravadivelu, S.R.Gandhi "Effect of sloping ground on single pile load deflection curve" *IGC – 2003 IIT Roorkee* (December 2003)
6. J.S.Mani, Coastal zone management plan for Chennai,. *National seminar on GTS to GPS*, Survey of India, Dehradun, February 2003
7. K.Praveen Reddy and J.S.Mani, Wave climate in the vicinity of an isolated structure of arbitrary shape- a numerical approach, *National Conf. on Hydraulics and water resources HYDRO 2003*, 26-27 Dec 2003.

### In Proceedings of International Conferences:

1. Narasimha Rao. S and G. G. Moses. "Behaviour of Marine clay under wave type of cyclic loading", 22<sup>nd</sup> International Conference on offshore mechanics and Arctic Engg 2003 – ASME Conference.(OMAE – 2003), Paper No. 37077, Mexico, June 2003.
2. Narasimha Rao. S. and G. G. Moses and A. Swarnaiatha "Cyclic shear strength behaviour of cemented Marine clays subjected to initial shear stress", International conference on Problematic soils, 2003, Nottingham, U. K. July 2003.
3. Balaji,R. and Sundar,V. "Wave Attenuation by Chambered Breakwater" Proc. Of XXXth Intl. Association of Hydraulic Research congress, Thessoloniki, Greece, Aug 24-29, 2003, Theme A, pp 409-416.
4. Kalyani, M., Sundar, V. and Sundaravadivelu, R. ' Studies on a Submerged Vertically Moored Cylinder Under Regular Waves' Proc. 6<sup>th</sup> Intl Conf on Coastal and Port Engg in developing countries, COPEDEC , Sri Lanka 15-19 sep 2003, paper No: 154, pp 1-11.
5. Balaji, R. and Sundar, V. ' Wave Damping By Single Chamber Breakwaters' Proc. 6<sup>th</sup> Intl Conf on Coastal and Port Engg in developing countries, COPEDEC , Sri Lanka 15-19 sep 2003, paper No: 007, pp 1-9.
6. Vijayakumari, P.L. and Sundar, V. 'Forces Due to Waves On Tandem Twin Pipelines Near A Sloping Boundary', Proc. 6<sup>th</sup> Intl Conf on Coastal and Port Engg in developing countries, COPEDEC, Sri Lanka 15-19 sep 2003. Paper No:155, pp 1-9.
7. Roopsekhar, K.A., Mahmoud, R.A., Sundar, V., and Schluermann, T. "Probabilistic Description on Pipelines Normal to Shoreline Near A Sloping Boundary', Proc. 6<sup>th</sup> Intl Conf on Coastal and Port Engg in developing countries, COPEDEC , Sri Lanka 15-19 sep 2003, paper No: 159, pp 1-9.
8. Sannasiraj, S.A., Eng Soon, C. and Sundar, V. "Spacial and Temporal Evolution of Deep-water Breaking Waves" Proc. 6<sup>th</sup> Intl Conf on Coastal and Port Engg in developing countries, COPEDEC , Sri Lanka 15-19 sep 2003, paper No: 085, pp 1-20.
9. Narasimha Rao, S., Dargakumar, N. and Sundar, V. "Influence Of Cyclic Load on Model Caisson Seawalls Embedded In Marine Clay". (Abstract accepted for Intl. Conf. On Cyclic Behaviour of soils and Liquifaction Phenomena, 31 Mar-2 Apr 2004, Bochum, Germany.)
10. Balaji, R. and Sundar, V. 'Wave Damping By Single and Double Chamber Breakwater' Proc. 22<sup>nd</sup> Intl. Conf. on Offshore Mechanics and Arctic Engg. , Cancun, Mexico, 8-13 June 2003, paper NO: 37206.
11. Anitha Joseph, V.G. Idichandy, S.K. Bhattacharyya, Simulation of the Coupled behaviour of the Hull-Tether system of a mini tension leg platform, COT'03, International Conference on Coastal and Ocean Technology, Chennai, 10-12 Dec., 2003, pp. 329-336
12. K.Muthukkumaran, R.Sundaravadivelu, and S.R.Gandhi, "effect of slope on berthing structure under seismic condition: a field study" Sixth International Conference on Coastal & Port Engineering in Developing countries, Colombo, Sirlanka (September 2003) pp 61 to 62
13. R.Sundaravadielu, C.R.Balaji, V.Chellapan, S.R.Gandhi and V.Nagarajan "planning and development of harbour structures" Sixth International Conference on Coastal & Port Engineering in Developing countries, Colombo, Sirlanka (September 2003) pp 67 to 68
14. K.Muthukkumaran R.Sundaravdivelu, and S.R.Gandhi, "Lateral movement of weak soil slope and its effect on pile supported coastal structures" Sixth International Conference on Coastal & Port Engineering in Developing countries, Colombo, Sirlanka (September 2003) pp 57 to 58
15. R.Sundaravadivelu, S. Neelmani and A.Vijayakumar "Effect of Construction of fishing harbour on Pondicherry Coast" Sixth International Conference on Coastal & Port Engineering in Developing Countries, Colombo, Sirlanka (September 2003) pp 297- 298
16. Vijayalakshmi, K., Neelamani, S. and Sundaravadivelu, R.. 'Wave Loads on a Perforated Circular seawater intake Caisson". International Conference on Coastal and Ocean Technology, December 10-12, COT-2003, International Conference on Coastal and Ocean Technology, 529-538TKRoy, MkJha, JSMani, Modelling of oil dispersion in coastal and ocean region, Published in Petrotech 2003, New Delhi 9-12 January 2003.
18. Praveen Reddy and J.S.Mani, Prediction of wave kinematics in the vicinity of pile group- a numerical approach, COPEDEC 2003, SriLanka 15-19 Sept 03, International Conf. on Coasts Port Engg., in developing countries.
19. A.C. Rambabu and J.S.Mani, Reef breakwater for coastal protection, Coasts and Ports Australasian Conference 2003, 9-12 Sept. 2003 Auckland NewZealand.

20. J.S.Mani, Integrated coastal zone management for Chennai India, Pacem in Maribus, 27-30 October 2003, Kiev, Ukraine.
21. J.S.Mani, Prediction of wave forces on large diameter twin intake structures Praveen Reddy, . COT 2003, International Conference on Coastal and Ocean Technology, pp 539-548, 10-12 Dec 2003.
22. MV. Ramanamurthy,B. J.S.Mani and R. Subramanian and Wave transformation over shoals North of Ennore port, Dr., COT 2003, International Conference on Coastal and Ocean Technology, pp 589-597.
23. Sannasiraj, S.A., Hong, t. and Chen, E.S. 2003. An Ocean Wave Predictive Modelling with data assimilation in the South East Asian Waters. Naval Platform Technology Seminar, Singapore, 10-11 November.
24. Sannasiraj, S.A. 2003, Real time wave forecasting using local model. COT'03, International Conference on Coastal and Ocean Technology, Chennai, 10-12 Dec.,
25. V. Anantha Subramanian, V. Jagadeesh Kumar, S. Nagur Meera Vali, Fin Stabilization in Swath for Oceanographic Research, COT'03, International Conference on Coastal and Ocean Technology, Chennai, 10-12 Dec., 2003, pp 143-152
26. V. Anantha Subramanian, N. Gururajan, P.V.V. Subramanyam, Investigation of Catamaran form for Application in Oceanographic Research, COT'03, International Conference on Coastal and Ocean Technology, Chennai, 10-12 Dec., 2003, pp. 183-190
27. T. Rajesh Kannah, R. Natarajan, Motions and Mooring forces of an external turret moored FPSO tanker by valm arrangement with four lines in sea waves, COT 03, International Conference on Coastal and Ocean Technology, Chennai, 10-12, 2003, pp 315-328.

#### Distinguished Visitors to the Department:

Sl. No.	Name of the Visitor and Designation	Date of visit	Purpose of visit
1.	Mr. J. Dasgupta, Principal Surveyor, Indian Register of Shipping, Mumbai – 72	14 <sup>th</sup> April, 2003	Department visit
2.	Dr. Roni Francis and Dr. R.V. Suresh, Scientists from Naval Science and Technological Lab, Visakhapatnam	21 <sup>st</sup> April 2003	Technical discussions
3.	A team from Technip-Coflexip, Technology Petroleum and Gas (TPG), France	April 28, 2003	Department visit
4	Mr. A.K. Sonawane, General Manager, IEOT, ONGC along with three senior officials	2.6.2003	Draft MoU has been discussed.
5	Mr. R.A. Noras and Mr. Kulkarni, L&T Ltd	June 10, 2003	Discussion on collaboration in developing technology for deep water.
6	Mr. Richard Billant, Head, Maritime M/s Saipem s.a.	June 2003	Discussion on using the model test facilities in the department.
7	A team consisting of three members from IEOT, ONGC Mumbai	July 2003	Discussion on MoU between IEOT, ONGC and Dept. of Ocean Engineering, IIT Madras and future collaboration
8	Commander RPS Josen, Training Coordinator and Commander V.K. Agarwal, Manager (Finance), Naval Academy Project, New Delhi	31.07.2003	Department visit
9	Prof. K.S. Varyani, Glasgow University, U.K	August 8, 2003	Delivered the following lectures. (a) Estimation of Horizontal Loading due to Green Water using three-dimensional CFD Simulation (b) Application of Three Dimensional Discrete Element Method in the Prediction of Deck Loading due to Green Water Effect
10	The Hon'ble Union Minister for HRD Prof. Dr. Murli Manohar	9 <sup>th</sup> August 2003	Department visit
11	Dr. Faisal I Khan, Memorial University, Canada	August 22, 2003	Delivered a lecture on "Risk-Based Process Safety Assessment and Control Measures Design for Offshore Process Facilities"

Sl. No.	Name of the Visitor and Designation	Date of visit	Purpose of visit
12	Prof. Dr. Ismail Bin Haji Bakar, Rector and Prof. Madya IR. Ahmad Bin Jush, Kolej Universiti Sains Dan Teknologi Malaysia	16.09.2003	Department visit
13	A group of Senior Border Security Force Officers from the BSF Academy, Gwalior (MP)	September 18, 2003	Department visit
14	Dr. Punima Ratilal, Post Doctoral Associate, Massachusetts Institute of Technology, USA	29.09.2003	Delivered a talk on "Long range acoustic imaging of the Continental Shelf Environment: The Acoustic Clutter Experiments"
15	Dr. K. Baskar, Senior Structural Engineer, Det Norske Veritas, Singapore	October 31, 2003	Delivered lectures (a) Failure Investigation on Jack-up rig and Leg Structure & (b) Repairing of corroded Risers and rise-bends
16	Dr. E. Schreiber, Rector, Dr. F. Lehmann, Vice-Rector and Dr. H. Jansen, Director, Indian Liaison Office, Hochschule Bremen	November 26, 2003	Department visit
17	Dr. M.A. Rahim, Senior Surveyor, Nippon Kaiji-Kyokai (Class NK), Mumbai	November 28, 2003	Delivered a lecture on "Advanced Ship Structural Strength Assessment Standards for Double Hull Tankers and Bulk Carriers"
18	Mr. N. Ueda, Managing Director, Mr. T. Kinoshita, Manager, Dr. M.A. Rahim, NK Singapore and Mr. N. Venkatesan, Manager NK Chennai	November 28, 2003	Discussion on Class NK Award
19	Dr. S. Sankaranarayanan, Ocean Engineer, Applied Science Associates, Rhode Island	February 18, 2004	Delivered a talk on "Three dimensional hydrodynamic modeling of circulation in New York Harbour"

#### 4.12.6. Other Activities:

##### Construction of Glass flume

The Glass flume being planned and on completion will be a unique facility at IIT Madras. With the dimensions of 20x0.6x0.6m and with the capabilities for generating waves and bi-directional current, this flume will provide a number of opportunities for flow visualization of various free surface and under water phenomena. This will be achieved with a good visualization system. Wave breaking, mass and momentum transfer at the air-sea interface, effects of turbulence at the free surface, fluid dynamics around under water bodies, coalescence, visualization of turbulence etc., are some of the phenomena that could be studied in this facility.

##### Construction of Shallow Water Basin

A shallow water wave basin, of size 19.7m long, 16.5m wide and 1m deep, will be constructed just outside the deep water wave basin. The maximum water depth will be 0.6m. A long crested wave maker will be installed on the shorter side and a wave absorber (multiple perforated wave screens) will be provided at the opposite end. Both the wave maker and wave absorber would consist of different modules which provide the flexibility in the testing conditions such as creating harbour models or coastal zone simulation. Regular and random long crested waves can be simulated. The department is indigenously carrying out the entire planning and installation of all the modules.

##### Current generation facility for 2m flume

Existing 2m flume will be upgraded to cater the needs of studies related to wave and current interaction. For this purpose, arrangements are being made to install suitable pump and water injection system to facilitate generation of currents with a maximum velocity of 0.3 m/s.

## 4.13 DEPARTMENT OF PHYSICS

### 4.13.1. 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.

Introduction of Holding a Joint Admn.Test to M.Sc programme in all IITs on all India Basis approved in Director's meeting on 9.3.2003.

### 4.13.2. Academic programmes:

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

#### New Course Introduced:

Sl.No	Course No.	Title
1.	PH 561	Modern Optics
2.	PH 579	Science & Technology of Nano Materials
3.	PH 581	Fluids : Simple & Complex
4.	PH 583	Advanced dynamical Systems

#### Students on Roll:

Programme	I Year	II Year	III Year	IV Year	V Year	Total
Engg. Physics (B.Tech)	9	10	-	-	-	19
M.Tech	5	8	-	-	-	13
M.Sc.	32	34	-	-	-	66
Ph.D	23	12	16	6	6	63
<b>Total</b>	<b>69</b>	<b>64</b>	<b>16</b>	<b>6</b>	<b>6</b>	<b>161</b>

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

Sl. No.	Name of the Scholar	Programme	Name of the Conference/ Seminar/Symposia	Date & Venue
1	Ramesh Chandra Mallik	Ph.D	22 <sup>nd</sup> International Conference on Thermoelectric ICT 2003,	17-21 August 2003 Montpellier, France
2	M.M. Shaijumon	Ph.D	1 <sup>st</sup> International Conference and Summer School	24-09-03 – 2-10-03 Universitat Karlsruhe, Germany
3.	S K Debnath	Ph.D	International Conference on Laser Applications and Optical Metrology (ICLAOM-03)	Dec. 1-4, 2003 New Delhi
4	S K Debnath	Ph.D	Third National Conference on Precision Engineering	Dec. 19-20, Bangalore.
5	Umakanth Tripathy	Ph.D.	National Laser Symposium	Dec 22-24, 2003 IIT Kharagpur
6	Umakanth Tripathy	Ph.D.	Int.Conf.on Opto electronics tec.	Jan 10-16,2004 North Maharashtra Univ.Jalagaon
7	Ambika Nautiyal	Ph.D	National Laser Symposium	Dec 20-26, 2003 IIT Kharagpur
8	Zaheer Jabeen	Ph.D	National Conf On Nonlinear Systems and Dynamics	Dec 28-30, 2003 IIT Kharagpur
9	P S Anantha	Ph.D.	Int.Conference on Ionic Devices	Nov 28-30, 2003 Anna University Chennai
10	Sanjith Kumar Debnath	Ph.D.	3 <sup>rd</sup> National Conf. On Precision Engg.	Dec 19-20, 2003 CMTI, Bangalore

Sl. No.	Name of the Scholar	Programme	Name of the Conference/ Seminar/Symposia	Date & Venue
11	M Kandavel	Ph.D.	1st constat.2003 Nano series and Technology	Dec 15-22, 2003 Saha Inst.of Nuclear Physics, Kolkatta
12	M M Shaijumon	Ph.D.	1st constat.2003 Nano series and Technology	Dec 15-22, 2003 Saha Inst.of Nuclear Physics, Kolkatta
13	Amritha Bhide	Ph.D.	Int.Conference on Ionic Devices	Nov 28-30, 2003 Anna University Chennai
14	R Srilatha	Ph.D.	DAE Solid State Physics Symposium	Dec 24-31,2003 Jiwaji Univ, Gwalior
15	P S Anantha	Ph.D.	DAE Solid State Physics Symposium	Dec 24-31,2003 Jiwaji Univ, Gwalior
16	Dibyanjan Rout	Ph.D.	46 <sup>th</sup> DAE Solid State Physics Symposium	Dec 26-30,2003 Jiwaji Univ, Gwalior
17	Ramesh Chandra Mallick	Ph.D.	46 <sup>th</sup> DAE Solid State Physics Symposium	Dec 26-30,2003 Jiwaji Univ, Gwalior
18	Bibekananda Sundaray	Ph.D.	46 <sup>th</sup> DAE Solid State Physics Symposium	Dec 26-30,2003 Jiwaji Univ, Gwalior
19	J Arout Chelvane	Ph.D.	46 <sup>th</sup> DAE Solid State Physics Symposium	Dec 24-31,2003 Jiwaji Univ, Gwalior
20	Umakanta Tripathy	Ph.D.	Trombay Symp.on radiation & Photochemistry	Jan 08-12,2004 BARC, Mumbai
21	I.C. Ingersoll	Ph.D.	46 <sup>th</sup> DAE Solid State Physics Symposium	Dec 24-31,2003 Jiwaji Univ, Gwalior
22	K Madhu	Ph.D.	Workshop on String Theory	Dec 08-21,2003 IIT Kharagpur
23	N Rama	Ph.D.	12 <sup>th</sup> Int.Workshop on Semiconductor Devices	Dec 16-20,2003 IIT Madras
24	Ullash Kumar Barik	Ph.D.	12 <sup>th</sup> Int.Workshop on Semiconductor Devices	Dec 16-20,2003 IIT Madras
25	S haijumon M M	Ph.D.	12 <sup>th</sup> Int.Workshop on Semiconductor Devices	Dec 16-20,2003 IIT Madras
26	M Kandavel	Ph.D.	12 <sup>th</sup> Int.Workshop on Semiconductor Devices	Dec 16-20,2003 IIT Madras
27	K Sathyamoorthy	Ph.D.	National Lasers Symposium	Dec 19-23,2003 IIT Kharagpur
28	K P Biju	Ph.D.	Int.Workshop on Crystal Growth and Characterization on Technology of Important Materials	Jan 24-28,2004 Anna University
29	Bhaskar Chandra Mohanty	Ph.D.	Nat.Conf.on Emerging Areas of Applied Physics	Feb 21-23,2004 ISM, Dhanbad
30	N Meenakshi Sundaram	Ph.D.	Nat.School on Nonlinear Dynamics	Dec 21-27,2003 ISI, Kolkotta
31	N Meenakshi Sundaram	Ph.D.	Nat.Conference on Nonlinear Systems & Devices	Dec 28-30,2003 IIT, Kharagpur
32	C Krishnamoorthy	Ph.D.	NCEAAP	Feb 19-24,2004 ISM, Dhanbad
33	Zaheera Jabeen	Ph.D.	SERC School	Feb 16-28, 2004 TIFR, Mumbai
34	K P Rajesh	Ph.D.	Nat.Conf.& Workshop on Virtual Inst.embedded system & robotics	March 1-5,2004 Gwalior

#### 4.13.3. Faculty and their Development:

Faculty :

Name and Qualification

Areas of specialization

Professors:

V.Balakrishnan, Ph.D (Brandeis Univ., USA)

Mathematical Physics, Statistical Physics and Dynamical  
Systems

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

Thin film science and technology

P.C.Deshmukh, Ph.D Nagpur Univ., Nagpur)	Atomic and Molecular Physics
K.Hariharan, Ph.D (IIT, Madras)	Solid state ionics
M.P.Kothiyal, Ph.D (IIT, Madras)	Physics - Applied optics
(Mrs) Maha Seshasayee, Ph.D (RPI, New York, USA)	Condensed matter physics, (structure studies)
V.R.K.Murthy, Ph.D (IIT, Madras) (Head)	Microwaves and Dielectrics
T.S.Natarajan, Ph.D (IIT, Madras)	Conducting polymers, Instrumentation Electronics
(Mrs) Neelima M. Gupte, Ph.D (SUNY, Stony Brook, USA)	Dynamical systems, Statistical Physics
S.Ramaprabhu, Ph.D (IIT, Madras)	Metal hydrides, Resonance Spectroscopy
K.V.S.Rama Rao, Ph.D (Andhra Univ., Waltair)	Magnetism and magnetic materials, Hydrogen in metals, Actuators/Sensors
G.Rangarajan, Ph.D (IISc, Bangalore)	Low temperature physics, Superconductivity & Magnetism
R.S.Sirohi, Ph.D (IIT, Delhi)	Optics
A.Subrahmanyam (IIT, Kharagpur)	Semiconductor Devices, photovoltaics Transparent conducting thin films
<b>Associate Professors:</b>	
S.Kasiviswanathan, Ph.D. (IIT, Madras)	Thin Films
(Mrs) S.Lakshmi Bala, Ph.D (Madras Univ.)	Theoretical Physics with specialization in gauge theories, dynamical systems and chaos
G.Markandeyulu, Ph.D (IIT, Madras)	Magnetism and magnetic materials
V.S.Murty, Ph.D (IIT, Madras)	Resonance spectroscopy
P.B. Bisht, Ph.D (Kumaun Univ., Nainital)	Ultrafast laser optics and spectroscopy
M.S.Ramachandra Rao Ph.D (IIT, Kharagpur)	Experimental Solid State Physics (Electronic and Magnetic Materials - Thin films and bulk)
V.Sankaranarayanan, Ph.D (IIT, Madras)	Superconductivity, Low Temperature Physics, Cryogenics
M.V.Satyanarayana, Ph.D (Madras Univ.)	Photonics, Quantum optics
K.Sethupathi, Ph.D Moscow State Univ., Russia)	Low temperature physics and Superconductivity
P.B. Sunil Kumar, Ph.D. (IISc, Bangalore)	Condensed Matter Physics
Suresh Govindarajan Ph.D (Pennsylvania Univ., USA)	Theoretical Physics with specialization in Field Theory & Dynamical Systems
C.Vijayan, Ph.D (IIT, Madras)	Photonics, Nonlinear Optics
<b>Assistant Professors:</b>	
Dr. Arul Lakshminarayan	Quantum Chaos, Mathematical Physics, Nonlinear Dynamics
Dr. N.Harish Kumar	Condensed Matter Physics – Superconductivity, Magnetic Materials
Dr. Mahaveer Kumar Jain	Ceramics Sensors
Dr. Priya Mahadevan	Electronic structure of solids, magnetism
Dr. P.N.Santhosh	Magnetism and Magnetic materials , condensed matter Physics
V.Subramanian, Ph.D. (IIT, Madras)	Microwaves, Semiconductors, Ferroelectrics

**Chief Design Engineer:**

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

Optical instrumentation, lens design

**Senior Scientific Officer Gr.I:**

Dr.N.Krishna Mohan

**Scientific Officer – Gr.II:**

Dr.T.R.Kesavan

Metal Hydrides

Sri S.Sainathan

Dr.A.T.Seshadri

Experimental solid state Physics/condensed matter physics

Sri M.Veerabhadra Rao

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

Sl.No	Name of the Faculty	Title	Institution	Period
1	Dr.V. Balakrishnan	University Visit	Int.Centre for Theoretical Physics , Trieste Italy	29.04.2003 - 25.05.2003
2	Dr.V. Balakrishnan	University visit	Limburg Universitair Centrum, Belgium	05.06.2003 - 23.06.2003
3	Dr.V. Balakrishnan	Int.Symposium on Fluctuations and.Noise	Santa Fe, New Mexico, USA	01.06.2003 - 04.06.2003
4	Dr.V. Balakrishnan	Kolmogorov's Legacy in Physics: One Century of Chaos, Turbulence and Complexity	ICTP, Trieste, Italy	08.09.2003 - 18.09.2003
5	Dr.V. Balakrishnan	Refresher course of Indian Academy of Sciences	CUSAT, Cochin	08.10.2003 - 15.10.2003
6	Dr.V. Balakrishnan	National Conference on Nonlinear Systems and Dynamics (NCNSD-2003)	IIT, Kharagpur	28.12.2003 - 30.12.2003
7	Dr.V. Balakrishnan	Workshop on role of surface in UG Engineering	JNCA, Bangalore	20.12.2003
8	Dr.V. Balakrishnan	Intl.Conference on Nonlinear Phenomena	IISc, Bangalore	05.01.2004 - 10.01.2004
9	Dr.P.C. Deshmukh	Indo-US Workshop in Radiation Physics	North Bengal University, Darjeeling	22.03.2004 - 26.03.2004
10	Dr.A. Subrahmanyam	Seminar	Madurai Kamaraj University	11.09.2003
11	Dr.A. Subrahmanyam	Inauguration of a seminar	Sri Vel Rangararajan Sukanthala College of Multimedia, Chennai	09.10.2003
12	Dr.A.T.Seshadri	National Workshop on Design innovative experiments for post graduate teaching laboratories	Nuclear Science Centre, New Delhi	August 2003
13	Dr.Neelima M.Gupte	A.Veeria Vandayar Memorial	Sree Pushpam College, Thanjavur	10.10.2003
14	P.C.Deshmukh	Indo-US workshop	Argonne National Lab, USA	12.05.2003 - 16.05.2003
15	P.C.Deshmukh	DST-NSF Indo US Collaboration meeting	IITM and GSU Atlanta	17.05.2003 - 10.07.2003
16	P. B Bisht	Femtochemistry VI	Paris, France	July 2003
17	Dr.V.Sankaranarayanan	Neutron Sciences	BARC, Mumbai	02.01.2004 - 04.01.2004

**Special Lectures Delivered by the Faculty in other Institutions:**

Sl. No.	Name of Faculty	Topic of Lecture	Venue & Date
1	Dr.V. Balakrishnan	Trend setters in Physics (TSIP-04)	Kumbakonam 13.2.04
2	Dr.V.R.K. Murthy	-	Gandhigram Rural Institute 29.11.03



Sl. No.	Name of Faculty	Topic of Lecture	Venue & Date
3	Dr.V.R.K. Murthy	UGC Refresher course	
4	Dr.A. Subrahmanyam	Invited lecture	DMRL, Hyderabad
5	Dr.S.Lakshmi Bala	Quantum Information and Quantum Optics	PRL, Ahmedabad 9.2.04 to 13.2.04
6.	K.Vijayan	Introduction of Nanotechnology	NIT Karnataka, April 2003
7.	K.Vijayan	Physics of Quantum Dots Mahatma Gandhi University	Kottayam, January 2004
8.	K.Vijayan	Optical Properties of semiconductor nanostructures	Cochin Univ. Kochi, March 2004
9	K.Vijayan	Physical properties of semiconductor nanostructures	Academic Staff College, Pondicherry University March 2004
10	Dr. Priya Mahadevan	Physics of Novel Materials : Electronic and Magnetic Properties	7.1.2004-12.1.2004

#### Visits Abroad by Faculty:

Sl. No.	Name of Faculty	Country visited	Date	Purpose of Visit
1	Dr.K.V.S. Rama Rao	New Orleans, USA	July 2003	University visit
2	Dr.V. Balakrishnan	Italy	29.4.03 to 25.05.03	To give lectures
3	Dr.V. Balakrishnan	Belgium	05.06.03 to 30.06.03	University visit
4	Dr.K. Sethupathi	Rome Italy	27.07.03 to 01.08.03	International Conference
5	Dr. Maha Seshasayee	New York, USA	11.08.2003 to 05.09.2003	Conference/University visit
6	Dr.M.S. Ramachandra Rao	USA	18.09.2003 to 17.09.2004	Visiting Assistant Professor
7	Dr.V. Balakrishnan	Italy	08.09.2003 to 17.09.2003	ICTP-INFM SUMMER SCHOOL
8	Dr. Priya Mahadevan	Japan	10-12 November 2003	International Conference
9	Dr.T.S Natarajan	Singapore	07.12.2003 to 12.12.2003	International conference
10	Dr.P.C. Deshmukh	USA & Atlanta	12.05.03 to 16.05.03 17.05.03 to 10.07.03	Indian delegate to attend Indo-US Workshop Participation in On-going DST-NSF Indo-US Collaboration between IITM and GSU, Atlanta
11	Dr.M.S. Ramachandra Rao	USA	18.09.03 to 17.09.04	Visiting Assistant Professor
12	Dr.M.S. Ramachandra Rao	Germany	08.05.03 to 07.07.03	Professional visit
13				
14.	Dr.S.Ramaprabhu	Korea	09.05.2003 to 06.06.2003	Visiting Professorship
15.	Dr.Sursh Govindarajan	Geneva	14.05.2003 – 28.06.2003	Professional Visit
16.	Dr.P.B.Sunil Kumar	Southern Denmark & Spain	01.05.2003 to 03.07.2003	Professional visit
17.	P. B Bisht	Germany	10 May-5 July 2003	IIT-BMBF Collaborative project
18.	P. B Bisht	FRANCE	5-9 July 2003	Conference

#### Honours and Awards obtained

Sl. No.	Name of the Faculty	Name of the Award	Award by	Awarded for	Date
1	M P Kothiyal	NRDC Meritorious invention award.	NRDC		11.05.2003
2	Dr.R.S. Sirohi, IITM Professor and IIT Delhi Director	Padma Sri Award	on the 55 <sup>th</sup> Republic Day of India		Jan 2004
3	Dr.R.S. Sirohi, IITM Professor and IIT Delhi Director	Sir C V Raman award:	Hari Om Ashram Trust	outstanding scholar	

Sl. No.	Name of the Faculty	Name of the Award	Award by	Awarded for	Date
4	Dr.N.Krishnamohan	SPIE Fellow award	SPIE The International Society	Valuable contribution for optical engg.	6.8.2003

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

Sl. No.	Name of Faculty	Name of Academy / Professional Society	Level	Year of Admission
1.	Dr.A.Subrahmanyam	American Vacuum Society	Member	1993
2.	Dr.K. Hariharan	Materials Research Society of India	Life Member Through Payment	2001
3	Dr.C. Vijayan	Indian Physical Society	Life Member	1998
4	Dr.C. Vijayan	Indian Association of Physics Teachers	Life Member	1992
5	Dr.C. Vijayan	SPIE Madras Chapter	Member	1997
6	Dr.C. Vijayan	Luminescence Society of India	Member	1999
7	Dr.D.K. Sharma	Optical Society of India	Fellow	1980
8	Dr.D.K. Sharma	SPIE-India Chapter	Secretary	1995

**4.13.4. Design and Development Activities:**

Thermoelectric power measuring setup for Ionic conducting materials

In situ conductivity measurement setup for flash evaporated ionic thin films.

Set up a new Experiment "Calibration of thermocouple and determination of inversion temperature of Thermocouple" for the General Physics Laboratory for the M.Sc. students.

In the year 2001, immense efforts were made to establish a thin film lab at MSRC. The technique is the well known pulsed laser deposition (PLD). A Nd:YAG laser was procured from Quantel, France and the same is hooked up with a vacuum chamber with target rotation and substrate heating facilities. A shutter arrangement was also provided for pre-ablation. The laser beam when focused on to the rotating target (1" dia) with suitable energy density (Fluence) ablates the material and generates a plume (plasma). Initial growth optimization is being done and the film quality is good.

A special lab for PLD growth has been established. Room no 111 in the centre has now been converted in to a full-fledged thin film lab. With the kind support from the institute, this lab has false roofing, vinyl flooring and air-conditioning to facilitate clean room environment. This PLD technique is the first of its kind in IITM and only the second one in the southern region.

PC controlled laser-induced transient grating technique for fast decay curve measurements and efficiency measurements has been developed.

Fluorescence microscopy technique for imaging and steady state fluorescence measurements has been introduced.

Photonic Band gap structure at microwave frequencies.

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

1. Server Intel Xeon	Rs. 3,15,350
2. DC Sputtering Unit	Rs. 2,30,000
3. Sputtering System	Rs. 2.60,000
4. DSC & TGA	Rs.21,00,000
5. Function Generator 3 Nos	Rs. 1,17,600
6. Power Supply	Rs. 53,400
7. Digital multimeter	Rs. 6,600

**4.13.5. Research and Consultancy:**

**Sponsored Research Projects :**

Sl. No	Title of the Project	Period	Funding Agency	Value (Rs.in lakhs)	Co-ordinators
1	Morphology dependent resonances in microcavities and their effect on laser action in xanthene dyes	21.2.2001-21.4.2004	DST, New Delhi	22.25	P.B.Bisht

Sl. No	Title of the Project	Period	Funding Agency	Value (Rs.in lakhs)	Co-ordinators
2	Studies on Multiphoton distributed feedback dye lasers	2001-2004	DRDO, New Delhi	16.39	P.B.Bisht
3	Investigations of ultrafast response of vacuum tunnel junction.	2001-2004	DRDO, New Delhi	19.89	S. Kasiviswanathan (PI), V Damodar Das, P. B. Bisht, and V. Subramanian (CO PI)
4	Photophysics of dyes and semiconductors by using laser induced transient grating : experimental and theoretical approach.	2002-2005	CSIR, New Delhi	8.2	P.B.Bisht S. Kasiviswanathan
5	Quantum confinement effects on the optical properties of semiconductor nanostructures	2002-2005	DRDO, New Delhi	22.69	C. Vijayan (PI) P. B. Bisht (Co PI) R. Devanathan (Co-PI)
6	Excited state reactions in condensed and gas phase	2002-2004	IITM-BMBF, DLR, Germany	Research visits	Prof. Dr. Eberhard Riedle, Munich
7	Studies on generation of tunable femtosecond pulses by picosecond chirped pulse optical parametric amplification	2003-2006	DRDO, New Delhi	22.56	P.B.Bisht
8	Photoelectrochemical production of hydrogen and storage of hydrogen in composite materials	2002-2004	MHRD	10.0	S.Ramaprabhu A.Subrahmanyam
9	Investigations of hydrogen storage properties of interstitially modified and polymer dispersed nano-crystalline materials	2002-2004	DRDP New Delhi	12.8	S.Ramaprabhu
10	Proposal for research faculty at low temperatures and high magnetic fields	2002-2005	DST New Delhi	64.62	G.Rangarajan V.Sankaranarayanan K.Sethupathi
11	Development of rare earth based complex perovskites for dielectric resonator and photonic band gap structure applications	2002-2005	CSIR New Delhi	10.78	V.Subramanian V.R.K.Murthy
12.	Investigations on the Reaction kinetics of Silane Glow Discharge Plasma at high frequencies	2002 – 2005	DST	18.75	Dr.A. Subrahmanyam Dr.J. Majhi
13	Mixing and de-mixing in chaotic dynamical systems	2002-2005	BRNS	7.0	Neelima M.Gupte V.Balakrishnan P.B.Sunil Kumar
14.	Studies on silver and copper based oxide films for new and novel p-type transparent conducting oxides (TCO)	2002-2004	DRDO	24.22	A.Subrahmanyam M.S.Ramachandra Rao
15.	Investigation of magnetic properties of some cubic laves phase sputtered thin films	2002-2005	CSIR	7.2	G.Markandeyulu A.Subrahmanyam
16	Information randomness and entropy in classical and quantum dynamics	2002-2005	DST	19.33	S.Lakshmi Bala M.V.Satyanarayana V.Balakrishnan
17	Development of thin film metal hybrids for optical switching	2003-2005	DST	14.4	S.Ramaprabhu
18.	X-ray diffraction and computer simulation of lithium based oxysulphide ionically conducting glass structures	2003-2005	DRDO	20.70	Maha Seshasayee K.Hariharan
19.	Development of thin film fiber-optic hydrogen sensors	2003-2005	MNES	19.27	S.Ramaprabhu M.S.Ramachandra Rao

Sl. No	Title of the Project	Period	Funding Agency	Value (Rs.in lakhs)	Co-ordinators
20	Development of Solid State Electrochromic Device for Medical Applications	2004	GEIT	13.50	A.Subrahmanyam
21	Dopler Michelson Interferometer for measuring in-Bore velocity-time history of a projectile	2000-2004	DRDO	66.00	R.S.Sirohi M.P.Kothiyal
22.	Development of microwave hall effect technique and study of mobility at microwave frequencies in semiconductors and heterostructure devices	2002-2005	DRDO	19.29	V.Subramanian V.R.K.Murthy
23.	Theoretical studies of photoabsorption processes involving free and confined atoms	2002-2005	DST	3.60	P.C.Deshmukh
24.	Study of Magnetocaloric Effect for Magnetic Refrigeration Applications	2004-2006	MHRD	14.00	V.Sankaranarayanan
25.	Optical properties of semiconductor nanostructures	2002-2005	DRDO	24.00	C.Vijayan
26	Investigation on the Improvement of Dielectric properties of Microwave Dielectric Resonators for Higher Efficiency in Microwave Devices".	2004-2007	DRDO	31.5	V.R.K.Murthy B.Viswanathan V.Subramanian
27	Investigation on Indium Gallium Nitride for optoelectronic application".	2004-2007	MHRD-R&D	15.00	Makaveer Kumar Jain A.Subrahmanyam
28	Development and optimization of Biocompatible Thin films for Surface Plasmon Resonance Based Biosensors	2004-2007	MHRD-R&D	15.00	Dr.S.Kasiviswanathan. Dr.V.Damodaradas.
29	Investigation and Development of Nano Silver Oxide for Optical Memories	2004-2006	Ministry of Communications & Information Technology	31.2	A.Subrahmanyam Mahaveer Kumar Jain
30	Thin Films of Indium Gallium Nitride (IGN) for Optoelectronic and Photovoltaic Applications: Basic Studies	2004-2007	DRDO	41.7	A. Subrahmanyam and Mahaveer K. Jain
31	Spectrally Resolved White Light Interferometer	2001-2004	BRNS	16.5	M.P.Kothiyal
32	Doppler Michelson Interferometer	2000-2004	DRDO	78.5	M.P.Kothiyal

**RBIC (only ongoing):**

Sl No.	Name of the Faculty	Title	Industry	Amount (in Lakhs)
1.	Dr.Mahaveer Kumar Jain	Battery charging of photovoltaics in electric driven car	Akash Education and Research Trust	2.5

**Exchange programme with other Universities:**

Sl. No.	Name of the Faculty	Level	Journal
1.	P. B. Bisht	Research (IIT-BMBF)	Ludwig-Maximillian University, Munich

**Journal Editorial Boards:**

Sl.No.	Name of the Faculty	Chairman/Member	Journal
1.	Dr.MahaveerKumar Jain	Member	Sensor Letters

## In Refereed National Journals

1. V. R. Shah, G. Markandeyulu, K. V. S. Rama Rao, M. Q. Huang, K. Sirisha and M. E. McHenry, Structural and magnetic properties of  $(\text{Sm}_{1-x}\text{Pr}_x)_2\text{Fe}_{27.5}\text{Ti}_{1.5}$  [ $x = 0.2, 0.5, 0.8, 1.0$ ] and their nitrides, *J. Alloys and Compounds*, 352, 6-15 (2003).
2. J. C. Ingersoll, G. Markandeyulu, V. S. Murthy and K. V. S. Rama Rao, Structural and magnetic properties of  $\text{ErPrFe}_{17-x}\text{M}_x$  [ $\text{M} = \text{Ga, Si}; x = 0 - 3.5$ ], *J. Alloys and Compounds*, 354, 29-34 (2003).
3. S. Pandian, V. Chandrasekharan, G. Markandeyulu, K. J. L. Iyer and K. V. S. Rama Rao, Effect of Co, Dy and Ga in modifying the magnetic properties and microstructural features of powder metallurgically processed NdFeB magnets, *J. Alloys and Compounds*, 364, 295-303 (2004).
4. Arout Chelvane, S. Kasiviswanathan, and G. Markandeyulu, Magnetic and electrical properties of  $\text{Ho}_{0.85}\text{Tb}_{0.15}\text{Fe}_{2-x}\text{Mn}_x$  [ $0, 0.5, 1.0, 1.5$ ], *J. Magn. Mater. [in press]*.
5. J. Arout Chelvane, S. Kasiviswanathan, M. V. Rao and G. Markandeyulu, Magnetic properties of ball-milled  $\text{TbFe}_2$  and  $\text{TbFe}_2\text{-B}$ , *Bull. Mater. Sci. [in press]*
6. S. K. Debnath, Senthil Raja, Shanthy Mary Philipose, D. K. Sharma, M.P. Kothiyal, "Use of PZT Phase Shifter in Analysis of spectrally Resolved White Light Interferometry", International conference on Laser Applications and Optical Microscopy (ICLAOM-03), Dec. 1- 4, New Delhi, 241- 244, (2003).
7. S. K. Debnath, Shanthy Mary Philipose, D. K. Sharma, M. P. Kothiyal, "Calculation of Fringe contrast function in White Light Interferometry", International Conference on Laser Applications and Optical Microscopy (ICLAOM-03), Dec. 1-4, New Delhi, 385-388, (2003).
8. M. Sreedhar, K. Radhika, Senthil Raja, M. P. Kothiyal, "Interferometric Calibration of a PZT Translator", International Conference on Laser Applications and Optical Microscopy (ICLAOM-03), Dec. 1-4, New Delhi, 425 - 427, (2003).
9. M. P. Kothiyal, "Interferometric Surface Metrology with White Light", International Conference on Laser Applications and Optical Microscopy (ICLAOM-03), Dec. 1-4, New Delhi, 172-178, (2003).
10. S. K. Debnath, Shanthy Mary Philipose, Harini Bharath, Senthil Raja, D. K. Sharma, M. P. Kothiyal, "Interference Microscopy for Surface Measurement," Proc. of Third National Conference on Precision Engineering, Dec 19 – 20, Bangalore, 325 – 329, (2003).
11. N. Gupte, A. Sharma and G.R. Pradhan, Dynamical and statistical behaviour of coupled map lattices *Physica A* 318, 85-90, (2003).
12. T.M. Janaki and N. Gupte Connectivity strategies for enhancement of capacity of a load-bearing network *Phys. Rev. E* 67, 021503-6 (2003).
13. T.M. Janaki and N. Gupte Connectivity strategies for enhancement of capacity of a load-bearing network *Phys. Rev. E* 67, 021503-6 (2003).
14. T.M. Janaki, S. Sinha and N. Gupte Evidence for directed percolation universality in deterministic models of spatio-temporal intermittency *Phys. Rev. E* 67, 056218-8 (2003).
15. B.K. Singh and N. Gupte Cross-over Behaviour in a communication network, *Phys. Rev. E* 68, 066121 (2003).
16. M. Kandavel and S. Ramaprabhu Effect of non-stoichiometric on the hydrogen storage properties in Ti/Zr based  $\text{AB}_2$  alloys. *J. Physics, Condensed Matter*, 15, 7501-7517 (2003).
17. M.M. Shaijumon and S. Ramaprabhu Synthesis of carbon nanotubes by pyrolysis of acetylene using alloy hydride materials as catalysts and their hydrogen adsorption studies. *Chemical Physics Letters*, 374, 513-520 (2003).
18. Muruganadham, N. Rajalakshmi, K.S. Dhathathreyan and S. Ramaprabhu Electrochemical investigations of  $\text{MmFe}_2$  electrodes for Ni-MH battery applications. *J. Power Sources*, 114, 352-356 (2003).
19. R. R. Vedantam, V. Subramanian, V. Sivasubramanian and V. R. K. Murthy - Low Frequency Dielectric Study of Barium and Strontium Substituted  $\text{Pb}(\text{Zn}_{1/3}\text{Nb}_{2/3}\text{O}_3)$  Ceramics. *Jap. J. Appl. Phys.*, 42, 1732-1736, 2003
20. Bibekanada Sundaray, V. Subramanian, T. S. Natarajan, Rong-Zheng Xiang, Chia-Cheng Chang and Wun-Shain Fann- Electrospinning of Continuous Aligned Polymer Fibers. Accepted for publication in *Applied Physics Letters*.

21. Dibyaranjan Rout, V. Subramanian, K. Hariharan, V. Sivasubramanian and V. R. K. Murthy Dielectric Study of the Phase Transitions in  $\text{Pb}_{1-x}\text{Ba}_x(\text{Yb}_{1/2}\text{Ta}_{1/2})\text{O}_3$  Ceramics. - Accepted for publication in *Ferroelectrics*.
22. Ullash Kumar Barik, S.Srinivasan, C.L.Nagendra and A.Subrahmanyam, Electrical and Optical properties of reactive DC Magnetron sputtered silver oxide thin films : Role of Oxygen , *Thin Solid Films*, Vol 429; pp 129-134
23. V.Vasu and A.Subrahmanyam, Carrier transport mechanism in Indium tin oxide (ITC) / silicon heterojunctions : effect of chlorine, *Applied Physics A* (in press)
24. M. Pattabiraman, P. Murugaraj, G. Rangarajan, C. Dimitropoulos, Jean-Philippe Ansermet, G. Papavassiliou, G. Balakrishnan, D. McK. Paul and M. R. Lees  $^{55}\text{Mn}$  NMR investigation of  $\text{Nd}_{1-x}\text{Sr}_x\text{MnO}_3$  ( $0.1 \leq x \leq 0.5$ ), *Phys. Rev. B*, 66 (2003) 224415 1-7.
25. V. Ravindranath, R. Suryanarayanan, G. Rangarajan and M.S. Ramachanda Rao Evidence for phase separation in  $\text{Er}^{3+}$  doped  $\text{La}_{0.8}\text{Sr}_{0.2}\text{MnO}_3$  *Appl. Phys. Lett.*, 82 (2003) 2865-2867.
26. K-Y. Choi, P. Lemmens, G. Güntherodt, M. Pattabiraman, G. Rangarajan, V. P. Gnezdilov, G. Balakrishnan, D. McK. Paul and M.R. Lees, Raman scattering study of  $\text{Nd}_{1-x}\text{Sr}_x\text{MnO}_3$  ( $x = 0.3, 0.5$ ) *J. Phys.: Condens. Matter*, 15 (2003) 1-10.
27. S. Angappane, G. Rangarajan and K. Sethupathi, Magnetic clusters in  $\text{Nd}_{1-x}\text{Sr}_x\text{MnO}_3$  ( $0.3 \leq x \leq 0.5$ ): An electron-spin resonance study *J. Appl. Phys.*, 93 (2003) 8334-8336.
28. S. Angappane, G. Rangarajan and K. Sethupathi, *Physica B* 339 (2003) 87-93. ESR study of magnetic homogeneity in  $\text{La}_{0.67}\text{Ca}_{0.33}\text{MnO}_3$  thin film,

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1. Umakanta Tripathy, Prem B. Bisht and K. K. Pandey, Study of excitation energy migration and transfer in 3,3'-dimethylloxycarbocyanine iodide (DMOCl) and o-(6-diethylamino-3-diethylimino-3H-xanthen-9-yl) benzoic acid (RB) in thin films of polyvinyl alcohol, *Chemical Physics* 299, 105-112 (2004).
2. S.Venkataraman, R.Kumar, J.Shnakar, T.K.Chandrasekharan, K.Sendhil, C.Vijayan, A Kelling and M.O.Senge Oxasmaragdyrin-ferrocene and Oxacorrole-ferrocene conjugates: Synthesis, Structure and Nonlinear Optical Properties *Chemistry-A European Journal*, Vol. 1423-1432 (2004)
3. K.S.Babu, C.Vijayan and R.Devanathan Strong quantum confinement effects in polymer-based PbS Nanocrystals *Materials Letters* Vol. 58, page 1223-1226

#### In Proceedings of National Conferences

1. Z. Jabeen and N. Gupte A Phase diagram for the spatio-temporal intermittency in the sine circle map, in the Proceedings of National Conference on Nonlinear Science and Dynamics, IIT Kharagpur December 2003, pg 101, (2003).
2. Umakanta Tripathy and Prem B. Bisht Evaluation of excited singlet state absorption cross sections by ps pulse transmission technique, , *Proc. of National Laser Symposium*, IIT Kharagpur, Dec. 21-24, 2003 p. 441-442.
3. R. Sailaja and Prem B. Bisht Experiments and theoretical simulations on ps distributed feedback dye laser in a new dye, , *Proc. of National Laser Symposium*, IIT Kharagpur, Dec. 21-24, 2003 p. 443-444.
4. Ambika Nautiyal and Prem B. Bisht Design parameters of femtosecond noncollinear optical parametric oscillator, , *Proc. of National Laser Symposium*, IIT Kharagpur, Dec. 21-24, 2003 p.445-446.
5. K. C. Jena, R. J. Rajesh, P. B. Bisht\* and S. Kasiviswanathan, Diffraction efficiency measurements by third harmonic pumping of ps Nd:YAG laser: studies on coumarin dyes, *Proc. of National Laser Symposium*, IIT Kharagpur, Dec. 21-24, 2003 p. 447-448.
6. Dibyaranjan Rout, V. Subramanian, V. Sivasubramanian, K. Hariharan and V.R.K. Murthy Preparation and Phase Transition Studies of  $(\text{Pb}_{0.9}\text{Ba}_{0.1})(\text{Yb}_{0.5}\text{Ta}_{0.5})\text{O}_3$ . - DAE Solid State Physics Symposium, Gwalior, Dec. 2003.
7. Bibekananda Sundaray, V. Subramanian and T. S. Natarajan - Electrospinning of Continuous Polystyrene Fibres. - DAE Solid State Physics Symposium, Gwalior, Dec. 2003.

8. K. Sathyamurthy, C. Vijayan and M. P. Kothiyal Enhancement of visible fluorescence in CdS quantum dots due to dye encapsulation National Laser Symposium, IIT Kharagpur, Dec 2003

#### In Proceedings of International Conferences

1. M P Kothiyal: International Conference on Laser Applications and Optical Metrology (ICLAOM-03) Dec. 1-4, New Delhi
2. The paper Cross-over Behaviour in a communication network by B.K. Singh and N.Gupte, was presented at the SIAM conference on Dynamical Systems, DS-03, May 27-31, 2003, Snowbird, Salt Lake City, Utah.
3. T. Bizjak, P. B. Bisht, S. Lochbrunner, and E. Riedle, Femtosecond Transient Spectroscopy of the Photoionization of Indole in Water, *Proc. of Femtochemistry VI* conference, Paris, July 6-10, p.13, 2003.
4. P. Sandeep and Prem B Bisht, Determination of Femtosecond Dephasing Times of Organic Dyes Confined in a Single Spherical Microparticle, *Proc. of Femtochemistry VI* conference, Paris, July 6-10, p.68, 2003.
5. T. Bizjak, P. B. Bisht, S. Lochbrunner, and E. Riedle, Ultrafast photodynamics of indole, *Proc. of meeting of German Physical society*, Munich March 22-26, 2004, p.75..
6. Umakanta Tripathy and Prem B. Bisht, Experimental and theoretical simulations on Z-scan profile under ps time scale, *Proc. of Int. conf. on optoelectronics technology*, North Maharashtra University, Jalgaon, Jan. 12-14, 2004, p. 30-35
7. R. Sailaja and Prem B. Bisht, Study of factors contributing to ps white light generation: Stimulated Raman scattering, spatial and temporal self phase modulation, *Proc. of Int. conf. on optoelectronics technology*, North Maharashtra University, Jalgaon, Jan. 12-14, 2004, p. 19-23
8. R. Sailaja and Prem B. Bisht, Multiphoton studies of organic dyes under ps excitation, *Proc. of 7<sup>th</sup> Biennial Trombay symposium on radiation and photochemistry* (TSRP-2004), BARC, Mumbai, Jan 8-12, 2004, pp.29-30
9. Sandeep P and Prem B Bisht, Effect of dopant concentration on microcavity resonances in fluorescence spectra and lifetimes of 9 – amino acridine hydrochloride hydrate, *Proc. of 7<sup>th</sup> Biennial Trombay symposium on radiation and photochemistry* (TSRP-2004), BARC, Mumbai, Jan 8-12, 2004, pp.133-134.
10. Umakanta Tripathy and Prem B. Bisht, Energy transfer efficiency of dipole-dipole interaction in a dye pair in polymer medium, *Proc. of 7<sup>th</sup> Biennial Trombay symposium on radiation and photochemistry* (TSRP-2004), BARC, Mumbai, Jan 8-12, 2004, pp.149-150.
11. M.M. Shaijumon and S. Ramaprabhu, *Catalytic synthesis of carbon nanotubes from acetylene using MmNi<sub>2</sub> hydride material as catalysts and their hydrogen storage properties. Presented at the International conference on functional nanostructures*, held at Germany, 28<sup>th</sup> September to 2<sup>nd</sup> October 2003.
12. M.M. Shaijumon and S. Ramaprabhu, *Hydrogen adsorption studies of carbon nanotubes synthesized by pyrolysis of acetylene using C 15 MmFe<sub>2</sub> hydrides as catalysts. Presented at the International Conference on Nano Science and Technology held at Kolkata, India, December 17-20, 2003.*
13. M. Kandavel and S. Ramaprabhu, *Hydriding properties of mechanically milled Mg-based nano composite materials. Presented at the International Conference on Nano Science and Technology held at Kolkata, India, December 17-20, 2003.*
14. M.M. Shaijumon, N. Bejoy and S. Ramaprabhu, *Synthesis of carbon nanotubes using Ni-Cr anionic clay catalyst and their hydrogen adsorption studies. Presented at the International workshop on the Physics of semiconductor devices*, held at Indian Institute of Technology, Madras, December 16-20, 2003.
15. M. Kandavel and S. Ramaprabhu, *Mg based nano-composite materials for hydrogen storage applications. Presented at the International workshop on the Physics of semiconductor devices*, held at Indian Institute of Technology, Madras, December 16-20, 2003.
16. S. Angappane, M. Pattabiraman, G. Rangarajan, K. Sethupathi and V. S. Sastry, ESR study of Nd<sub>0.5</sub>Sr<sub>0.5</sub>MnO<sub>3</sub> single crystal International Conference on Magnetism, Roma, Italy (2003).
17. D. V. B. Murthy, V. Subramanian and V. R. K. Murthy - Contactless Technique for Measuring the Mobility of Semiconductors. - XII International Workshop on The Physics of Semiconductor devices, Chennai, Dec. 2003.

- S. Gopalan, M. Balasubramanian, T.S. Natarajan, V. Subramanian and V.Santhanam, - Electrical and Mechanical Properties of Polystyrene-Carbon Fiber Composites. - International Conference on Materials for Advanced Technologies, Singapore, Dec. 2003.
18. G. Santosh Babu, V. Subramanian, V. Sivasubramanian and V. R. K. Murthy - Study of One-dimensional Photonic Band Gaps at Microwave Frequencies for Microwave Filters. - 4th Asian Meeting on Ferroelectrics, Bangalore, Dec. 2003.
19. E. D. V. Nagesh, V. Subramanian, V. Sivasubramanian and V. R. K. Murthy - Microwave Propagation in a Square Lattice using different Dielectric Materials for Device Applications. 4th Asian Meeting on Ferroelectrics, Bangalore, Dec. 2003.
20. G. Santosh Babu, V. Subramanian, V. Sivasubramanian and V. R. K. Murthy - Study of One-dimensional Photonic Band Gaps at Microwave Frequencies for Microwave Filters. - 4th Asian Meeting on Ferroelectrics, Bangalore, Dec. 2003.
21. E. D. V. Nagesh, V. Subramanian, V. Sivasubramanian and V. R. K. Murthy - Microwave Propagation in a Square Lattice using different Dielectric - 4th Asian Meeting on Ferroelectrics, Bangalore, Dec. 2003.
22. R. R. Vedantam, V. Subramanian, V. Sivasubramanian and V. R. K. Murthy Low Frequency Dielectric Study of Strontium Substituted  $Pb(Zn_{1/3}Nb_{2/3}O_3)$  4th Asian Meeting on Ferroelectrics, Bangalore, Dec. 2003.
23. S. Angappane, M. Pattabiraman, G. Rangarajan, K. Sethupathi and V. S. Sastry, ESR study of  $Nd_{0.5}Sr_{0.5}MnO_3$  single crystal International Conference on Magnetism, Roma, Italy (2003).

**Distinguished Visitors to the Department:**

Sl. No.	Name of the Visitor & Designation	Date of Visit	Purpose of Visit
1.	Dr.(Ms) Vijaya, IIT, Bombay	9 <sup>th</sup> April 2003	Give a lecture
2.	Prof.Abdul Halim Shaari Instt, Mathematical Research, Universiti Putra Malaysia	24 <sup>th</sup> May 2003	Give a lecture
3.	Prof.G.Srinivasan RRI, Bangalore	30 <sup>th</sup> July 2003	Give a lecture
4.	Dr.Sanjay Krishna University of New Mexico	4 <sup>th</sup> August 2003	Give a lecture
5.	Dr.Hasi Ray IIT Roorkee	21 <sup>st</sup> August 2003	Give a lecture
6.	Dr.Gautam I Menon The Institute of Mathematical Science Taramani	28 <sup>th</sup> August 2003	Give a lecture
7.	Dr. Sourendu Gupta , TIFR, Mumbai	17 <sup>th</sup> September, 2003	Give a lecture
8.	Dr.Sitabhara Sinha Institute of Mathematical Science	18 <sup>th</sup> September, 2003	Give a lecture
9.	Dr.T.Padmanabhan IUCAA, Pune	23 <sup>rd</sup> October, 2003	Give a lecture
10.	Dr.S.Dutta Gupta, University of Hyderabad, Hyderabad	28 <sup>th</sup> October, 2003	Give a lecture
11.	Prof.Bary R.Masters Univ. of Oxford, UK	13 & 14 Nov. 2003	Give a lecture
12.	Dr. Virendra Mahajan, Aerospace Corporation, California, USA,	11 <sup>th</sup> December 2003	Give a lecture
13.	Dr.K. Subramanian, GE, Global Research, New York USA	19 <sup>th</sup> December 2003	Give a lecture
14.	Dr. Kripesh Vaidyanathan, Institute of Microelectronics A, Singapore	19 <sup>th</sup> December 2003	Give a lecture
15.	Dr.Ravi Prakash Jagadeeshan, Monash University, Australia	22 <sup>nd</sup> December 2003	Give a lecture
16.	Dr.Sitabhra Sinha The Institute of Mathematical Sciences, Chennai	11 <sup>th</sup> March 2004	Give a lecture
17.	Dr.Sarika Jalan Physics Research Laboratory, Ahmedabad,	18 <sup>th</sup> March 2004	Give a lecture



Sl. No.	Name of the Visitor & Designation	Date of Visit	Purpose of Visit
18	Professor R.Ramaswamy School of Physics, JNU,	26 <sup>th</sup> March 2004	Give a lecture
19	Prof. Siddhartha Sen Trinity College, Dublin & IACS, Kolkata	5 <sup>th</sup> February 2004	Give a lecture
20	Dr.Klaus Weishaupt Managing Director, WITee, Germany	11 <sup>th</sup> February 2004	Give a lecture
21	Prof. A. K. Majumdar, Department of Physics, IIT Kanpur	12 <sup>th</sup> February 2004	Give a lecture
22	Dr.Stefan Lochbrunner, Sektion Physik, Ludwig Maximilian University, Germany	25 <sup>th</sup> February 2004	Give a lecture
23	Dr.M.P.Anantram Centre for Nanotechnology, NASA Ames Research Centre	5 <sup>th</sup> January 2004.	Give a lecture
24	Dr. R.Srikanth, Raman Research Institute, Bangalore	21 <sup>st</sup> January 2004	Give a lecture

#### 4.13.6. Other Activities:

Sir C.V.Raman's Birthday has been celebrated in the Department on 7<sup>th</sup> November 2003 Dr.T.R.Ravindran, Materials Science Division, IGCAR Kalpakkam was invited as Chief Guest and delivered lecture on that day.

An Intercollegiate Physics Quiz Competition has been organized in the Physics Department on Saturday 1<sup>st</sup> November 2003.

Dr.A. Subrahmanyam, Professor & Head, Member nominated by Department of Science and Technology as member of Facility Management Committee of Sophisticated Analytical Instrument Facility.

## 5.1 COMPOSITES TECHNOLOGY CENTRE

### 5.1.1 Introduction:

Composites Technology Centre formerly known as Fibre Reinforced Plastics (FRP) Research Centre was established in 1974 as an interdisciplinary Centre for carrying out teaching, research, design and development in the field 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 applications. The areas of expertise of the Centre include:

- Materials Research and Development
- Composites Manufacturing Technology
- Composite Product Design and Development
- Quality Assurance of Composites

The Centre has undertaken a large number of sponsored projects and established close interaction with the industries by offering consultancy and technical guidance.

### 5.1.2 Academic Programmes:

This Centre enrolls the students/scholars for M.Tech, M.S. and Ph.D. programmes. But they are admitted in the respective departments for award of degree. As on 31.3.2004, the following numbers of students/scholars were with this center:

- M.Tech - 5
- M.S - 1
- Ph.D - 1

### Names of student / scholar attended Conference/Seminar and Symposia Abroad/India :

S. No.	Name of the student	Programme	Name of the conference / seminar / symposia	Date and venue
<b>Conference :</b>				
1.	V.Vinothini	MS	Intl.Ceramic Congress	Jan 9-11,, 2004, Chennai.
2.	J.Chandradass	PhD	Intl.Ceramic Congress	Jan 9-11, 2004 Chennai
3.	R.Varatharajan	PhD	IInd National Conf. on Computer Integrated Design & Mfg.	Nov.28-29, 2003 Coimbatore
4.	R.V.S.Reddy	PhD	Intl.Conf on Advances in Matls & their Processing	Dec.22-23,2003 Bagalkot
5.	R.V.S.Reddy	PhD	Intl.Conf.on Recent Trends in Concrete Tech. & Structures	Sept. 10-12,2003 Coimbatore
6.	R.V.S.Reddy	PhD	Intl. Conf & Exhibition on Innovative World of Concrete	Sept. 19-21,2003 Pune
7.	S.Bindu	PhD	INCCOM-2 & 12 NASAS	Sept.5-6,2003 Bangalore
8.	V.Manikandan	PhD	INCCOM-2 & 12 NASAS	-do-
9.	M.Shanmugam	M.Tech	INCCOM-2 & 12 NASAS	-do-
<b>Seminar:</b>				
1.	P.Jawahar	Ph.D	National Seminar on Polymers and Applications	Feb 5-7, 2004 Chandigarh
2.	K.Karthikeyan	M.S	National Seminar on Nano Composites	Feb 19-20, 2004 Bhubaneswar

### 5.1.3. Faculty and their activities:

#### Faculty :

Name and Qualifications	Major area of specialization
Dr S.K.Malhotra, Ph.D (IIT, Madras) (Head)	Composite Materials Research, Analysis and Design of Composite Products, Quality Control of Composites.
Dr. M. Balasubramanian, Ph.D. (IIT, Madras)	Ceramics and Ceramic Composites, Polymer Composites, sol-gel process
Dr. P. Alagusundaramoorthy, Ph.D. (IIT, Madras)	FRP Composites for Civil Engg., FRP Chemical Plant Structures, Retrofitting and Rehabilitation of Concrete Structures.
Dr. R. Velmurugan, Ph.D. (IIT, Delhi)	Composite Structures Analysis and Design, Impact Mechanics, 3-D Composites

**Short-term course / Workshops / Seminars / Symposia / Conferences organized by the faculty members :**

Sl. No.	Coordinator(s)	Title	Period
<b>Workshop :</b>			
1.	Dr M.Balasubramanian & Dr P.Alagusundaramoorthy	Fibre Reinforced Thermoset Plastics	July 21-26, 2003
2.	Dr P.Alagusundaramoorthy	Summer Assistantship Programme	June 2-27, 2003

**Short term Courses /Workshops/Seminars/Symposia/Conferences/Training attended by faculty members in Academic Institutions and Public Sector Undertakings:**

S.No.	Name of Faculty	Title	Period and Venue
<b>Conference:</b>			
1.	Dr S.K.Malhotra	INCCOM-2 & 12 NASAS	Sept.5-6,2003, IISc Bangalore
2.	Dr.M.Balasubramanian	INCCOM-2 & 12 NASAS	Sept.5-6,2003, IISc. Bangalore
3.	Dr.M.Balasubramanian	Intl.Ceramic Congress	Jan 9-11, 2004, Chennai
4.	Dr M.Balasubramanian	National Conf. on Fabn & Processing of Composites & light matls	Jan 2-3, 2004, Chidambaram
5.	Dr P.Alagusundaramoorthy	Intl.Conf.on recent trends in Concrete Technology & Structures	Sept. 10-12, 2003, Coimbatore
6.	Dr P.Alagusundaramoorthy	Intl.Conf. and Exhibition on Innovative World of Concrete	Sept. 19-21, 2003 Pune.

**Special Lectures delivered by the faculty in other Institutions:**

Sl.No.	Name of Faculty	Topic of Lecture	Venue and Date
1.	Dr S.K.Malhotra	Fibre Reinforced Polymer Composites	Mepco Schlenk Engg College, Virudhu Nagar, Oct.17, 2003
2.	Dr M.Balasubramanian	Metal Matrix Composites	Annamalai Univ., Chidambaram, May 27, 2003
3.	Dr P.Alagusundaramoorthy	Retrofitting & rehabilitation of concrete structures using FRP	Dr MGR Engg College, Chennai, March 19,2004
4.	Dr R.Velmurugan	Composites Technology in Aerospace applications	Honeywell India, Madurai, Jan 4, 2004.

**5.1.4 Design and Development Activities:**

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

Finite Element Analysis software for analysis of Composite shells subjected to thermal & mechanical loads is developed by Dr R.Velmurugan and his students.

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

Sl.No.	Equipment	Value (Rs.in lakhs)
1.	Microwave oven	0.21
2.	Drying chamber	0.53
3.	Fibre Forming chamber	2.82

**5.1.5 Research and Consultancy:**

**Sponsored Research Projects:**

Sl. No.	Title	Period	Funding Agency	Amount (Rs in lakhs)	Co-ordinators
1.	Processing & performance evaluation of light weight composite Gears.	Feb. 2002 - Jan. 2005	DST	12.43	Dr.R.Gnanamoorthy(Mech. Engg.) Dr.S.K.Malhotra
2.	Sol-gel processing of Advanced Ceramic Fibres	Apr. 2002-Mar. 2004	MHRD	8.00	Dr M.Balasubramanian Dr P.Alagusundaramoorthy
3.	Development of sol-gel Protective coating on metals	Oct 2002-Sept.2005	UGC	3.30	Dr M.Balasubramanian

Sl. No.	Title	Period	Funding Agency	Amount (Rs in lakhs)	Co-ordinators
4.	Development of FRP rebars for reinforcing concrete structures	Apr. 2003-Mar. 2005	MHRD	12.00	Dr P.Alagusundaramoorthy Dr M.Balasubramanian
5.	Vibration Control of Nano Composites	Mar. 2004 -Feb 2006	MHRD	17.00	Dr R.Velmurugan Dr R.Sarathi
6.	Low & Medium vel impact of projectiles on laminated plates	Aug. 2003 -July 2006	ARMREB	14.83	Dr R.Velmurugan

**Industrial Consultancy Projects:**

S.No.	Name of Faculty	Title	Industry	Amount (Rs.in lacs)
1.	Dr M.Balasubramanian	Characterisation of Nylon	E.I.Dupont India Ltd	0.60
2.	Dr M.Balasubramanian	Testing of Cenospheres	GIMPEX Ltd	0.60
3.	Dr P.Alagusundaramoorthy	Repair of Light houses damaged in earthquake at Gujarat using FRP	Dept.of Light houses & Lightships	1.33
4.	Dr P.Alagusundaramoorthy	Construction of shipway at Mangalore	Tebma Shipyard Ltd, Chennai	2.00
5.	Dr P.Alagusundaramoorthy	Preparation of feasibility report for setting up an impounded deck.	Kandla Port Trust, Gujarat	15.00
6.	Dr R.Velmurugan	Analysis of sample pots made of saw dust & starch	Progreen Products Pvt Ltd	0.60

**RBIC Projects :**

S.No.	Name of Faculty	Title	Industry	Amount (Rs in lacs)
1.	Dr P.Alagusundaramoorthy Dr M.Balasubramanian	GRP gratings by Compression Moulding	Technocraft, Chennai	1.50
2.	Dr R.Velmurugan	Characterization of non-Metallic materials	DRDL, Hyderabad	5.75
3.	Dr S.K.Malhotra Dr P.Alagusundaramoorthy	Design & Analysis of FRP Cab for DMU/DFC	Hindustan Fibreglass Works, Vadodara	3.75
4.	Dr M.Balasubramanian	Development & Characterisation of alum.matrix Composites for tracked vehicle appln.	CVRDE, Chennai	4.50

**Exchange programme with other Universities:**

Three graduate students from Osaka Prefecture Univ., Japan visited the Centre for one week in August 2003 under collaborative agreement between IIT, Madras and Osaka Prefecture Univ.

**Research Publications:**

Total No. of papers published in Refereed National Journals	:	1
Total No. of papers published in Refereed International Journals	:	8
Total No. of papers published in proceedings of National Conferences	:	9
Total No. of papers published in proceedings of International Conferences	:	3

**In Refereed National Journals:**

1. R.Velmurugan and N.K.Gupta, "Energy absorption characteristics of metallic and composite shells", Defence Science Journal, v-53, n-2, pp.127-138, 2003.

**In Refereed International Journals:**

1. J.Ramkumar, A.Kakisuji, S.K.Malhotra, R.Krishnamurthy and H.Mabuchi "Mechanical and erosion behaviour of Ti47Al-3W/Ti2AlC Composites by Reactive-Arc-Melting" Advanced Composites Letters, v-12, n-4, pp.141-148, 2003.
2. J.Ramkumar, S.K.Malhotra, R.Krishnamurthy, H.Mabuchi and K.Demizu, "Microstructure and dry sliding wear of Ti.50Al alloy and Ti-47Al-3W/Ti2AlC Composite produced by Reactive-Arc-Melting", Materials Transactions (The Japan Inst.of Metals), v-44, n-9, pp.1861-1865, 2003.

3. V.Viswabaskaran, F.D.Gnanam and M.Balasubramanian, "Mullitisation behaviour of calcined clay-alumina mixtures", *Ceramics International*, v-29, n-5, pp.561-571, 2003.
4. V.Viswabaskaran, F.D.Gnanam and M.Balasubramanian, "Effect of Mgo on mullitisation behaviour of clays", *Jl. of Matls Sci Ltrs*, v-22, n-9, pp.663-668, 2003.
5. V.Viswabaskaran, F.D.Gnanam and M.Balasubramanian, "Effect of Mgo,  $Y_2O_3$  and Boehmite additives on the sintering behaviour of mullite formed from Kaolinite-reactive alumina", *Jl. of Matls. Processing Tech.*, v-142, n-1, pp. 275-281, 2003.
6. P.Alagusundaramoorthy and R.Sundaravadivelu, "Stability of stiffened steel plates with initial imperfections", *ASCE Jl. of Engg Mechanics*, v-129, n-7, pp.751-758, 2003.
7. P.Alagusundaramoorthy, I.E.Harik and Choo.C.Chiaw, "Flexural behaviour of R/C beams strengthened with CFRP sheets or fabric". *ASCE Jl. of Composites for construction*, v-7, n-4, pp.292-301, 2003.
8. R.Sarathy, Supriya Das, C.Venkataseshaiah and R.Velmurugan, Analysis of failure of XLDE polyethylene cables due to electrical treeing", *Jl. of Applied Polymer Sci*, v-93, pp.2169-2178, 2004.

#### In Proceedings of National Conferences:

1. S.K.Malhotra, C.Lakshmana Rao, P.Kanakasabai and A.P.Deshpande, "Moisture absorption behaviour of Polyester Composites of Sisal fibres", *Proc. of INCCOM-2 / XII NASAS, Bangalore, Sept.2003*, pp.330-339.
2. J.Ramkumar, S.K.Malhotra and R.Krishnamurthy, "Effect of work piece vibration on drilling of GFRP laminates", *Proc. of INCCOM-2/XII NASAS, Bangalore, Sept.2003*, pp.369-374.
3. C.Lakshmana Rao, S.K.Panda and S.K.Malhotra, "Mechanical response of jute fibre reinforced composite water tank panels", *Proc.of INCCOM-2/XII NASAS, Bangalore, Sept.2003*, pp.108-116
4. P.Jawahar and M.Balasubramanian, "Thermoset polymer clay nano composites", *Proc. of INCCOM-2/XII NASAS, Bangalore, Sept.2003*, pp.214-222.
5. M.Balasubramanian, "Casting methods for Metal Matrix Composites", *Proc. of the Natl. Conf. on Fabr. & Processing of Composites and Light Matls.*, Annamalai Univ, Jan.2004, pp.1-6.
6. R.V.Sudarsana Reddy and P.Alagusundaramoorthy, "Characterisation of FRP Composite Matls". *Proc.of National Conf. on Advances in Matls. & their processing, Bagalkot, Dec 2003*, pp-147-152.
7. K.Bindu, R.Palaninathan and R.Velmurugan, "Thermo-structural analysis of laminated shells", *Proc. of INCCOM-2/XII NASAS, Bangalore, Sept.2003*, pp.148-158.
8. V.Manikandan, R.Velmurugan and S.G.Ponnambalam, "Experimental investigation of palmyra epoxy laminated composites," *Proc. of INCCOM-2/XII NASAS, Bangalore, Sept.2003*, pp.235-243.
9. R.Velmurugan and T.P.Mohan, "Influence of nano layered silicates in epoxy matrix," *Proc. of INEA National Conf. on Nano Composites, Chandigarh, Dec.2003*, pp.577-585.

#### In Proceedings of International Conferences:

1. P.Alagusundaramoorthy and R.V.Sudarsana Reddy, "Fibre Reinforced Polymer Composite Bridge decks," *Proc. of Intl.Conf. on Recent Trends in Concrete Tech. and Structures, Coimbatore, Sept.2003*, pp.693-698
2. P.Alagusundaramoorthy and R.V.Sudarsana Reddy, "Experimental study on the fracture behaviour of ferrocement beams", *Intl.Conf. & Exhibition on Innovative World of Concrete, Pune, Sept. 2003*, *Proc. in CD*.
3. N.Mohammed Sheriff, R. Harish, R.Velmurugan and N.K.Gupta, "Numerical and experimental studies of fold formation in thin walled shells under dynamic loading condition" *Proc. of INCARF, New Delhi, Aug 2003*, *Prof. in CD*.

## 5.2 MATERIALS SCIENCE RESEARCH CENTRE

### 5.2.1. 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 and solid state materials. The major research areas of the Centre are:

- Electrode Materials for Li-batteries and Fuel Cells
- Thermolectric Materials
- Magnetoresistance oxides
- PLZT Ferroelectric Ceramics
- Luminescent materials
- Rare Earth based Colourants
- Thin film Multilayers/Heterostructures
- Electroluminescent (EL) thin films
- Spintronics

### 5.2.2. Academic Programmes:

This Centre enrolls the students/scholars for M.Tech, M.S. and Ph.D. programmes. But they are admitted in the respective departments for award of degree. As on 31.3.2004, the following number of students/scholars were with this center:

- Ph.D. - 7

Names of student/scholar attended conference/seminar and symposia abroad/India:

S. No.	Name of the student	Programme	Name of the Conference/ seminar/ symposia	Date and venue
1.	M.V.V.M. Satya Kishore and U.V.Varadaraju	Electrochemical Performance of $\text{LiCoAsO}_4$ as Positive and Negative Electrode Material for Secondary Lithium Batteries	International Conference on Ionic Devices	Nov. 28-30, 2003, Anna University, Chennai.
2.	Mr. M.V.V.M.S.Kishore	Lithium Batteries	Science Programme of the Children's Club (Mylapore, Chennai 600 036) Members (XI and XII Std Students	IIT Madras, Chennai, April 2003
3.	Mr.N. Lakshminarasimhan	Inorganic Luminescent Materials		
4.	P. Chaitanya Das, V. Ravindranath, N. Rama and M.S.Ramachandra Rao, Emerging Technologies.	Spin polarized tunneling in magnetic tunnel junction (MTJ) fabricated using a novel insulating barrier	Twelfth International Workshop on Physics of Semiconductor Devices,	IIT Madras, Chennai 600 036. December 16-20, 2003.
5.	S.Bhaskar Reddy, V. Arvind Chander, V. Ravindranath, M.S. Sivakumar, K. Prasada Rao, K.N. Bhat and M.S. Ramachandra Rao,	Study of the ferroelectric properties of PLD grown PLZT thin films for pressure sensor applications	Twelfth International Workshop on Physics of Semiconductor Devices, Under Sensors & MEMS.	IIT Madras, Chennai 600 036. December 16-20, 2003
6.	N.Rama, V. Ravindranath and M.S.Ramachandra Rao	Tuning of room temperature magnetoresistance using $\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3/\text{La}_{0.66}\text{Ca}_{0.3}\text{MnO}_3/\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3$ manganite trilayer tunnel junctions	Twelfth International Workshop on Physics of Semiconductor Devices, under Nanostructures	IIT Madras, Chennai 600 036. December 16-20, 2003
7.	Anup Kumar Jha, N.Rama, K.Chandrasekaran, V. Ravindranath and M.S. Ramachandra Rao	Electrical transport and surface morphology studies of PLD grown vanadium dioxide thin films	Twelfth International Workshop on Physics of Semiconductor Devices, under Optoelectronics.	IIT Madras, Chennai 600 036. December 16-20, 2003
8.	V. Siva kumar, N. Lakshminarashimhan and U.V.Varada Raju	Synthesis and Optical Properties of Calcium Substituted Monazite $\text{CePO}_4$	Materials for the Future MF 2004	Materials Research Centre, Indian Institute of Science, Bangalore 560 012 in association with Materials Research Society of India March 22 & 23, 2004

S. No.	Name of the student	Programme	Name of the Conference/ seminar/ symposia	Date and venue
9.	K. Biswas and U.V.Varadaraju	Synthesis of $\gamma$ -Ce <sub>2</sub> S <sub>3</sub> : The Red Pigment	Materials for the Future MF 2004	Materials Research Centre, Indian Institute of Science, Bangalore 560 012 in association with Materials Research Society of India March 22 & 23, 2004
10.	M.V.V.M. Satya Kishore and U.V.Varadaraju	Electrochemical Performance of LiFeSnO <sub>4</sub> as an Anode Material for Rechargeable Lithium Batteries	Chemists Meet 2004	Department of Chemistry, IIT Madras, Chennai 600 036; 26-27 March 2004
11.	M. Kottaisamy	Preparation of Y <sub>2</sub> O <sub>3</sub> :Eu and Zn: Eu Nano-Crystal Red Phosphors from Urea-Metal Chloride Mixture	Chemists Meet 2004	Department of Chemistry, IIT Madras, Chennai 600 036; 26-27 March 2004
12.	N. Lakshminarashimhan and U.V.Varadaraju	Eu <sup>3+</sup> Luminescence and Bi <sup>3+</sup> Energy Transfer in LaInO <sub>3</sub>	Chemists Meet 2004	Department of Chemistry, IIT Madras, Chennai 600 036; 26-27 March 2004
13.	V. Sivakumar and U.V.Varadaraju	Luminescence of Sm <sup>3+</sup> in Eulytine, Ba <sub>3</sub> La(PO <sub>4</sub> ) <sub>3</sub>	Chemists Meet 2004	Department of Chemistry, IIT Madras, Chennai 600 036; 26-27 March 2004

### 5.2.3. Faculty and their activities:

#### Faculty:

##### Name and Qualification

##### Major Areas of Specilization

#### Professor:

Prof. S. Vancheesan Ph.D., (IIT Madras) [Head]  
Prof. U.V. Varadaraju Ph.D. (IISC Bangalore)

Synthesis and Characterization of Organo-Transition Metal Catalysts for Hydrogenation and Oxidation, Asymmetric Catalysis  
Thermo Electric Materials, Materials for lithium ion battery, Luminescent materials, Inorganic Colourants.

#### Asst. Professor:

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

Spintronics, Multilayers, Heterostructure thin film growth of manganites, double perovskites, PLZT ferroelectrics for sensor applications, Electroluminescent films

#### Senior Scientific Officer - I

Dr. K.D. Chandrasekaran, S.S.O. – I, Ph.D. (IIT Madras)

Oxide ceramic systems for practical applications, High temperature heating element composition.

#### Special Lectures delivered by the faculty in other Institutions:

S.No.	Name of Faculty	Topic of lecture	Venue and Date
1.	Prof. S. Vancheesan	Catalysts and Techniques for Hydrogenation and Transfer Hydrogenation	IPCL, Baroda, 26-12-2003
		Metal Carbonyls and their Derivatives as Catalysts	IITBombay, Mumbai 7-11-2003

S.No.	Name of Faculty	Topic of lecture	Venue and Date
2.	Prof. B. Viswanathan	Introduction to Materials: Why and How Material is Different from Conventional Chemistry	Science Programme of the Children's Club (Mylapore, Chennai 600 036) Members (XI and XII Std Students), in IIT Chennai, March 2004
		Carbon nanomaterials as supports for noble metals	IITGauhathi on 28th April 2003
3.	Prof. U.V. Varadaraju	i. Materials for Li Battery Electrodes ii. Luminescent Materials	Summer Training Programme on Physics for I M.Sc. Students in Nuclear Physics Division of Anna University, Organized by Tamil Nadu Academy of Science, Sponsored by Science City: June 2003
		Materials for the Thermoelectric, Luminescence and Lithium Batteries"	Gulbarga University 27-01-2004
4.	Dr.M.S.Ramachandra Rao	1.Effect of substitution in Rare-earth ions on Magneto-transport Properties in Manganites 2.Phase Separation in Manganites.	Walther-Meissner Institute (WMI), Munich, Germany June 2003:
5.	Dr. K.D.Chandrasekaran	1. Ceramics 2. Fluidized Catalytic Cracking Catalys 3. High Temperature Super Conductors Dr. K.D.Chandrasekaran and Prof. U.V.Varadaraju	Science Programme of the Children's Club (Mylapore, Chennai 600 036) Members (XI and XII Std Students).In IIT Chennai, April 2003
		1. Recent Developments in Nanotechnology, Dr. K.D.Chandrasekaran and Prof. B.Viswanathan 2.High Temperature Super Conductors, Dr. K.D.Chandrasekaran and Prof. U.V.Varadaraju	Thiru A. Govindasamy Government Arts College, Thindivanam 604 002 for Final Year B.Sc. Physics/Chemistry students 12-03-2004.

#### Visits abroad by faculty:

S.No.	Name of faculty	Country visited	Date	Purpose of visit
1.	Prof. B. Viswanathan	Hungary	May 19 to 25, 2003.	delivered lectures in the Indo-Hungarian Conference on Nano Materials during
2.	Prof. U.V.Varadaraju	France	Dec. 1-6, 2003	Member Indo-French Delegation
3.	Dr. M.S. Ramachandra Rao,	Germany	15 <sup>th</sup> May 2003 to 14-07-2003	BMBF project between India and Federal Republic of Germany
		USA	Sept. 2003 - till date	University of Maryland

#### 5.2.4. Design and Development Activities:

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

- Prof. U.V.Varadaraju and his group has designed, fabricated and set up indigenously an electrochemical cell to carry out *in situ* X-ray diffraction studies on secondary rechargeable lithium batteries. This *in situ* XRD measurement set-up enables probing the structural changes and phase evolution in the electrode materials while the battery is in operation
- Prof. U.V.Varadaraju and his group have successfully synthesized environmentally secure rare-earth based red and yellow pigment compositions under the CSIR-NMITLI project. Further refinements in process parameters are underway.
- Two electrode Li cell has been fabricated. The cell gives 3.8 volts with a capacity of 85 mA h/g and this has been successfully tested.



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

S. No.	Name of Equipment	Value (in Rs.lakhs)
1.	Spectrophotometer (Ocean Optics)	3.00

**5.2.5. Research and Consultancy:**
**Sponsored Research Projects:**

S. No.	Title	Period	Funding Agency	Amount (Rs.in Lakhs)	Co-ordinators
1.	Environmentally Secure Rare Earth based Colorants for surface Coatings	1 year	CSIR under NMITLI (New Millenium India Technology Leadership Initiative)	20.90	Prof. U.V.Varadaraju
2.	Development of ElectroLuminescent (EL) Phosphors	1 year	DST	6.00	Dr. N. Kottaiswamy Dr. M.S.Ramachandra Rao.

**Research Publications:**

No. of papers published in Refereed National Journals .. 1

No. of papers published in Refereed International Journals .. 2

No. papers presented in International Conferences .. 1

**In Refereed National Journal:**

- Effect of addition of 5 wt % of PbO on the microstructure and electrical transport properties of  $\text{La}_{0.7}\text{Ca}_{0.3}\text{MnO}_3$ : Ravindranath, V., Abhijit Goel, C.V.Gokulrathnam and M.S.Ramachandra Rao, "Trans. Indian Ins. Met.", 56(4), 347-350 (August 2003).

**In Refereed International Journals:**

- Evidence for phase separation in Er-doped  $\text{La}_{0.8}\text{Sr}_{0.2}\text{MnO}_3$ : V. Ravindranath, R. Suryanarayanan, G. Rangarajan and M.S.Ramachandra Rao, *Applied Physic Letters*, 82 (17) 1-3 (April 2003).
- Solid state studies on  $\text{K}_2\text{Ti}_{6-x}\text{Nb}_x\text{Fe}_2\text{O}_{16}$  ( $x = 0$  and 1) and lithium insertion into  $\text{K}_2\text{Ti}_6\text{M}_2\text{O}_{16}$  ( $M = \text{Cr, Fe and Ga}$ ) and  $\text{K}_2\text{Ti}_5\text{NbFe}_2\text{O}_{16}$  hollandite type phases: K.N. Marimuthu, L.E. Smart, F.J. Berry and U.V. Varadaraju, *Materials Chemistry and Physics*, 82 (2003) 672-678.

**In Proceedings of International Conferences:**

- Spin polarized tunneling in magnetic tunnel junction (MTJ) fabricated using a novel insulating barrier, P. Chaitanya Das, V. Ravindranath, N. Rama and M.S.Ramachandra Rao, Emerging Proceedings of Twelfth International Workshop on Physics of Semiconductor Devices, IITMadras, Chennai 600 036. December 16-20, 2003

**Distinguished Visitors to the Centre:**

S.No.	Name of the visitor and designation	Date of visit	Purpose of visit
1.	Prof. E.V. Sampathkumaran, TIFR, Bombay	June 2003	Do We Understand Transport and Thermal Anomalies of "Normal" Rare Earth Systems?"
2.	Prof. Dinesh K. Agrawal, Professor of Materials & Director, Microwave Processing and Engineering Centre, Penn State University, USA,	30 <sup>th</sup> September 2003.	Recent Developments in Microwave Processing of Ceramics, Composites and Metallic Materials
3.	Dr. N. Nandha Gopal, Department of Biological Sciences, Purdue University, U.S.A.,	15 <sup>th</sup> October 2003.	Structure of ~ 1900 Å PBCVI Virus
4.	Prof. Bernard Raveau, Director, CRISMAT, ISMRA, Caen, France,	21 <sup>st</sup> November 2003	Recent Trends in CMR Manganites
5.	Dr. M.A. Subramanian, DuPont Central Research & Development, USA	11 <sup>th</sup> December 2003.	Materials Impossible
6.	Prof. R. Suryanarayanan, University of Paris, Orsay, France	24 <sup>th</sup> February, 2004	Orbital occupancy of 3d electrons in bi-layer manganites: Manifestation and Determination
7.	Prof. S. Ramasesha, Solid State Structural Chemistry Unit, Indian Institute of Science, Bangalore	22 <sup>nd</sup> March, 2004.	Organic Semiconductors and their Applications

### 5.2.6. Other Activities/Achievements:

1. An Industrial Associates meet was held through ICSR for MSRC in MSRC Seminar Room. 35 participants from Industries attended the meet. Prof. V. Kalyanaraman, Dean-ICSR welcomed the participants and briefed the purpose of the meet. Prof. S. Vancheesan (Head, MSRC), Prof. U.V.Varadaraju and Dr. M. Kottaiswamy welcomed and presented various salient features of Research that is being carried out, Possibilities and the infrastructure and equipment available in MSRC. Participants' doubts were clarified and questions answered. September 2003.
2. Prof.B.Viswanathan: DST PAC meeting on April 25-26, 2003 as member.
3. Dr. U.V.Varada Raju has attended and Chaired a Scientific Session at the First Meeting of Indo-French Laboratory of Solid State Chemistry as a member of a joint committee at the Institute of Condensed Matter Chemistry, University of Bordeaux, France on 03 & 04-12-2003
4. Prof UV.Varadaraju attended Review Meeting of the NIMITLI Project at CLRI and presented the progress. The Evaluation Committee headed by Prof. M.M. Sharma has expressed its appreciation for the excellent progress made in the Project by Prof. U.V.Varadaraju and his group's successful synthesis of environmentally secure rare-earth based pigment compositions under the CSIR-NMITLI project. Formulation of Proposals for the Next Phase on Synthesis of Environmentally Secure Pigment Compositions under the CSIR-NMITLI project has been suggested.
5. Two new controlled atmosphere furnaces for high temperature synthesis have been procured, commissioned and calibrated and are in use.
6. Prof. U.V.Varadaraju has visited Indian Rare Earths Ltd., Udyogamandal Kerala to plan for the supply of rare earth raw materials regarding his project.
7. Prof. U.V. Varadaraju has Co-ordinated a Two day (Jul 4-5, 2003) Lecture and Demonstration on Structural Analysis by Powder X-ray Diffraction by Prof. T.N. Guru Row (Solid State Structural Chemistry Unit, Indian Institute of Science, Bangalore 560 012).  
The response was overwhelming.  
About 130 Research Scholars, Scientists & Faculty from various Educational / Research Institutions in Tamil Nadu have attended.

Lectures were on:

- i. Basics of diffraction, X-ray powder patterns, indexing procedures
- ii. Rietveld refinement methodology
- iii. Structure determination via PXRD in 2 parts

Practicals with Lecture cum Demonstration using the Electronic Class Room of Computer Centre were also supervised and supported by simultaneous use of 20 PC facilities with 60 users simultaneously using the methodology discussed in the Lectures

### 5.3 REGIONAL SOPHISTICATED INSTRUMENTATION CENTRE

#### 5.3.1. Introduction:

Sophisticated Analytical Instrument Facility (SAIF) (formerly made the name of RSIC) established with financial support from the Department of Science and Technology provides sophisticated instrument and equipment facilities to Scientists / Faculties of Educational Institutions, National Laboratories, Industries and IIT Madras.

SAIF also undertakes on specific request, servicing of sophisticated instruments at other institution and also provide training for operation and maintenance.

Periodically SAIF 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.

#### 5.3.2. Academic Programmes :

##### New Courses Introduced :

Sl.No.	Course No.	Title	Faculty
1.	EPR	Special Course on EPR spectroscopy to students in Physics/Chemistry Departments Sept. – Dec. 2003 (Auditing)	Dr.P.T.Manoharan

##### Students on Rolls:

This Centre enrolls the students/scholars for M.Sc., Ph.D., PROGRAMMES. But They are admitted in the respective departments for award of degree. As on 31.3.2004, the following number of students/scholars were with this center:

- M.Sc -1
- Ph.D -8

##### Names of student/Research Officer who attended conference/Seminar/symposia abroad/India:

S.No.	Name of the Student	Name of the Conference/Seminar	Date and venue
<b>Symposia:</b>			
1.	T.Pradeep	5 <sup>th</sup> National Symposium in Chemistry	7-9, Feb. 2003, Chennai
2.	T.Pradeep	Workshop for Chemistry teachers	29-31, Jan 2003, Trivandrum
3.	T.Pradeep	Indo-JSPS symposium on nanomaterials for surfaces and interfaces	Tokyo March 25-27, 2003
4.	T.Pradeep	International Union of Materials Research Societies (IUMRS), International Conference on Advanced Materials	Yokohama, October 9-12, 2003
5.	T.Pradeep	Emerging Directions in Chemical Sciences	Bangalore November 25-28, 2003
6.	T.Pradeep	International Conference on Nanoscience and Technology	Kolkata, December 18-22,2003
7.	T.Pradeep	Solid State Physics Symposium	Gwalior December 26-30, 2003
8.	P.T.Manoharan	Modern Trends in Inorganic Chemistry	Dec. 14-17, 2003 Mumbai
9.	P.T.Manoharan	Third World Academy of Sciences	Oct. 13-18, 2003 Beijing Shangal
10.	P.T.Manoharan	Tamil Nadu Pollution Control Board	Oct. 27, 2003, Chennai
11.	P.T.Manoharan	Bioinorganic Chemistry Workshop	Nov. 3-4, 2003 Trichy
12.	P.T.Manoharan	JNCASR Bangalore Annual Meeting	Nov. 14-15, 2003 Bangalore
13.	P.T.Manoharan	Prof.Yeddenapalli Symposium in Chemistry	Jan 5-7, 2004 Chennai
14.	P.T.Manoharan	Double helix Discovery (Bharathidasan Univ.)	Jan. 19, 2004 Trichy
15.	P.T.Manoharan	DST-SERC Workshop at IGCAR, Kalpakkam.	Feb. 9, 2004 Kalpakkam
16.	P.T.Manoharan	Recent Trends in Science and Technology of Materials at the University of Madras, Guindy Campus	Feb. 27, 2004 Chennai

## 5.3.3. Faculty and their activities:

Faculty :

Name and Qualification	Major area of specialization (only 3 areas)
<b>Professor:</b>	
Prof.S.Sankararaman, B.Sc., M.Sc., Ph.D (HEAD)	Organic Chemistry, synthesis of acetylenic macrocyclic systems and cyclophanes
<b>Associate Professor:</b>	
Dr.T.Pradeep, Ph.D	Chemical Physics, advanced materials, Spectroscopy, Ion Chemistry, Monolayers, Clusters
<b>Assistant Professor:</b>	
T.S.Sampath Kumar, M.Sc. Ph.D	Biometaterials, Surface Sciences, Analytical Instrumentation.
<b>Visiting Faculty:</b>	
Sr. Scientist INSA: P.T.Manoharan FNA, FASc, FTWAS, FWIF	Spectroscopy, Bioinorganic Chemistry
<b>Scientific Officers:</b>	
Dr.M.S.Moni Dr.R.Murugesan Dr.Babu Varghese	NMR Spectroscopy Mass Spectroscopy X-ray crystallography

Short-term courses /Workshops/Seminars/Symposia/Conference /Training attended by the faculty members in Academic institutions and Public Sector undertakings:

Sl.No.	Name of faculty	Title	Institution	Period
<b>Workshop:</b>				
1.	P.T.Manoharan		Tamil Nadu Pollution Control Board	Oct.27, 2003 Chennai
2.	P.T.Manoharan		Bioinorganic Chemistry Workshop	Nov.3-4,2003 Trichy
3.	P.T.Manoharan		DST-SERC Workshop at IGCAR	Feb.9,2004 Kalpakkam
4.	P.T.Manoharan		Recent Trends in Science and Tech. of Materials at the Univ. of Ms. Guindy Campus	Feb 27,2004 Chennai
<b>Conference:</b>				
1.	S.Sankararaman	IKCOC-9, 9 <sup>th</sup> International Kyoto Conference on New Aspects of Organic Chemistry	Kyoto Park Hotel, Kyoto, Japan	Nov 10-14, 2004
2.	T.Pradeep		5 <sup>th</sup> National Symposium in Chemistry	7-9, Feb. 2003, Chennai
3.	T.Pradeep		Workshop for Chemistry teachers	29-31, Jan 2003, Trivandrum
4.	T.Pradeep		Indo-JSPS symposium on nanomaterials for surfaces and interfaces	Tokyo March 25-27, 2003
5.	T.Pradeep		International Union of Materials Research Societies (IUMRS), International Conference on Advanced Materials	Yokohama, October 9-12, 2003
6.	T.Pradeep		Emerging Directions in Chemical Sciences	Bangalore November 25-28, 2003
7.	T.Pradeep		International Conference on Nanoscience and Technology	Kolkata, December 18-22,2003
8.	T.Pradeep		Solid State Physics Symposium	Gwalior December 26-30, 2003
9.	P.T.Manoharan		Modern Trends in Inorganic Chemistry	Dec.14-17, 2003 Mumbai.
10.	P.T.Manoharan		Prof.Yeddenapalli Symposium in Chemistry	Jan.5-7,2004 Chennai
11.	P.T.Manoharan		Double helix Discovery (Bharathidasan Univ)	Jan.19,2004 Trichy

## Special Lectures delivered by the faculty in other Institutions:

Sl.No.	Name of faculty	Topic of Lecture	Venue & Date
1.	P.T.Manoharan	Mechanism of Radical Production in Hemoglobin under Hypoxic condition	S.N.Bose National Centre for Biological Science Kolkata – April 4, 03
2.	P.T.Manoharan	Vitamin B <sub>12</sub> No Interaction	Radiation Biology Branch, NCI/NIH Bethesda, 24, July 2003
3.	P.T.Manoharan	Interaction of Cobalamin (II) and (III) with Nitric Oxide?	Institute of Inorganic Chemistry, University of Fribourg, Fribourg, Switzerland – 28, July 2003
4.	P.T.Manoharan	Does NO interact with Vitamin B <sub>12</sub>	Institute of Inorganic Chemistry, University of Stuttgart, Germany. – 31 <sup>st</sup> July 2003
5.	P.T.Manoharan	Fuel Adulteration studies in Chennai and Suburb.	Tamil Nadu Pollution Control Board, Chennai – 27 <sup>th</sup> Oct. 2003
6.	P.T.Manoharan	Blue Copper Proteins Hemoglobin	Bharathidasan Univ., Trichy – 03 <sup>rd</sup> November 2003
7.	P.T.Manoharan	Hemoglobin	Bharathidasan Univ., Trichy 3 <sup>rd</sup> November 2003
8.	P.T.Manoharan	Chemical Educations – Problems and Perspectives	Professor Yeddanapatti centenary celebration – 5, Jan 2004
9.	P.T.Manoharan	Double Helix – Inagural Address	Bharathidasan University, Trichy – 19, Jan. 2004
10.	P.T.Manoharan	Materials Characterization by spectroscopy	Indira Gandhi Centre for atomic Research, Kalpakkam – 9, Feb. 2004
11.	P.T.Manoharan	Electron paramagnetic Resonance spectroscopy	Annamalai University, Chidambaram 17, Feb. 2004
12.	P.T.Manoharan	Blue Copper Proteins	Annamalai University, Chidambaram, 17, Feb.2004
13.	P.T.Manoharan	Science and Technology of Materials – A recent review	University of Madras 27 <sup>th</sup> Feb 2004
14.	T. Pradeep	Ice chemistry	FCBS workshop for college teachers Trivandrum, January 30, 2003.
15.	T. Pradeep	Monolayers: structure and dynamics and applications	FCBS workshop for college teachers, Trivandrum, January 31, 2003.
16.	T. Pradeep	Reactions of metal nanoparticles	CRSI Micro symposium, IIT Madras, February 8, 2003.
17.	T. Pradeep	Monolayer protected metal clusters: chemical properties	Indo-Japan meeting on surfaces and interfaces for nanophase materials, Tokyo, March 25, 2003.
18.	T. Pradeep	Nanoscience: an introduction,	MES College, Ponnani, 2003
19.	T. Pradeep	Metal nanoparticles: chemistry, novel materials and sensors	National Aerospace Laboratories, June 27, 2003
20.	T. Pradeep	An overview of analytical instrumentation	A.C. College of Technology Madras, Workshop on Instrumentation in Textile Technology, July 4, 2003.
21.	T. Pradeep	Analytical applications of spectroscopy	Workshop on Instrumentation in Textile Technology, July 5, 2003
22.	T. Pradeep	The nano world: a chemist's perspective	National Institute of Technology, Calicut, July 25, 2003.
23.	T. Pradeep	Reactions of nanometals: sensors and novel materials & Functionalized fluorescent nanobubbles	International Union of Materials Research Societies (IUMRS), Yokohama, October 12, 2003.
24.	T. Pradeep	Advanced materials science without advanced tools: the Indian experience	International Union of Materials Research Societies (IUMRS), Yokohama, October 9, 2003
25.	T. Pradeep	Metal clusters: monolayer dynamics and chemical reactions,	Darmstadt University, Department of Materials Science, November 20, 2003.
26.	T. Pradeep	Nano: where science is size dependent,	NSS College, Ottapalam, December 2, 2003
27.	T. Pradeep	Capped metal clusters in the gas phase, International Conference on Nanoscience and Technology	International conference on Nanoscience and Technology, Kolkata, December 20, 2003
28.	T. Pradeep	Dynamics of monolayers on metal nanoparticles	Solid State Physics Symposium, Gwalior, December 27, 2003
29.	T. Pradeep	Analytical applications of spectroscopy	Eureka Forbes, Bangalore, February 5, 2004.

**Visits abroad by faculty:**

Sl.No.	Name of faculty	Country Visited	Date	Purpose of visit
1.	S.Sankararaman	Germany	July-Aug 2003	Collaborative research
2.	P.T.Manoharan	Switzerland Germany, USA	June 2003	To give lectures and to do collaborative research
3.	P.T.Manoharan	China	Oct 13-18 2003	To attend the TWAS meeting
4.	T.Pradeep	Japan	March 25-31	Indo-JSPS Meeting Measurement at ILL, Grenoble
5.	T.Pradeep	Japan	October 8-13	IUMRS meeting
6.	T.Pradeep	France, Germany	November 11-21	IUMRS meeting Measurement at ILL, Grenoble

**Honours and Awards obtained:**

S.No.	Name of Faculty	Name of Award/Honour	Awarded by	Awarded for	Date
1.	Dr.P.T.Manoharan	Balaiah Memorial Lectur Award	Annamalai University, Chidambaram	Atribute to Prof.Balaiah's, Memory	17.02.2004
2.	T. Pradeep	Young Scientist Award	Chemical Research Society of India		

**Books, Monographs, Journal authored or co-authored:**

S.No.	Name of faculty	Title	Publisher	Author/Co-author
<b>(i) Books:</b>				
1.	T.Pradeep	Advances in Physical Chemistry	Allied, New Delhi	Editor
2.	T.Pradeep	Catalysis: Principles and Applications	Narosa, New Delhi	Author of a chapter

**Fellowships of Academies and Professional Societies:**

S.No.	Name of faculty	Title	Level	Year of Admission
1)	Dr.S.Sankararaman		Humboldt Fellowship 1998	
2)	P.T.Manoharan	i) Indian Academy of Sciences	F.A.Sc	1982
		ii) Third World Academy of Sciences	F.N.A.	1985
		iii) Indian Academy of Sciences	FTWAS	2002
		vi) World Innovation Foundation	FWIF	2002
		vii) Chemical Research Society of India	Treasurer vice president	1999-2002 2002-

**5.3.4. Design and Development Activities: NIL****Brief and specific details of Process/Instruments/Equipment/ Software designed and developed :**

The following two instruments are being refurbished and brought to full life.

- i) Varian E-112 X-Q band EPR spectrometers
- ii) Canberra Mossbauer Spectrometer

Developed a low temperature IR spectrometer with coupled mass spectrometer

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

Sl.No.	Name of Equipment	Amount (in lakhs)
1.	FT-IR spectrometer	10.00
2.	UV-VIS spectrometer	10.00
3.	MALDI spectrometer	84.00

## Patents filled:

One Indian patent filed (a method of preparing purified water from water containing pesticides (chlorpyrifos and malathion) and purified water prepared by the same method"

## 5.3.5. Research and Consultancy:

## Sponsored Research Projects:

Sl. No	Title	Period	Funding Agency	Amount (Rs. in lakhs)	Co-ordinators
1.	Novel Cyclophanes with Acetylenic Bridges. Synthesis, Structure and Reactivity Studies	3 years (1999-2004)	Volkswagen Stiftung, Germany	Euro: 72,100	Prof.Dr.Henning Hopf University of Braunschweig, Germany
2.	Cyclophanes with Novel Molecular Architectures: Investigation of Host-Guest Chemistry and Photochemistry	3 Years (2000-2003)	CSIR, New Delhi	10.50	Dr.S.Sankararaman
3.	Synthesis, structure and reactivity studies on shape persistent macrocyclic silacyclines.	3 years (2003-2006)	Defence Research and Development Organization (DRDO), New Delhi, INDIA	20.16	Dr.S.Sankararaman
4.	Multispectroscopic approach to Biological and Inorganic Materials	2002-5	DST Govt. of India	15.00	Prof.P.T.Manoharan and Dr.T.Pradeep
5.	Nanosopic optical limiters	2002-2005	MIT	29.50	Dr. T. Pradeep
6.	Nanoscience and nanotechnology....	2003-2006	DST	108.00	Prof. K. Prasad Rao and Dr. T. Pradeep
7.	Molecular and ionic chemistry at ice surfaces	2003-2008	DST	100.50	Dr. T. Pradeep
8.	Fundamental studies on thermal conductivity of nanofluids	2003-2006	DRDO	19.00	With Dr. Sarit Kumar Das
9.	Thermal and electrical conductivity of nanofluids	2003-2006	DST	9.00	With Dr. Sarit Kumar Das
10.	Dynamics of aminoacids in ices	2003-2006	CSIR	3.30	Dr. T. Pradeep

## Industrial Consultancy projects:

Sl.No	Name of the Faculty	Title	Industry	Amount (in Rs. In lacs)
1.	T.Pradeep	A method of determining the carboxylation content in butyl rubber	Lakshmi Machine Tools, Coimbatore	20,000

Dr.P.T.Manoharan – Educational Consultancy to some local Institutions.

## Journal Editorial Boards:

Sl.No	Name of Faculty	Chairman/Member	Journal
1.	Dr.T.Pradeep	Editor	Asian J. of Spectroscopy
2.	Dr.T.Pradeep	Member of Advisory Board	Oriental Journal of Chemistry

## Research Publications:

No. of papers published in Refereed National Journals	..	5
No. of papers published in Refereed International Journals	..	33
No. of papers presented in International conferences	..	3

### In Refereed National Journals:

- 1 Ciprofloxacin@SiO<sub>2</sub>: fluorescent nanobubbles, M. J. Rosemary, V. Suryanarayanan, P. Ganapati Reddy, Ian MacLaren, S. Baskaran and T. Pradeep, Proc. Indian Acad. Sci. Chem. Sci., Prof. C. N. R. Rao Special Issue, 115 (2003) 703-709.
- 2 Halocarbon mineralization by metal nanoparticles, A. Sreekumaran Nair and T. Pradeep, Current Science, 84 (2003) 1560-1564.
- 3 Magnetic and spectroscopic studies of a soft ferromagnet: ferricenium tetrabromoferrate(III), [Fe(C<sub>5</sub>H<sub>5</sub>)<sub>2</sub>]<sup>+</sup>[FeBr<sub>4</sub>]<sup>-</sup>, K. Padmakumar, T. Pradeep, K.K. Singh, D.E. Morris, J. Ensling, P. Güttlich and P.T. Manoharan, Indian J. Chem., Special issue, 42A (2003) 2359-2370.
- 4 Crystal growth and characterization of thiourea cobalt sulphate single crystal. Dr.R.Murugesan – Indian JL of Physics, V42, 2003
- 5 A study on morphology and composition of human gallstones in South India. Dr. Murugesan – Trop-Gastroenterol, 2003 April-June 22, No.2

### In Refereed International Journals:

1. Synthesis of Buta-1,3-diyne Bridged Macrocycles with (Z)-1,4-Diethynyl-1,4-dimethoxycyclohexa-2,5-diene as the building block M. Srinivasan, S. Sankararaman, H. Hopf, B. Varghese *Eur. J. Org. Chem.*, 660-665, (2003)
2. Synthesis of Differentially Protected / Functionalised Acetylenic Building Blocks from p-Benzoquinone and Their Use in the Synthesis of New Enediynes. S. Sankararaman, M. Srinivasan *Org. Biomol. Chem.*, 1, 2388 – 2392 (2003) (formerly Perkin Transactions 1 and 2, Royal Society of Chemistry, London)
3. Vitlay K.Koltover, Vyacheslav P.Buvnow, Yakov S.Estrin, Vera P.Lodygina, Roman M.Davydov, Mahadevan Subramoni and Perakaruppan T.Manoharan, Spin Transfer Complexes of Endohedral Metallofullerenes: ENDOR and NMR evidences, *Phys. Chem. Chem. Phys.* 5,2774-2777(2003)
4. Tapan K.Kundu, G.V.R.Chandramouli and P.T.Manoharan, Magneto-structure Correlation in di-μBridged Dicopper Complexes – Predictability of Isotropic Exchange coupling Constant from Structure, *Aus. Chem.*(2003) 1239-1248.
5. B.Venkatesh, S.Ramasamy, R.Asokan, J.M.Rifkind and P.T.Manoharan, PH Influenced Metal Ion Coordination Changes in Reconstituted Hemoglobin, *Journal of Porphyrins and Pthalocyanains* 7, 637-644 (2003)
6. Rifkind, J.M., Ramasamy, S., Manoharan, P.T., Nagababu, E., Mohanty, J.G., Redox reactions of hemoglobin. *Antioxidant & Redox Signaling* (2004) in press.
7. V.Swarnalatha and P.T.Manoharan, Conformational Changes Monitored by Fluorescence Study on Reconstituted Hemoglobins, *Spectrochimica Acta Part A*, (2004) in press.
8. M.Rajesh, N.Sulochana, S.Ramakrishnan, J.Biswas and P.T.Manoharan, Iron Chelation Abrogates Excessive Formation of Hydroxyl Radicals and Lipid Peroxidation Products in Monocytes of Patients with Eale's Disease in Vitro:Direct Evidence Using Electron Spin Resonance Spectroscopy, *Current Eye Research* (2004) in press.
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2. 1,3,6,8-Tetraethynylpyrene – A new building block for pyrene based highly fluorescent benzocyclynes and benzodehydroannulenes G. Venkataramanan and S. Sankararaman Poster presented in IKCOC-9, 9<sup>th</sup> International Kyoto Conference, Kyoto, Japan, November 10-14, 2003. Abstract PB-103
3. Capped clusters in gas phase, Proceedings of the International Conference on Nanoscience and Technology, Kolakata, December 2003, to appear in J. Nanoscience.

**Distinguished Visitors to the Centre:**

Sl.No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1.	Prof.Wolfgang Kaim from Germany	January 2004	To interact with Prof.P.T.Manoharan on collaborative research + give lectures
2.	Professor Andrew Thomson FRS from the UK	January 2004	

**5.3.6 Other Activities:**

P.T.Manoharan  
 Chairman, Research Committee, RRL/Trivandrum  
 Chairman, UGC Committee to BITS – Pilani/J.N.U.Delhi

## 5.4 CENTRE FOR SYSTEMS AND DEVICES

The Centre for Systems and Devices carries out research and development work on areas of interest to Defence Research and Development Organization .The centre has focused its R and D activities in the following areas:

- a) Applied Electromagnetics and Antenna Engineering
- b) Semiconductor Devices
- c) Signal Processing Techniques

The centre has established leadership in R and D activities on the above areas over the past several years. DRDO is in a position to make full use of the expertise available in the centre which is of relevance to their programs .The is close interaction between the DRDO Laboratories and the concerned research group in CSD on the R and D program undertaken by the centre with funding from DRDO. There is frequent visit of scientists of DRDO to the concerned laboratory in CSD for this purpose. Some of the R and D activities of the centre relate to programs of national importance pursued by DRDO. Further, a number of students also work in the laboratories of the centre towards their B.Tech ,M.Tech, M.S. and Ph.D projects. The centre receives recurring grants annually from DRDO for the up keep of CSD laboratory facilities in addition to project grants received from DRDO from time to time.

During the year under review (2003-2004) the following R and D activities of the centre could be highlighted:

### **DESIGN OF A WIDE BAND RECEIVING ANTENNA IN THE 1.5 MHZ TO 30 MHZ BAND**

Decoding the messages from signals transmitted by the enemy across the boarder is an important operational requirement for the defence forces. For this purpose there was a need to design an ultra wideband HF antenna in the frequency band of 1.5Mhz to 30 Mhz subject to constraints such as physical dimensions and weight . Conventional antenna design methods do not yield the desired ultra wide band of operation . Innovative methods employing modern methods of computational electromagnetics were used to design an ultra wide band HF antenna to meet the specifications of the user and the resulting design data was supplied to DRDO on completion of this job .

### **DESIGN OF AN INDOOR NEAR FIELD MEASUREMENT RANGE TOWARDS SIMULATION OF RARAR TARGET RETURN SIGNALS**

Simulation of radar target return signals using a hardware which can be housed in a laboratory environment helps efficient testing of radar receiving system periodically without deploying the radar receiving system to the actual field of operation . A hardware set up which can generate the simulated radar target return signals was designed to meet the requirements of DRDO. The set up has a provision to simulate most of the parameters of the radar range encountered in a battle field environment such as target cross section, PRF, range length , speed of the target(applicable to air borne targets)and transmitted power. The design data was supplied to DRDO on completion of this job.

## 6.1 CENTRE FOR CONTINUING EDUCATION

### 6.1.1 Introduction:

The Centre for Continuing Education (CCE) at IIT, Madras was established in June 1986 by merging together the different units connected with Quality Improvement Programme (QIP), Continuing Education Programmes (CEP-STC) and Curriculum Development Cell (CDC) activities of the Institute. Since then, the activities of the centre expanded bringing into its fold, the activities of Early Faculty Induction Programme (EFIP) and Production of Computer Aided Learning Material.

### 6.1.2 Quality Improvement Programme (QIP) :

The QIP was formulated by the All India Council for Technical Education (AICTE) with the prime objective of upgrading the expertise of the faculty members of AICTE approved degree level engineering institutions in the country through improvement of their qualifications. Since inception, 328 faculty members from other institutions have obtained Ph.D Degrees and 477 faculty members M.Tech degrees under this programme.

Following are the data on Quality Improvement Programme (QIP) for the year 2003-04:

Programme	Number Admitted	Number on Roll	Degrees Awarded
M.Tech	34	59	28
Ph.D	21	64	14

### 6.1.3 Short Term Training Programmes (STTP) under QIP:

Under QIP STTPs, 5 courses were held in 2003-04 and 159 teachers of Engineering Institutions as well as a few professionals from industries / R & D organisations have participated in these programmes.

From 1970-71 to 2003-04, 206 STTPs were held and 4815 teachers from various engineering colleges participated and got benefited from these courses.

### 6.1.4 Curriculum Development Cell activities (CDC):

Curriculum Development Cell (CD Cell) caters to the needs of all Departments. The course materials in the form of modules are developed. On request, these materials will be sent to various engineering college.

### 6.1.5 Book Writing Scheme (BWS):

This scheme is designed to encourage text book writing by teachers. During the year 2003-04, 7 faculty members have come forward to write book under this scheme. Two books have been published during the year. 36 books have so far been published under this scheme.

### 6.1.6 Early Faculty Induction Programme (EFIP):

The quality of technical education basically depends on the quality of teachers. Adequately qualified, highly competent and motivated faculty is becoming scarce in technical institutions all over the country. AICTE is giving a high priority to attract bright young persons to teaching profession by launching Early Faculty Induction Programme (EFIP).

Centre for Continuing Education assists AICTE in the selection process of the candidates for the scheme and also coordinate the programme. Under, EFIP – 2003, total applications received were 2532 and finally selected candidates were 192 across the country.

### 6.1.7 Continuing Education Programme (CEP-STC):

Our Institute faculty members organize several Short Term Courses (STC) under Continuing Education Programme for the professionals from industry and R & D establishments on need-basis. From the date of inception, i.e., between 1980 and 2003-04, 491 STCs were conducted benefiting 10659 participants. About 25 to 30 such programmes are organised every year. During the year under review, 28 Short Term Courses have been conducted and 903 participants attended these programmes.

### 6.1.8 Educational Consultancy Programmes (ECP):

Educational Consultancy Programmes (ECP) are offered to a specific industry or institution and it is a tailor-made programme to suit their requirements. The course content and the syllabus are drawn in consultation with the industry and offered either in IIT Campus or at a location suggested by the sponsors. From the date of inception i.e., between 1997-98 and 2003-04, 86 training programmes were held and during the year under review, 14 such programmes have been taken up. Between 1997 and 2003-04, 1489 participants attended these courses. During the year 2003-04 there were 311 participants for the ECP course.

### 6.1.9 Short Term Training Programmes under ISTE:

One STTP has been conducted during 2003-04 with 10 participants benefiting out of the programme.

### 6.1.10 Other Activities:

#### Web Based Courses:

A meeting of all faculty members interested in web based content creation for their courses was held in the month of May 2003 and the manpower, hardware and software requirements were identified.

The web studio moved to its present location on the Third floor of IC & SR in January 2004. The studio also expanded to accommodate project requirements of the National Programme on Technology enhanced Learning funded by MHRD. With the financial and human resource support given by the Institute under the web courses project, about 50 courses have been prepared with 20 or more lectures or modules amounting to two thirds of a course. About 100 more courses are in various stages of preparation. The software Acadc and WebCT whose licenses were renewed for one more year continue to offer the e-learning platform for the faculty and students.

#### NPTEL:

The Ministry released the first installment of funding in May 2003 which has enabled the Institute to order the equipment for video recording of lectures under this programme. The process had to be carried out jointly with all IITs and IISc ordering the equipment from the same vendor and took some time to materialize.

Two workshops were conducted under the NPTEL in the months of August 2003 and January 2004. The processes of identifying all the courses and all coordinators have been completed and the faculty have started the activity from this year. Adobe acrobat was obtained with large licenses under this programme and has been distributed to all the interested faculty. A documentation plan detailing the progress and the monitoring of the project has been distributed to all faculty participating in this project. An NPTEL coordinators meeting held in IIT Kharagpur in Aug 2003 authorized the Web Studio of IIT Madras to provide the necessary software and training to all project associates hired by various IITs under this project. Two associates from IIT Guwahati were given initial training by the studio for two weeks and have re-joined IIT Guwahati. More such programmes and workshops for faculty are likely to follow.

### 6.1.11 Educational Technology Cell:

Educational Technology Cell was established by the Ministry of Human Resources Development in 1989 with the main objective of making available the valuable expertise and experience of the faculty in IIT Madras to the students of Engineering colleges and scientists of R&D departments / Industries through programmes / lessons produced at ETC.

#### Total hours of shooting - 403 hrs:

- Semester Lecture Courses - 125 hrs
- Laboratory Shoots - 114 hrs
- Non-linear editing - 80 hrs
- LCD Projection - 84 hrs

#### Video recording of semester lecture courses:

##### Completed:

- "Digital VLSI Design" by Prof. S.Srinivasan, Department of Electrical Engineering. (27 Lectures)
- "Quantum Chemistry and Group Theory" by Dr.K.Mangal Sunder, Department of Chemistry. (27 Lectures)
- "Advanced Finite Element Analysis" by Prof.R.Krishna Kumar, Department of Mechanical Engineering. (28 Lectures)
- "Fuzzy Sets and Logic" by Prof.P.Veeramani, Department of Mathematics. (40 Lectures Completed)
- "Material Science and Technology" by Prof.R.Krishna kumar (22 Lectures) and Prof. Krishnan Balasubramanian (23 Lectures), Dept. of Mechanical Engg.
- "Fundamentals and Operational Research" by Dr.G.Srinivasan, Humanities and Social Sciences (22 Lectures)

##### Ongoing:

- "Digital circuits and Digital Systems" by Prof.S.Srinivasan, Department of Electrical Engineering. (29 Lectures)

**Coverage of institute functions, workshops etc.:**

- 40<sup>th</sup> Convocation
- " International Workshop on Physics Semiconductor Devices"
- 12<sup>th</sup> International Faculty conference by Prof. K. R. Rajagopal, Texas A & M University, Forsyth Chair, Dept. of Mechanical Engg.
- SHAASTRA
- "Training program on MALDI MS"
- Extramural lecture by Sri. Rammohan Rao, Governor of Tamilnadu

**Awareness Programme:**

An hour of awareness meet for NPTEL participants was conducted, wherein 35 faculty members participated. The participants were given the guideline for recording video lectures.

**Sale of Educational Programmes:**

About 600 hours of video material has been sold to various colleges and R & D establishments at a subsidized rate, fetching an amount of Rs.1,81,460/- .

**Cell Upgradation:**

- Enhanced Multimedia and Graphics Lab for 3 D Animations, Presentations and Web applications.
- Video programs can be viewed over any PC available inside the campus after successful installation of video streaming equipment.

## 6.2. CENTRE FOR 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 organized for the benefit of the industries and the Institute. 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 as well as materials.

Some of the major activities that the Centre is involved are:

- Sponsored Research programmes
- Plan Schemes
- Technology Development Mission Schemes
- Consultancy programmes: Project / research based/ retainer / institutional
- Collaborative projects with foreign countries
- Industrial Associateship Scheme
- ISRO-IITM Space Technology Cell joint projects
- IGCAR-IITM Cell joint projects
- Patents and Technology Transfers

Dean: Prof. V. Kalyanaraman

<b>Staff:</b> Dr. D. Balakrishnan Sri R. Sundaram Sri V. Suresh Sri B. Ramaswamy Sri G. Ravichandran	Chief Techno Economic Officer Senior Techno Economic Officer Senior Techno Economic Officer Assistant Registrar (Project Purchase) Assistant Registrar (F&A)
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### 6.2.2 Sponsored Research:

#### A. National Projects:

103 projects of value totaling to Rs.2,471.79 lakhs were taken up by the Institute during 2003-2004 as given below

Sl. No.	Sponsoring Agency	No. of Projects	Sanctioned Value (Rs. in lakhs)
1	Armament Research Board	1	14.83
2	Aeronautics Res & Dev Board	1	9.68
3	Banyan Networks	1	24.00
4	Board of Res in Nuclear Sciences	1	154.38
5	Department of Coal	1	15.06
6	Council of Scientific & Indl Research	4	46.12
7	Combat Vehicle Res & Dev Est	1	4.98
8	Department of Biotechnology	3	38.83
9	DFG, Germany	1	32.14
10	DRDO	9	188.46
11	DSIR	1	4.50
12	Dept of Science & Technology	16	403.12
13	European Commission	1	30.19
14	GE India Technology Centre P Ltd	1	13.50
15	INCH	1	17.88
16	Intel Technology India Ltd	2	52.40
17	Integrated Softech Solutions P Ltd	1	3.00
18	ISRO	4	185.09
19	Midas Communication Technology	1	60.00
20	M H R D	38	540.50
21	Microsoft Corporation	1	14.13
22	Ministry of Information Technology	2	111.20
23	Min of Nonconventional Energy Sources	5	106.21
24	National Institute of Ocean Technology	1	4.49
25	N P S M	1	259.60
26	Naval Research Board	1	29.69
27	RCI, Hyderabad	1	14.79
28	SIDA	1	14.79
29	Additional Grant received for various projects	-	68.42
	<b>Total</b>	<b>103</b>	<b>2471.79</b>

**B. International Collaborative Projects:** 4 (Value: Rs.91.25 lakhs)

**C. Industry Sponsored Projects:** 6 (Value: Rs.152.90 lakhs)

### 6.2.3 Plan Schemes:

Plan Schemes were sanctioned to this Institute by the Ministry of Human Resource Development as follows: 19 projects under Thrust area, Modernisation and Removal of Obsolescence and Research & Development schemes for a total value of Rs.267 lakhs.

### 6.2.4 Consultancy Programmes:

735 Consultancy assignments of value totaling to Rs.557.94 lakhs, 37 Research Based Industrial Consultancy for a total value of Rs.301.66 lakhs were taken up during 2003-2004. Also 11 faculty were retained as consultants by various industries for a total fee of Rs. 15.49 lakhs. Total value for all consultancy assignments during the period was Rs.859.60 lakhs.

### 6.2.5 New Faculty Scheme:

35 proposals were supported by the Institute for funding under the New Faculty Research Scheme for a total sum of Rs.138.09 lakhs.

### 6.2.6 Industrial Associateship Scheme:

244 Industries are members of this Scheme (Large scale 26, Medium scale 117 and Small Scale 101).

The following six Technology Appreciation Programmes were organized during the period under report:

1. Orientation towards Mathematical Treatment of Metal Forming
2. Awareness to SoC Design and Verification
3. Strategy Formulation in Competitive Scenario
4. Overview of Wireless Technologies - GSM, cdma2000, corDECT
5. Polymers in the 21<sup>st</sup> Century
6. Failure Analysis - Principles and Applications

### 6.2.7 Other Programmes:

#### ISRO-IITM Space Technology Cell joint projects:

This is an on-going activity sponsored by the ISRO where research projects of interest to ISRO are being carried out by faculty of IIT Madras. 19 on-going projects totaling to a value of Rs.220.72 lakhs were continued and 3 new projects for a value of Rs 25.24 lakhs were taken up during the year 2003-2004. During the year, the Joint Policy Committee of the ISRO-IITM Space Technology Cell met on 29<sup>th</sup> August, 2003 and 16<sup>th</sup> February, 2004 to review the projects under the cell.

#### IGCAR-IITM Cell:

Three on-going projects were continued during 2003-2004.

### 6.2.8 Distinguished Visitors to the Centre:

The following visited the Institute during the year 2003-04:

- Dr David Johnston, President, Univ of Waterloo and Dr Ravi Seethapathy, President of Indo-Canadian Chamber of Commerce, Toronto (27/3/2003)
- Dr Sridhar Subramanyam, General Motors (R & D), USA & Dr B-G Prakash, GM's India Science Laboratory, Bangalore (29 &30/4/2003)
- Vice-President-Technology, Cookson Electronics Assembly Materials (CEAM), USA (20/6/2003)
- Team led by Prof Abu Hassan Othman, Vice-Chancellor, University of Malaysia, Sabah (4/8/2003)
- Dr Robert (Bob) Cross, Director, Edith Cowan Univ., Perth Western Australia (3/9/2003)
- Mr Marian Schuegraf, Science Counsellor of the German Embassy (15/9/2003)
- 11-Member Malaysian Delegation led by Prof Ismail Bin Hj Bakar (16/9/2003)
- 4-member delegation led by Prof Buchkremer Hermann-Josef, Rector from UAS Aachen, Germany (24/9/2003)
- Mr F Currimjee, President, Board of Governors and Prof P S Coupe, Director General, University Technology, Mauritius (26/9/2003)
- Mr Tarun Vijay, Editor, Panchjanya (1/10/2003)
- Representatives from General Motors India (P) Ltd., Bangalore (12/11/2003)



- Dr E Screiber, Rector, Dr F Lehmann, Vice-Rector, Dr H Jansen, Director, Indian Liaison Office, Hochschule Bremen (26/11/2003)
- Dr Seeram Ramakrishna, Dean and Professor, Faculty of Engg, National University of Singapore (19/12/2003)
- Dr Ashok Nayak, Alcoa (16/2/2004)
- Prof S K Shou, Vice-Dean-Engg & 2 others, National Univ of Singapore (24/3/2004)
- Mr U Podewils, Director, DAAD(German Academic Exchange Service) Regional Office, New Delhi (25/3/2004)

#### 6.2.9 MoUs/ Agreements signed:

21 new MoUs / Agreements have been signed by IIT Madras with the following 17 organizations / Institutions during 2003-04:

1. Midas Communication Technology Pvt Ltd, Chennai and Electronics Corporation of India Ltd, Hyderabad
2. GTRE, DRDO, Bangalore
3. Electro Optical Instruments Research Academy (ELOIRA), Hyderabad
4. Sundaram Medical Foundation, Chennai
5. Banyan Networks Ltd, Chennai
6. India Pistons Ltd, Chennai
7. Intel Technology India Pvt Ltd, Bangalore
8. Malladi Drugs & Pharmaceuticals Ltd
9. ISP Management Company, Inc, New Jersey, USA
10. Oil & Natural Gas Commission Ltd, New Delhi
11. Object Oriented Programming Services P Ltd (OOPS), Chennai
12. Honeywell Technology Solutions Lab Pvt Ltd, Bangalore
13. Intel Technology India Pvt Ltd, Bangalore
14. General Motors Corporation, USA
15. Vortex Engineering Private Ltd, Chennai
16. Neurosynaptic Communications Pvt Ltd, Bangalore
17. Texas Instruments (India) Pvt Ltd, Bangalore.

#### 6.2.10 Patents:

Details of patent applications filed during the year are given below:

Sl. No.	Title of the Invention	Inventor(s)	Department	Date of filing the application
1	A divided cell for the Electrolysis of water	Dr R P Viswanath	Chemistry	31.7.2003
2	A process for the preparation of calcium phosphak from egg shell waste	Dr T S Sampath Kumar Prof S K Seshadri	Met & Mat Engg	4.8.2003
3	A broad-band internet connectivity system	Prof Ashok Jhunjunwala Dr Bhaskar Ramamurthi	Electrical Engg	18.9.2003
4	Halocarbon mineralization by nanoparticles	Dr T Pradeep	SAIF	6.10.2003
5	A process for the manufacture of an inorganic - organic membrane for use, interalia, in fuel cells, lithium batteries & electrochemical displays	Prof B Viswanathan Prof T K Varadarajan	Chemistry	19.1.2004
6	A process for the manufacture of a bromate ion sensitive electrode & electrode manufactured by the said process	Prof B Viswanathan Prof T K Varadarajan	Chemistry	19.1.2004

Three patents were granted during the year 2003-04.

#### 6.2.11 Publications:

- a) Publication of the quarterly titled "IIT Madras News" was continued.
- b) The publication titled "NEWSTECH" was continued for the benefit of the Industrial Associate Members.

**6.2.12 Summer Assistantship Scheme:**

Under the Summer Assistantship Scheme 31 numbers of 3<sup>rd</sup> year B.Tech./B.E. students of other Engineering Colleges were supported during the year to work on projects of faculty of IIT Madras.

**6.2.13 Industrial Lectures:**

The Industrial Lecture Programmes for the VI Semester B.Tech. students, conducted by Engineering Departments, were supported during the year.

**6.2.14 Other information:**

1. Three Programmes on "Intellectual Property Rights and Related Issues" were organized on 20<sup>th</sup> September 2003, 18<sup>th</sup> October 2003 & 22<sup>nd</sup> November 2003.
2. Technology Day was celebrated on 9<sup>th</sup> May, 2003. Prof M Ravindran, Director, NIOT, was the Chief Guest on the occasion.
3. Engineers Day was celebrated on 15<sup>th</sup> September, 2003. Dr K A Padmanabhan, Vice-Chancellor, Asia International Institute, Hyderabad, was the Chief Guest.
4. A meeting with the NGOs, for understanding interaction for Socially Relevant Projects, was held on 17<sup>th</sup> January, 2004.

## 6.3 CENTRAL ELECTRONICS CENTRE

### 6.3.1 Introduction:

The Central Electronics Centre (CEC) was established in 1971 within IITM with the main objective of servicing and maintaining the wide variety of sophisticated electronic equipment. The need for training service engineers for maintaining the electronic equipment was felt and an 18-month training program, the first of its kind, in the country was started in the same year. Since then, conducting such Training Program has become one of the important activities of the Centre. The significant advantage, this Centre has over the other similar organizations is the mixed environment, i.e a blend of academic environment and industry-type working atmosphere.

The Centre is housed in a dust-free environment of about 500m<sup>2</sup>. The infrastructural and equipment facilities have been adequately strengthened over the years by successive collaborative Indo-German Projects. The Centre has a team of qualified, experienced and talented staff members, trained in Germany in various fields of electronic instrumentation.

The Centre has continuously enlarged and diversified its activities and now it offers the following services:

- Servicing and Maintenance of Electronic Equipment
- Training Programs for Manpower Development
- Calibration of Electronic Test & Measuring Instruments
- Testing of Electronic Products
- Development of Custom built Equipment
- Consultancy Services to industries in the above areas.

In the area of Renewable Energy too, this Centre has been playing a key role by conducting several Training programmes in the area of Solar Photo Voltaics (SPV).

In the recent years, 40 programs have been conducted and more than 860 personnel were trained. The project is sponsored by IREDA (Indian Renewable Energy Development Agency), New Delhi. SPV Laboratory (indoor and outdoor) facilities have been established and Solar Photo Voltaic Park has been developed to promote the developmental activities in this area.

During the past four years, four batches of special 12 weeks Training Programs of unique in nature, have been organized to retrain the Radio Officers of Merchant Navy to become Electro-Technical Officers. The project is sponsored by AMET (Academy of Maritime Education and Training), Chennai.

This Centre has lent its expertise in the above areas to more than 220 industries and other organizations in and outside the country.

In 2001, this Centre received ISO 9001:2000 Quality Certification from RWTÜV, Germany for establishing its Quality Systems.

The Centre established Quality System for its Calibration and Testing Laboratories in accordance with ISO/IEC 17025 Guidelines and awaiting NABL Accreditation.

### 6.3.2 Activities:

#### Training Programmes:

#### Long Term CEC Training programme:

XVIII CEC Training Program of Two years duration commenced on 22nd October 2002. XIX CEC Training Program commenced on 3<sup>rd</sup> November 2003. The total number of candidates attending these programmes are twenty three.

#### Following Laboratories have been equipped with new additional facilities:

- |                         |                           |
|-------------------------|---------------------------|
| 1. Servicing Laboratory | 3. Calibration Laboratory |
| 2. Training Laboratory  | 4. Testing Laboratory     |

#### List of Major Equipments procured:

- |                      |                           |
|----------------------|---------------------------|
| 1. 6 ½ Digit DMM     | 5. Lux Meter              |
| 2. Oscilloscopes     | 6. Earth resistance Meter |
| 3. Clamp on Meters   | 7. UPS                    |
| 4. Sound Level Meter |                           |

**Some of the important Consultancy Projects handled:**

Sl. No	Co-ordinator	Title of Project	Organisation	No of Assign.	Project value (Rs. in lacs)
1.	Dr.M.Kumaravel	Digital Storage Oscilloscopes	Ordnance Factory, Medak (A.P)	2	0.86
		Charge Controllers	Ford India Ltd, Chennai	12	1.85
		EG & G Potentiostat	SPIC Science Foundation, Chennai	1	0.03
		MGC Boards, BP Monitor	Kodytech Ltd, Chennai	1	1.55
		Controlllers & Monitor	SPIC Electronics Ltd, Chennai	3	0.45
		UPS	LIC India, Chennai	2	0.18
		Alco Sensors	Indian Airlines, Chennai	5	0.28
		Improvement of Pulsar	Milton Roy, Chennai	1	1.47

As invited by Ministry of Non Conventional Energy Sources (MNES), Dr.M.Kumaravel served as Resource Person and Expert Member in the National Workshop on "Specifications of Photo Voltaic Systems" during 28.11.03 and 29.11.03 at Hyderabad. The workshop was organized by NEDCAP (Non Conventional Energy Development Corporation of Andhra Pradesh) and MNES.

**Ongoing Development Activities:**

- (i) Pedel driven generator powered energy efficient Lighting Systems for rural applications
- (ii) PV Powered LED Lighting Systems for different applications.
- (iii) PV Powered Reverse Osmosis System for brackish water.

**Staff Strength:**

The Centre has 10 Technical and 4 Administrative 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 microcomputers and PCs to support research and development in various areas. Applications for the Institute are also supported. The Siemens system was replaced by a client-server environment with effect from November 1995. For about six years from 1995, IBM RS 6000 models 590 and 370, a cluster of servers on a high-speed network, provided a distributed computing platform for research and development. The computing facility was enhanced with HP high end server cluster and a file server under ICOSER scheme and IBM S-390, a gift from IBM. In December 2001 a 64 processor SGI 3800 compute server with the software MSC Product (DYTRAN, MENTAT, NASTRAN AND PATRAN), ACCELRYLS, STARD CD, ABAQUS, FLUENT and MAT LAB, was installed in Computer Centre and this High performance machine has been catering to the computational requirements of the research and development community of the Institute extensively for over two years.

Recently, there is a move to make the Computer Centre a High Performance Computing Environment. In this direction, a 64-processor IBM p690<sup>+</sup> has been procured by the Institute. 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. This is expected to provide new and exciting opportunities for computing to students and faculty apart from rendering the Centre as one of the most modern among its peer academic institutes in the country/continent.

Computer Centre also provides Campus network connecting all the departments and Internet facility. The current Campus network is an ATM based High-speed backbone. Presently, the internet facility is provided by a dedicated 2 Mbps BSNL link for Internet connectivity besides the VSNL 64Kbps radio link. 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. This network has been extended to cover the hostel sector. A 34 Mbps fibre link to BSNL exchange at IIT Madras for future Internet access requirement has been commissioned.

The ATM based backbone network connecting all the buildings has been implemented by Computer Centre. Mostly, the existing conduits laid for running the Siemens systems cables have been used for installation of the fibre optic cable. The three nodal points for the backbone are Computer Centre, Environmental and Water Resources Engg. Lab and RSIC. The ATM small switches are placed in R & AC, MES and Administration building. The edge devices are placed in optimal locations in each one of the buildings, so that any next level switch can be reached within the UTP CAT5 cable length limitation of 100 meters. Buildings with large spread (BSB, HSB, Workshop Lab complex) have been provided with multiple fibre drops to enable full coverage. In each one of the buildings, the local network is implemented based on a structured design for scalability using enhanced CAT5 UTP cable. To implement the campus network, 3 ATM (622 Mbps) backbone switches, 3 ATM (155 Mbps) small switches, 25 edge devices with ATM (155 Mbps) uplink, 80 Ethernet switches, 7 kilometers UTP components are used. The network provides about 200 ports at the 100 Mbps (lab/server) level and about 1500 ports at the 10 Mbps (desktop) level.

The PC Maintenance cell provides services for repairs and maintenance of PCs in the institute including projects (totaling about 2000 machines). In addition Computer Centre has been serving the computerization of the following establishments of the IIT:

- |                       |                               |
|-----------------------|-------------------------------|
| 1. Administration     | 6. Joint Entrance Examination |
| 2. Finance & Accounts | 7. Hostels                    |
| 3. Hospital           | 8. Stores & Purchase          |
| 4. Engineering Unit   | 9. Academic Section           |
| 5. GATE               |                               |

### 6.4.2 Details of Staff:

Name and Qualification	Major Area of Specialization
<b>Chairman:</b> Srinivasan K, Ph.D	Water resource planning and management Stochastic modeling of hydrologic processes Reliability analysis and design.
<b>Vice-Chairman:</b> David Koilpillai R, Ph.D	DSP Techniques, Wireless communications

**Senior Systems Engineers:**

Dheenadayalu R, M.Sc(Engg)

Data Centre Operations, Systems Administration. Application Software, System selection.

Jayaprakash S, Ph.D.

Software Engineering, Computer Networks, Fault-tolerant Distributed Systems, Internet, Next Generation Network (NGN)

Ramesh S.K, M.S

System Administration, MIS, Data Management, Data Processing, System Programming.

**Systems Officer Gr.I:**

Sourirajan C.S., M.Sc.

System Administration, Programming Languages, Small computers, Application Software Development.

**Assistant System Engineer:**

Baman Banavath B.Tech.(C.S)

System Analysis &amp; Design, AIX A, Windows NT server Administration, INTERNET, Database Management System, Power builder, Visual Basic GUI Applications.

Venkatesan C.S., B.E.(CS),M.Tech(IT)  
(MBA),M.Tech(C\_level),MBA

Software Engineering, Operating Systems (Unix, Windows, Sun), Database management systems, Programming Languages (C,C++, Cobol), Computer Networking, System administration, HRD Management.

Technical Officers (Systems)  
Ravichandran V, M.Sc.

Application Programming, Database Management systems, Systems Programming, System Administration, Training industrial Personnel on Mainframes.

Vijayaraghavan C.N, M.Sc. &  
M. Tech. (Ind. Maths)

Computer Network and Data Centre Operations, Operating Systems System Administration.

**Junior Systems Engineer:**

Sreekumar P.Y, B.Tech(C.S)

Computer Networks, Database Management Systems, Systems Administration.

**System Trainees on Roll: (2003-2004)**

Selection of Systems Trainees: 19<sup>th</sup> batch of Systems Trainees interview was held on 26.06.03. 115 candidates were called for test, 55 candidates turned up and they were called for interview. 18 candidates were selected. Data entry work was done by Mr. T. Rama Rao.

Systems Trainees joined on 21.07.2003. Mr. C.S.Sourirajan is in-charge of the Systems Trainees.

- |                             |                   |
|-----------------------------|-------------------|
| 1. P. Amutharasan           | 7. N. Raj Kumar   |
| 2. R. Ganapathy Subramanian | 8. T. Rajesh      |
| 3. S. Ganeswari             | 9. J. Shanmugam   |
| 4. G. Kavitha               | 10. M.H. Sundaral |
| 5. L. Parthiban             | 11. N. Visintra   |
| 6. R. Palani Ganesh         |                   |

**PC Maintenance Cell:**

Mr. V. Ravichandran, Technical Officer (Systems) took over as PC Maintenance Cell in-Charge with effect from 23.04.2003.

PC Cell renovation work was completed under his guidance and supervision.

**Senior Technical Assistant:**

Selvaraju V., B.E. (ECE) -

PC Hardware and software maintenance and trouble-shooting. Microcontroller and Microprocessor based system development and BIOS programming. Training PC Cell Trainees in Hardware and OS (Windows 9X/NT/XP/2000 and Linux).

**Technical Assistants:**

Venkata Subba Rao T.,

Maintenance, Troubleshooting and Repair of SMPS, Mother B.Tech. (CSE) boards, Printer, Monitors and other peripheral devices, Installation, Administration and Maintenance of Windows 9X NT, XP, 2000, Linux, Novel Netware operating systems. Training on PC Maintenance and Repair to PC Cell Trainees.

Anandkumar S., B.E.(ECE)

Maintenance and Troubleshooting of Computers and Peripherals in the Institute. Giving technical support to PC Cell Trainees that include theory and Hands-on-Sessions on computer hardware & Peripherals. Installation. Networking and system administration of (Windows 9X/ NT, XP, 2000 Servers, Linux and SUN)Operating systems.

**Selection of Trainees for the PC Maintenance Cell:**

PC Cell Interview was held on 29.03.2003. 65 candidates were called for written test and 52 attended. 25 were short listed for interview and finally 6 were selected. Data entry work was done by Mr. T. Rama Rao.

**Trainees:**

1. M. Kirubakara Prabhu
2. N. Ragavendran
3. S. Rajesh
4. C. Ravikumar
5. N. Saravana Kumar
6. P.M. Sriram Baskar

**New Facilities / Equipment added:****Hardware:**

64 Processor IBM P690<sup>+</sup> server has been procured. The installation and testing work is in progress. It is expected to be available for users in the next few months.

**Software:**

The following applications software have been installed

1. NAG software with the Fortran libraries has been installed.
2. Abaqus software upgraded to version 6.4
3. MS.Office 2003 licenses were distributed to all the Departments, Centres and Sections.
4. MS Academic Alliance (AA) tool kit was installed in the 13 departments.

**Equipment:**

1. The new 30 KVA UPS has been installed exclusively for all the servers.
2. The 80 KVA UPS has been load shifted to serve the IBM p690+

**Networking:**

All the hostels were connected to the backbone by fibre cable. Provision for 10 access network points in each one of the hostels have been implemented. Cable implementation for the network connectivity for rooms in all the hostels were completed. The installation of network switches in three hostels (Sharavathi, Kaveri and Krishna) has been completed by M/s. ERNET (India) under the supervision of Computer Centre. The access to intra and internet have been provided in these 3 hostels. Steps are being initiated to enable 6 Mbps internet bandwidth. This will be completed shortly. Prof. David Koilpillai, Dr. S. Jayaprakash, Mr.C.N. Vijayaraghavan and Mr. P.Y. Sree-kumar have been actively involved in this activity.

The intranet IP addresses are being revised to 10.x.x.x in place of 144.16.x.x., throughout the Institute. The IP addresses will be withdrawn from July 1, 2004. This is being handled by Prof. David Koilpillai and Mr. P.Y. Sreekumar.

#### **GATE and JMET:**

The following software were developed/completed by Mr. S.K. Ramesh during the year 2003

GIPS (GATE Information Processing System) software development was started in 2002 and completed in April 2003. This software was used for data processing works during GATE 2003 organised by IIT Madras. The same software was 'modified' and used during GATE 2004 operations organised by IIT Delhi.

JIPS (JMET Information Processing System) software development was started and completed in 2003. This software was used for data processing works during JMET 2003 organised by IIT Madras.

JAT (Joint Admission Test) for M.Sc. Chemistry admission software was developed and used as the data processing software for Joint Admission for M.Sc. Chemistry in 2003 (IIT Bombay, IIT Guwahati, IIT Kanpur and IIT Madras).

The accounts section software was modified with additional facilities as and when opted by the accounts section. The work done by the staff was very well appreciated by GATE.

#### **JEE 2003-2004 Data Processing:**

Mr. Sreekumar P Y and Mr. Vijayaraghavan C N were successfully carried out the JEE 2003 Computer Operations which include Applications query on Web/IVR, Data Processing, all India Rank generation, results publishing in Web/IVR.

#### **McAfee Antivirus:**

Server based McAfee Antivirus Security Suite (AVSS) software from McAfee has been installed in a server at the Computer Centre that provides automatic updating. Installation in individual machines is provided through a website at Computer Centre. Help is provided to the users who face some difficulties in activating or updating this from time to time. Clean-ups and reinstallation (if required) are also done. This activity is co-ordinated by Dr. S. Jayaprakash and Mr. D. Hariharan.

#### **Additional Programme:**

##### **Short Term Courses:**

Dr. S. Jayaprakash, Senior Systems Engineer has conducted a Short Term Course on "Networking – A Practical Approach", during February 2003 for Tamil Nadu Electricity Board System Managers/ Engineers.

The following courses were handled by staff for Systems Trainees. Mr. C.S. Venkatesan coordinated the courses.

- |                                |   |                     |
|--------------------------------|---|---------------------|
| 1. Digital System fundamentals | - | Prof. S. Srinivasan |
| 2. Mainframe Systems           | - | Mr. V. Ravichandran |
| 3. CGI / Perl                  | - | Mr. P.Y. Sreekumar  |
| 4. Networking                  | - | Dr. S. Jayaprakash  |
| 5. Orientation                 | - | Mr. R. Dheenadayalu |

#### **Seminars / Lectures / Other activities:**

Dr. S. Jayaprakash delivered lectures on "Advanced Networking" for LIC of India Engineers at the LIC Training Centre, Chennai (7 days).

Dr. S. Jayaprakash delivered lectures on "Networking" for the students of SAEIT (School of Advanced Engineering and Information Technology) BHEL, Trichy (3 days).

Dr. S. Jayaprakash handled the course on "Network Management" for the Second year MBA students during March-April 2003, Department of Humanities and Social Sciences, IIT Madras.

Dr. S. Jayaprakash handled the course on " Network-Principle, theory and practice" for the UOP M.Tech. students, during July-Nov.2003, Department of Computer Science and Engineering, IIT Madras.

Mr. S.K. Ramesh developed a programme for computing the amounts due to the retirees on Special Voluntary Retirement scheme.

Institute payroll related computerization was looked after by Mr. S.K. Ramesh.



Hostel payroll related activities were looked after by Mr.C.S. Sourirajan and Mr. V. Ravichandran.

Mr. P.Y. Sreekumar was involved in administration of internet services for Campus Network and trouble shooting of Campus Network Problems.

**Member of Committees:**

Dr. S. Jayaprakash was invited to serve as Expert Member, "e-Governance Advisory Committee", Govt. of Pondicherry.

Dr. S. Jayaprakash was invited to serve as Technical Member of Technical Evaluation Committee for Networking, Tamil Nadu Electricity Board.

Mr. C.S. Sourirajan and Mr. P.Y. Sreekumar served as members of the Committee for introduction of OMR technology based on Teachers Evaluation feedback for Academic Section.

Dr. K. Srinivasan, Mr. S.K. Ramesh, and Mr. C.S. Venkatesan are involved in the software purchase processing and maintenance.

**Institute Projects:**

Sl. No.	Title	Coordinators
1.	Campus Network	Dr. S. Jayaprakash Mr.P.Y. Sreekumar Mr.C.N. Vijayaraghavan
2.	Hospital Information System, BBS*	Mr. R. Dheenadayalu
3.	JEE Data Processing	Mr. P.Y. Sreekumar Mr. C.S. Venkatesan
4.	GATE Data Processing	Mr. S.K. Ramesh Mr. V. Ravichandran
5.	M. Tech Admission	Mr. S.K. Ramesh Mr. V. Ravichandran
6.	Academic Records Maintenance System	Mr. P.Y. Sreekumar
7.	Hostel Mess Management	Mr. C.S. Sourirajan Mr. V. Ravichandran
8.	Hostel Billing System	Mr. C.S. Sourirajan
9.	Teachers Evaluation (processing)	Mr. C.S. Sourirajan
10.	Teachers Evaluation (on line feedback)	Mr. P.Y. Sreekumar

## 7. CENTRAL FACILITIES

This Institute is having the following units for central facilities and their activities during the period under report are given below:

### 7.1. Central Workshop:

Workshop is an educational platform where science is translated into technology. Central workshop was established to meet the above objectives from 1959 with three major production processes, i.e. Metal cutting, metal joining, metal forming with shops as given below: Apart from these shops five more shops were added (mentioned below) in the process of modernizing the workshop training in line with industry to suit industrial requirements.

Central workshop of our Institute is having the following sections and their activities during the period April 2002 – March 2003 are given below.

Sl.No	Shops	Facilities
1	Carpentry	Planing, cross cutting, turning, thickness reduction, Polishing, Teeth sharpening, Blade sharpening and grinding.
2	Fitting shop and Tool Room	Filing, Drilling, Tapping – Jig Boring, Tool milling, Engraving – Marking, Slotting, grinding and work cutting
3	Machine shop	Shaping – Milling – Turning – Planning, Radial drilling and Tool and Cutter grinding.
4	Gear shop	Spur, Helical, Bevel gear cutting.
5	Electrical shop	Simple wiring and winding, simple electric circuit.
6	Instrument shop	Pressure testing facilities up to 100Kg NC Trainer Lathes, Milling m/c
7	Welding shop	Arc Welding, Gas Welding, Soldering, Brazing and profile cutting.
8	Foundry shop	Oil fired furnace, Cupola and sand plant.
9	Smithy shop	Hand forging, power hammer, Heat Treatment and Hardness Tester
<b>Under Modernization, New additional sections</b>		
10	Pneumatics & Hydraulics	1. Festo training Kits with different valves. 2. Electromagnetic Kit. 3. PLC to demonstration Pneumatic. 4. Practical demonstration like auto wheel brake system. Weight lifting equipment for demonstration from Eukon Bosche. Hydraulic kit for different values for students. Bosche training kit for student's demonstration.
11	Electronics	PCB, Tag board, Soldering and PLC Proofing.
12	FRP	Material process demonstration for students. Making of dustbin and welding hand shield etc.
13	Plastics	Material process practical demonstration of cycle token, key tags, caps and folders
1. At this stage achieved ISO 9001 certificate in 1999 for 3 years 2. New Additional sections going to be added shortly are		
1	N.C. Machines (advanced) Lab2	CNC Turret (six tools) and CNC engraving M/c 3D Works.
2	Quality Control Lab (To help ISO 9001 recalibration)	Calibration of lever dial gauge, Least count:0.0002mm Plunger dial gauge: Least count:0.0002 mm Thread plug gauge: Least count:0.0002 mm Taper plug gauge: Least count:0.0002 mm Plain plug gauge: Least count:0.0002 mm Height Master: 0.002 mm Auto collimator to check the angular deviation Digital micrometer (0–25mm): Least count 0.001 Digital Vernier (0–200mm): Least count 0.01 Dial Vernier (0–200mm): Least count 0.01
3	Communication Lab	Amplitude and Frequency Modulation Trainer Signal sampling and reconstruction trainer TDM Pulse amplitude Modulation TDM Pulse Amplitude Pulse Position And Pulse width Modulation Time Division Multiplexing and Pulse code Modulation Optical Fibre and digital communication trainer

**ISO 9001/2000 re-certification got in May 22 upto 2005**

Besides the above, Central workshop also bears the responsibility of maintaining institute vehicles (20Nos) and also the environment friendly **Battery powered electrical vans (11Nos)** running in the campus are also being maintained by our electrical section.

Central workshop very effectively caters to the undergraduate's programmes by imparting individual practical training in various shops cited above

During the year under report, 510 undergraduates (1<sup>st</sup> year, B.Tech.) got training under the assigned course ME 107 and ME 108 titled workshop training I and II bearing two credits each.

For the 2<sup>nd</sup> year, 112 undergraduates students of Mechanical Engineering branch, trained in ME 207 Workshop III with two credits was offered.

ME 209 Advanced workshop training with 3 credits for 3<sup>rd</sup> and 4<sup>th</sup> year students preferably Mechanical Engineering students was also offered as (Summer-Term Course)

Central workshop executes fabrication of test setups and their accessories related to Ph.D, P.G and U.G. project works. 889 work orders were received out of which 869 were executed during the year 2003-2004. Some important work orders executed are given below

- Refrigeration and Air Conditioning Laboratory of Mechanical Engineering Department Project of "NITROGEN LIQUIFICATION USING MRC" for which wires Wound Over the Capillary tube with 0.055"pitch (for preparation of Heat Exchanger) Up for 30 sets.
- Fabrication work for the Project work design development of a running dynamo with help of both cycle mechanism and gearbox mechanism operating by leg and hand. Project done by under the Guidance of CEC completed.

#### ICSR Works

Gear testing – Profile and Lead Parameters Testing were Done by Gear shop for G.V.Industries Invitro Comparison of Dimensional Stability and Surface Quality of Stone dies Obtained From Two Elastomers testing were done by Quality control lab for sri Ramachandra Dental Collage.

#### Training of Central workshop staff External

Trained CWS staff for giving effective training to students under HRD Scheme **Outside** in connected fields as mentioned below.

- (a) Advanced Hydraulic & Pneumatics at ATI, Guindy.
- (b) CNC engraving training program at Sunita Engg Co., Nasik.
- (c) Machine shop Practice for supervisors training at Advance Training Institute, Guindy.
- (d) Inspection Tech. Of Dim & surface Roughness of Precision Components training at ATI, Guindy
- (e) Calibration of dim measuring Inst & Gauges, Inspn. Techniques of Profiles of plain tap & threaded Components and Engg. Neasurement, Measuring equ. & QC
- (f) Insp. Techniques of Geometric Feature.
- (g) Training Programmes in Electro – Pneumatics, electro – Hydraulics and PLC at Vocational and Advanced Training, vanagaram.

#### Training of Central workshop staff internal

Trained CWS staff for giving effective training to students under HRD Scheme **Within** the institute in connected fields as mentioned below

- (a) Conducted training Program in Machine shop for three staff of CWS
- (b) Two persons were deputed in fire fighting program
- (c) Two persons were deputed for motivation program under Human Resource Development.
- (d) Conducted Training Programs in Tool Room for the new recruits.
- (e) Conducted Training Program in CNC Machine and NC Engraving Machine with the help of EMCO service Engineers for our staff
- (f) Nine of our staff were trained in CAD-CAM at MDS, CAD Laboratory.

#### 7.2 Central Photographic Section :

This Centre caters to the various photographic needs of the Departments, Centres of the Institute as well as various sponsored and consultancy projects in digital/high resolution photography with high resolution digital cameras, computers with necessary professional software, scanner, printer etc. The jobs include photographic coverage of most of the important functions such as convocation, conferences, etc. held in the Institute. Besides this, section renders assistance to various departments for the technical Photography. The in-house processing and printing work is confined to Black and White photography. This centre caters to the requirements of Research activities of the students / faculty with respect to their photography requirements.

The Central Photographic Section has undertaken 284 Departmental jobs, 12 Project jobs and covered more than 50 functions in our Institute during 2003-04.

The Central Photographic Section has extended its service in all the above cases even during holidays, week ends and after office hours, on a regular basis.

### 7.3 Air-conditioning Unit

The A.C.Unit is responsible for planning, Installation, Servicing, Maintenance and operation of all central and packaged Air Conditioning plant, split and window Air Conditioners, water coolers and Refrigerators etc.

### 7.4 Central Gas Supply Unit

The Central Gas Supply Unit procures Industrial gases from various manufacturers/suppliers and issues to various Departments/Laboratories of the Institute for research and practical purposes.

Industrial gases : Oxygen, Nitrogen, Dissolved Acetylene , Hydrogen and Carbon-di-Oxide

Special gases : High pure Argon, High pure Oxygen  
High pure Nitrogen and Zero Air

The following are two quantity ordered and issued to various Departments during the year 2003-2004.

#### Industrial Gases:

<u>Item</u>	<u>Ordered Quantity</u>	<u>Consumption</u>
Oxygen	2250 Cu.M	2002 Cu.M
Dry Nitrogen	3000 Cu.M	2632 Cu.M
Dissolved Acetylene	300 Cu.M	253 Cu.M
Standard Hydrogen	400 Cu.M	308 Cu.M
Carbon -di-Oxide	400 kgs	307 kgs

#### Special Gases

High Pure Argon Gr.I	624 Cu.M	350 Cu.M
High Pure Nitrogen Gr.I	900 Cu.M	900 Cu.M
High Pure Oxygen Gr.I	200 Cu.M	56 Cu.M
Zero Air	350 Cu.M	308 Cu.M

### 7.5 Central Glass Blowing Section:

#### 7.5.1. Introduction:

The central glass blowing section is one of the important infrastructures Facilities of the Institute since 1972.being a central facility this section undertakes design and fabrication of sophisticated glass apparatus for research and development in various departments. This section also undertakes jobs for the industry consultancy program.

#### 7.5.2. Facility available:

This section has a range of modern glass working equipments largely procured from Germany as a component of the collaborative program and these include; horizontal cum vertical lathe, universal lathe, forming lathe and high vacuum system. The section is also well equipped with a good number of sophisticated burners, drilling and cutting machine, grinding and polishing equipments and such other tools necessary for fashioning out a variety of glass apparatus. The section has adequate facility for quartz working and has developed high level of expertise in this area.

The following glass apparatuses fabricated were:

Cryostat, spherical and cylindrical dewer flasks, lugging probe, laser housing tube with water jacker, reactor tube, jet electropolisher, double walled transfer tube, vacuum tube collector for solar energy and quartz wares.

During April 2003 to March 2004 the section undertaken 362 work orders from various department.

## 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, e-journals, printed and non-printed documents on Applied Science, Engineering, Technology, Humanities, Management, Social Science and other new emerging areas. The Central Library holds 3,81,355 collections and 1,114 current journals catering to the needs of 6,874 members. The major activities undertaken in the Central Library during the period under report are given below:

### 8.1 Library Information Services Statistics

#### a. Collections

Item	2002-03	Total
Books	6,566	2,10,380
Ph.D. Theses	360	3,122
Pamphlets and Reports	172	2,490
Microfilms/Fische	---	1,842
Book-Bank (General)	306	5,699
Book-Bank (Weaker Section)	447	7,491
Current Periodicals by Subscription	230	1,114
Current Periodicals by Exchange/Gift	---	86
Back Volumes of Periodicals	3,038	82,972
Patents & Specifications	---	20,000
Faculty Publications	---	1,000
German collection	---	44,000
C.D.	234	740
Video Cassettes	6	419

#### b. Membership

Staff	126	1,020
Retired Faculty	195	239
Students	1,407	4,911
Alumni Members	15	54
Corporate Members	34	76
Industrial Associate Members	225	445
Special Members	64	91
Project Coordinators	20	38
<b>Total</b>	<b>2,086</b>	<b>6,874</b>

#### c. Services: Circulation

	2003-04
1. Number of Readers visited	2,70,000
2. Number of Books/Journals issued	1,08,414
3. Number of Books issued through Book Bank (General)	3,424
4. Number of Books issued Book Bank(Weaker Section)	6,476
5. Consultation cards issued to users	900
6. Overdue & other charges collected	Rs.3,26,780
7. Xerox charges collected	Rs.5,84,300

#### d. Reservation of Books

1. Registered	2,542
2. Fulfilled	2,450

#### e. Loans

1. Department Loan (Under issue)	4,950
2. Permanent Loan issued	1,310

#### f. Inter Library Loans

1. Borrowed from other Libraries	575
2. Loaned to other Libraries	150

#### g. Literature Search

1. CD-ROM search by users	5,000
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**h. Reprint Service**

1. Reprints received from other Institutions	1,022p
2. Reprint supplied to other institutions	2,420p

**i. Reprography Service**

1. Number of Xerox copies supplied	8,17,000
2. Barcode-ID cards Generated	2,613

**j. Binding**

1. Number of books and journals bound (internal)	4,007
2. Number of Miscellaneous publications bound (internal)	3,500
3. Cutting/Trimming (Sheets)	5,500

**k. Expenditure on**

1. Books	Rs.1,31,14,341
2. Journals	Rs.4,24,28,190

**l. New Journals Added**

230

**8.2 ISO 9001 Activities:**

The Central Library participated in ISO activities along with other units of the Institute. Some of the major activities are listed below:

- ISO External Auditor conducted Quality Auditing on 9.5.2003.
- Internal Quality Audit Team visited on 07.10.2003.
- Organised a Pre-Conference Tutorial on ISO 9001:2000 Application in Libraries and Information Centre on 21.01.2004.
- Dr.Harish Chandra, Librarian delivered lecture on ISO-9001:2000 Application in Libraries to the participants of Tutorials on 21.01.2004.
- Various meetings of **Quality Classification Group** were held and also classified 3300 publications.

**8.3 Digital Initiatives:**

The Central Library has been actively engaged to provide web based library and information services, conducting various information literacy programs, facilitating access to on-line full text as well as bibliographic databases, e-journals, e-books. Regarding this, Central Library is actively participating in **MHRD Consortia**, set up for a consortia based subscription to Electronic Resources for Technical Education System in India. The Consortium is named as Indian National Digital Library in Science and Technology (INDEST). The Central Library has implemented the consortia subscriptions. The Librarian and Chairman, Library Advisory Committee attended meetings convened by **INDEST Consortia**. The following electronic resources are made available for access under INDEST Consortia.

1. ASCE Online Journals	13. Emerald Full Text
2. ASMEOnline Journals	14. JCCC
3. Engineering Village 2	15. J-GATE
4. INSPEC	16. EJ Server IITMadras
5. Proquest Databases: ABI/INFORM, Dateline	17. IEEE Xplore
6. ABI/INFORM Global	18. SpringerVerlog's Link
7. ABI/INFORM Trade & Industry	19. Web of knowledge
8. Applied Science & Tech Pus	20. Science Direct
9. Capitaline	21. ACM Digital Library
10. Nature	22. Sci Finder Scholar
11. EBSCO Business	23. Mathscinet
12. EuroMonitor(GMD)	24. Indian Standards

**8.4 Subscription of Current Journals:**

The Central Library initiated this year the review of current journals, which was normally done every 5 years with the objective to add/delete journals in view of current trends and developments in research and academic activities. The list of journals subscribed by the departments was sent to all heads of Departments requesting them to indicate the CORE journals. As per the recommendations received from the departments, 230 new journals in various disciplines have been added for the year 2004.

### 8.5 Binding Facilities:

Over the past decades, users used to face problems for not getting the publications in time as external binders used to take on an average 4 to 6 months to complete the binding. To overcome this difficulty, the Central Library installed Automatic Biding Machine with the facility to bind the books in few seconds using strong glue. This has saved the time of users ensuring great satisfaction among them. The details regarding work completed during 2003-2004 are given in the following table:

Month	No.of Journals/books	Amount (in Rupees)
April 2003	377	13,668.00
May 2003	262	23,089.00
June 2003	307	19,921.00
July 2003	173	10,826.00
August 2003	302	25,337.00
September 2003	278	17,321.00
October 2003	277	17,209.00
November 2003	293	19,631.00
December 2003	122	05,092.00
January 2004	122	8,174.00
February 2004	225	13,050.00
March 2004	378	24,219.00
<b>Total</b>	<b>3,867</b>	<b>2,25,869.00</b>

### 8.6 New Facilities/Equipments added:

- Central Library has signed on-line access agreement with American Institute of Physics for providing on-line access to Faculty, Students and Staff under intranet environment on 5.5.2003.
- 22 New Wooden Racks received and current journals have been reorganized. Journals on Biotechnology, Humanities and Social Sciences have been kept at separate locations for better utilization.
- On-line books reservation facility has been provided through Central Library website <http://www.cenlib.iitm.ac.in>
- Central Library website has been redesigned and many more additional web based services have been added.
- After conducting user's survey new books 477 & 306 have been added to Book Bank for Weaker and General Sections students respectively.

### 8.7 Donation:

- Librarian received 30 books from Dean (Planning) in the Function organized by Alumni Association on 09.08.2003.
- Received US \$600 from Dr.Sivakumar Tadikonda, Alumni towards the subscription of a Journal " Journal of MICROMECHANICS & MICROENGINEERING" for the year 2003.

### 8.8 Visitors:

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
1.	Faculty and Students of B.L.I.Sc., from College of Library and Information Science, Ankushpur, Orissa	09.05.2003	To see the facilities and functioning of the Central Library
2.	MHRD Review Committee Members and Director	15.05.2003	To see the facilities and functioning of the Central Library
3.	Mr.Yogendra Singh, Librarian, IIT Roorkee	11.09.2003	To see the facilities & Functioning of the Central Library
4.	Rev.Joseph Malekkudy(Vicar Gneral) and his team from Diocese of Kothamangalam,Kerala	31.10.2003	To see the facilities and functioning of the Central Library
5.	Dr.V.S.Jamode, Provice Chancellor, Dr.S.S.Kaptan, Head, M.B.A. and Prof.S.Potdar Librarian, Amaravati University	15.10.2003-16.10.2003	To see the facilities and functioning of the Central Library
6.	Dr.Ramesh kundra, Secretary, SIS, New Delhi	08.11.2003 09.11.2003	To discuss about SIS 2004 Conference
7.	23 Library Science Teachers/ Librarians from Karnataka & Kerala	18.12.2003	To see the facilities and functioning of the Central Library.
8.	22 Librarians from Andhra Pradesh	08.01.2004	To see the facilities and Functioning of the Central Library

Sl. No.	Name of the Visitor and Designation	Date of Visit	Purpose of Visit
9.	B.A. Library Science Students from Gulbarga University, Karnataka	12.01.2004	To see the facilities and Functioning of the Central Library
10.	30 Participants of Refresher Course Conducted by University of Madras	29.01.2004	To see the facilities and Functioning of the Central Library
11.	35 Librarians from Andhra Pradesh	06.02.2004	To see the facilities and Functioning of the Central Library
12.	15 M.L.I.Sc., Students from Sambalpur University, Orissa	13.02.2004	To see the facilities and Functioning of the Central Library
13.	Prof. Grey R. Noless, Montana State University Library, U.S.A. & Ms. Helen Lafare Vice Consul, U.S. Consulate, Chennai	17.02.2004	To see the facilities and Functioning of the Central Library
14.	Dr. D. Rajalakshmi, Head, Department of Library and Information Science, Nagpur University	17.02.2004	To see the facilities and functioning of the Central Library

#### 8.9 Staff Publications:

- Dr. Harish Chandra, Patents Information Support Services, Proceedings of National Workshop on Intellectual Property Rights, Sri Ramachandra College of Management of Sri Ramachandra Medical College and Research Institute, Chennai, March 2004. p.18-21.
- Dr. Harish Chandra, Automation Activities and Strategy at IIT Madras Central Library Information, Communication, Library and Community Development (Festschrift in Honour of Prof. C.P. Vashishth) edited by Dr. B. Ramesh Babu and Dr. S. Gopalakrishnan, Delhi, B.R. Publishing Corporation, 2004, p.745-754.
- Dr. Harish Chandra, E-Resources Management with Specific Reference Sources: Initiatives and Issues, SIS 2003, Proceedings of 21<sup>st</sup> Annual Convention and Conference, Volume I, Roorkee, 9-12, April, 2003, p.190-198.
- Dr. Harish Chandra, Creating Customer Awareness on Library and Information Services in Technical Libraries Experiences and Expectations, Proceedings of National Seminar on Challenges in Delivering Quality Services in Management and Technical Libraries. Delhi, Allied, 2003 p.39-44.
- Dr. Harish Chandra, Digital Reference Service at the Central Library of IIT Madras, 48<sup>th</sup> All India Library Conference on Electronic Information Environment and Library Services a Contemporary Paradigm, Delhi, ILA, 2003, p.551-563.
- Dr. Harish Chandra, Digital Library : Planning, Development and Management in S&T Sector, Course Material of Seminar on Emerging trends in Digital Library and Web Resources Management in Science and Technology, Sponsored by AICTE and Conducted by Department of Library, Kongu Engineering College, Perundurai, KEC, 9<sup>th</sup> and 10<sup>th</sup> January 2004.

#### 8.10 Books/Monographs authored or Co-authored:

Sl. No.	Name(s) of Author(s)	Title of Text Books/Monograph	Publisher
1.	Dr. Harish Chandra	Conference Proceedings of SIS 2004 on Digital Information Exchange: Pathways to Build Global Information Society (In association with Dr. P. Pichappan & Dr. Ramesh Kundra)	SIS 2004 Chennai
Sl. No.	Name(s) of Author(s)	Title of Text Books/Monograph	Publisher
2.	Dr. Harish Chandra	SIS 2004 Souvenir	SIS 2004 Chennai

#### 8.11 Staff User Meet:

The following staff user meets were organized followed by special lectures:

Sl. No.	Name of the Speaker	Topic	Date
1.	Dr. Edward Proctor, Electronic Resources Librarian, South West Missouri State University, USA	Invisible Web	11.07.2003
2.	Mr. Mark Wheeler, Manager, Education and Technical Support, Asia Pacific	Web of Science	28.07.2003



Sl.No.	Name of the Speaker	Topic	Date
3.	Mr.Ravi Singh, Director, Total Library Solutions, New Delhi	Web Resources on EJ Server	16.09.2003
4.	Dr.P.Pichappan, Reader, Department of Library & Information Science, Annamalai University,	Web Searching Techniques	24.09.2003
5.	Mr.M.V.Sathyanarayana, Managing Director, Informatics India,	JCCC@INDEST	08.10.2003
6.	Mr.Perdeep Kumar Elsevier, Singapore	Science Direct Back Files	12.11.2003

**8.12 Short term Course / Workshop / Seminar / Symposium / Conference / Training/ Meeting attended by Faculty in recognized Academic Institutions and Public Sector Units:**

Sl. No.	Name of the Staff	Title	Institution	Period
1.	Dr.Harish Chandra	Digital Library, Course 3: Libraries, e-Resources, e- publishing	Tillburg University, Netherlands	24.08.03 to 27.08.2003
2.	Dr.Harish Chandra	The Role of Science in the Information Society (RSIS 2003) A Pre-Summit event of World Summit on Information Society	RSIS CERN GENEVA, Switzerland	08.12.2003 to 11.12.2003
3.	Dr.Harish Chandra	To visit World Maritime University	Sweden & Denmark	25.02.2004 to 29.02.2004
4.	Mr.M.Koteswara Rao	Attended and presented paper at the 9 <sup>th</sup> International Conference on Scientometrics & Informetrics (ISSI-2003)	Beijing, China	25.08.2003 to 29.08.2003
5.	Mr.C.R.Sekar	One day workshop	Elsevier Science	27.08.2003
6.	Mr.C.R.Sekar	Attended one day Workshop- cum-meeting of Librarians of all IITs/IISc under INDEST	IIT Delhi	07.10.2003
7.	Mr.K.Sethu	Seminar on 'Web Resources for R & D Acceleration	Anna University	19.11.2003
8.	Mrs.Lalitha Rajendran and Mr. G.Kumar	Workshop on Web Searching Strategies and Advanced Techniques	AIRC, Chennai	18.02.2004

**8.13. Special Lectures Delivered by Staff in Other Institutions**

Sl. No	Name of the Staff	Topic of Lecture	Venue and Date
1.	Dr.Harish Chandra	Challenges before Library and Information Professionals	Dept.of Library & Information Science, University of Madras, 21.06.2003
2.	Dr.Harish Chandra	Web Resources,	Workshop on Exploiting Internet/Web Potential EIP 2003 organized by Sri Venkateswara College of Engineering and DRF Chennai 12.07.2003
3.	Dr.Harish Chandra	Web Resources at IIT Madras for HAL Trainees	Dept.of Aerospace Engineering, IIT Madras 30.07.2003
4.	Dr.Harish Chandra	A Model for gate-ways in Engineering	Workshop on developing digital information gate-ways for Engineering and Technology organized by Sri Venkateswara College of Engineering & DRF Chennai 09.08.2003
5.	Dr.Harish Chandra	Access & Management of Web Resources in IIT Madras;	Seminar on Web Resources Management Organized by Edutech India & Central Library, IITM 13-8-2003
6.	Dr.Harish Chandra	Intellectual Property Information Support Services for R & D Activities	IC & SR, iIT, Madras 20.09.2003
7.	Dr.Harish Chandra	ISO 9001 Application in Libraries	CSI Bishop Appa Samy College of Arts and Science, Coimbatore. 10.10.2003

Sl. No	Name of the Staff	Topic of Lecture	Venue and Date
8	Dr.Harish Chandra	Information Sources & Services with Specific Reference to Mathematical Sciences	Dept. of Mathematics, IIT, Madras. 23.10.2003.
9	Dr.Harish Chandra	Web Resources for Patents & IPRS	Anna University, Chennai. 19.11.2003
10	Dr.Harish Chandra	Patents Information Support Services for R & D Activities	IC & SR, IIT Madras 22.11.2003
11	Dr.Harish Chandra	TQM	TTTI, Chennai 05.12.2003
12.	Dr.Harish Chandra	Library Automation: Tips of Success	Dept.of Studies in Library & Information Science, University of Mysore, 29.12.2003
13.	Dr.Harish Chandra	Financial Mobilization for Library Development	Dept.of Studies in Library & Information Science, University of Mysore 30.12.2003
14.	Dr.Harish Chandra	Digital Library: Planning & Development in S & T Sector	Kongu Engineering College, Perundurai, Erode 10.01.2004
15.	Dr.Harish Chandra	Building E-collections in S & T Libraries	SIS 2004, IIT Madras 21.01.2004
16.	Dr.Harish Chandra	ISO9001:2000 Application in Central Library of IIT Madras	SIS 2004, IIT Madras 21.01.2004
17.	Dr.Harish Chandra	Web based Information Resources	Dept.of Library & Information Science, University of Madras, 29.01.2004
18.	Dr.Harish Chandra	Patents Information Support Services	Sri Ramachandra Medical College & Research Institute, 17.03.2004
19.	Dr.Harish Chandra	Design & Development of Library Website in S & T Sector for AICTE-ISTE participants	Faculty of Engg. & Tech. Library and Annamalai University Library 19.03.2004

#### 8.14 Journal Editorial Board:

Sl. No.	Name of the Faculty	Level	Journal
1.	Dr.Harish Chandra	Member Advisory Editorial Board	OCLC Systems & Services An International refereed Journal for Information Professionals LIS Educators & Students, Researchers & Archivists.
2.	Dr.Harish Chandra	Member – Review Committee of ICDL 2004	Proceedings of International Conference on Digital Libraries, New Delhi 24.02.2004 to 27.02.2004
3.	Dr.Harish Chandra	Member – Editorial Board	Journal of Digital Information Management' JSSN 0972 7272
4.	Dr.Harish Chandra	Editor	Proceedings of SIS 2004 on Digital Information Exchange: Pathways to Build Global Information Society
5.	Dr.Harish Chandra	Editor	Souvenir of SIS 2004 January 2004
6.	Dr.Harish Chandra	Secretary Editorial Board	Journal of Mathematical & Physical Sciences

#### 8.15 Short-Term Courses/Workshops/Seminars/Symposia/Conference/Training/ Meeting Organized:

Sl. No.	Co-ordinator	Title	Period
1.	Dr.Harish Chandra	Web Resources Management	Jointly with Edutech 13.08.2003
2.	Dr.Harish Chandra	1.Tutorial on ISO 9001:2000 Application in Libraries & Information Centres. 2.Tutorial on Management & Development of Digital Resources	Jointly with SIS, New Delhi 21.01.2004
3.	Dr.Harish Chandra	SIS2004–22 <sup>nd</sup> Annual Convention & Conference on Digital Information Exchange: Pathways to Build Global Information Society, 22-23, January 2004.	Jointly with SIS, New Delhi 22.01.2004 to 22.01.2004

**8.16 Visits Abroad:**

Sl. No.	Name of the Staff	Purpose	Countries visited	Duration
1.	Dr.Harish Chandra	To attend Inter- national Summer School on Digital Library	Netherlands and also visited Libraries/Institute in France, Switzerland and UAE	24.08.03 to 27.08.03
2.	Dr.Harish Chandra	To attend RSIS Conference at CERN, Geneva. A Pre-Summit event of WSIS	Switzerland and Srilanka	08.12.03 to 10.12.03
3.	Dr.Harish Chandra	To visit World Maritime University & other Libraries	Sweden and Denmark	25.02.04 to 29.02.04
4.	Mr.M.Koteswara Rao	To attend & present paper at 9 <sup>th</sup> International Conference on Scientometrics & Informetrics	Beijing, China	25.08.03 to 29.08.03

**8.17 Future Plan:**

The construction of second phase of new building is completed and inaugurated by Prof.M.S.Ananth, Director on 07.01.2004. Special facilities like Discussion Hall for Students, Research Cubicles for Faculty, Media Resource Centre, Digital Knowledge Centre, Video Conference Hall, Back Volumes and Reference Hall with more number of seats are to be provided. It is also planned to build digital library model facilities with new library management software.

## 9. STUDENTS AMENITIES AND ACTIVITIES

### 9.1 Hostels:

All students admitted to IIT Madras required to reside in the hostels inside the campus. There are 12 men's hostels and 1 ladies hostel with a total of 3072 single room, 163 double room and 15 triple room accommodation. During the period under report, there were 3170 men and 389 women students residing in the hostels.

A Warden and an Assistant Warden administer each hostel. A Hostel Council consisting of Student Secretaries and Assistant warden assists the Warden in day-to-day functioning of the hostel. The Hostel Management is a centrally administered body and is in overall charge on the functioning of the hostels and the Central Supplies Unit. There are 251 hostel employees and 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 the supporting staff. During the period under report, the following Wardens were in position:

<b>Chairman, Council of wardens and Hostel Management</b>	Dr. SP Subramanian Professor, Ocean Engg. Dept.
<b>Name of the Hostel/Unit</b>	<b>Warden</b>
Alakananda	Dr. Anantha Subramaniam Associate Professor, Ocean Engineering Dept.
Brahmaputra	Dr. K.N. Satyanarayana Professor, Civil Engineering Dept.
Cauvery	Dr. B Ramamoorthy Professor, Mechanical Dept.
Central Supplies Unit	Dr. SP Subramanian Professor, Ocean Engg. Dept.
Ganga	Dr.K. Sethupathi Assistant Professor, Physics Dept.
Godavari	Dr. V. Sundar Professor, Ocean Engg. Dept.
Jamuna	Dr. G. Srinivasan Professor, Humanities & Social Sciences Dept.
Krishna	Dr. S. Sundar Associate Professor, Mathematics Dept
Mandakini	Dr. C. Chandrasekhar Assistant Professor, Computer Science & Engg. Dept.
Narmada	Dr. Sankaranarayanan V Associate Professor, Physics Dept.
Saraswathi	Dr. M. Ramasubba Reddy Professor, Applied Mechanics Dept.
Sarayu	Dr. Thamban Nair M Associate Professor, Mathematics Dept.
Sharavati	Dr. Guhan Jayaraman Associate Professor, Chemical Engg. Dept.
Tapti	Dr. R. Dhamodharan Professor, Chemistry Dept.

### 9.2 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 – Campus Amenities.

### 9.3 N.C.C:

#### 4(TN) Air Sqn (Tech) NCC

This unit is functioning at IIT Madras since 16<sup>th</sup> September 1965. It provides NCC training exclusively to the students of this institute. Regular Air Force officers and airmen are posted to this unit to impart training to Air NCC of this institute. Two Associate NCC officers and office staff drawn from the institute augment unit strength.

**Training:**

This unit mainly imparts training in three different aspects. They are:

- (i) Common Syllabus: Activities like drill, range firing, skeet shooting, presenting guard of honour etc.
- (ii) Specialized syllabus: Air wing specialized subjects like Principles of flight, aero engines, avionics, Air navigation system, Aircraft electrical and instrumentation systems, Meteorology, General Service Knowledge, civil defence Aeromodelling etc.
- (iii) Community development/Social service /Adventure activities: Donation of clothes to Cheshire homes, Blood donation camps, Eye donation pledge ceremony, Anti-corruption pledge, Anti-dowry pledge, cycle expeditions, mountaineering, Para sailing etc.

**Highlights for the year 2003-04:****I. Community development/social service/Adventure training activities:**

- a. Blood donation Programme: The said programme was conducted on 09<sup>th</sup> November 2003 at Student Activity Centre, IIT Madras in association with International Red Cross Society, Chennai. The inaugural ceremony of the blood donation programme was started with the presentation of Guard of honour for the chief guest Prof. M.S. Ananth at 0945 hrs. Approximately 31 NCC cadets have volunteered to donate their blood. All ranks of PI Staff and cadets were present.
- b. Anti-corruption Pledge ceremony: On the eve Vigilance Awareness Week, Wg Cdr T Mohanakrishnan, Commanding Officer of NO 4 (TN) Air Sqn (Tech) NCC has presided over the Pledge ceremony against corruption on 09 Nov 2003 at SAC, IIT Madras.
- c. Eye donation Pledge: Further, a guest lecture was presented by Mr. Irungovel, Social Worker of Sankara Nethralaya on the importance of eye care and eye donation.
- d. Republic day Celebrations : The Republic day celebrations were held on 26 Jan 2004 at IIT Madras. Guard of Honour was presented to the Chief Guest, Prof. M.S. Ananth. All Cadets, FLt Lt A Mani , ANO and detailed PI staff were present.
- e. Zen Micro light flying experience for NCC cadets: A total of 31 cadets of institution and private colleges under this unit had a flying experience in Zen micro light aircraft at No.1(TN) Air Sqn under the guidance of Wg Cdr CS Kapri, Commanding Officer, No.1(TN) Air Sqn.

**II. Training Activities:**

- a. Annual Training Camp:
  - (i) Aim: To enhance the qualities of learning and understanding the concepts of military discipline, leadership, group activities.
  - (ii) Introduction: Annual Training Camp is conducted by 4(TN) Air Sqn (Tech) NCC for its Senior Division NCC cadets from IIT Madras; SVCE, Sriperumpudur; SSREC, Tambaram West and APEC, Melmaruvattur at Sarayu hostel of IIT Madras from 28 Nov 2003 to 09 Dec 2003. 159 IIT cadets and 90 cadets from the private institutions have attended the camp.
  - (iii) Welcome Address by Camp Commandant: Wg Cdr T Mohanakrishnan, Camp Commandant welcomed the Senior Division Air NCC cadets from various institutions under this unit to the Annual Training Camp-2003 at 0900 hrs on 29 Nov 2003.
  - (iv) Camp Activities: Air NCC Cadets started arriving at the camp site from 0900 hrs on 28 Nov 2003 onwards till 1700 hrs in the evening. Besides Air wing NCC Specialist theory classes, various guest lectures, demonstrations visits to Defence Installations and inter flight competitions were organized by inviting experts in the respective fields.
- b. Aero Modeling: As a part of camp activity, Mr Radha Kamallakharan, professional Aeromodeler imparted the training for 29 SD Air NCC cadets of this unit from 29 Nov 2003 to 09 Nov 2003. Two cadets were selected for controlling the Remote controlled type of Aero model. Others were trained in assembling the catapult models and fabricating the Remote Controlled model respectively.
- c. Lecture cum Demo on Fire Fighting: The following presentation was made to all cadets, ANO & P I Staff in the camp.
  - (i) A Fire Services team from, Air Force Station Tambaram lead by Sgt Srinivas and Cpl Shamsher singh have illustrated the types of fire fighting and extinguishing techniques on 04 Dec 2003.
  - (ii) Another fire fighting lecture was taken by Mr. Karthikeyan of Everlife Fire services on 05 Dec 2003.

- d. Motivation Lecture by Gp Capt U Shastri: A motivation lecture on "Indian Air Force a heaven opportunity for engineers" was delivered by Gp Capt U Shastri, JDPO (PUB) Air HQ (VB), New Delhi to all SD Air NCC Cadet participating in the ATC-2003 from various institutions and also from IIT Madras at 1600 hrs on 05 Dec 03 in Central Lecture Theatre of IIT Madras.
- e. Visit to Airforce Station Tambaram: 240 NCC cadets visited Air force Station, Tambaram accompanied by 06 PI staff On 06 Dec 2003. Wg Cdr Rajesh Mohan, S Edn Offr welcomed and addressed the cadets at Roopavani theatre at 0930 hrs. Cadets visited various training institutes i.e WTI, MTI and FIS respectively. The practical demo on Principles of Flight, Flying controls and Aero engines were demonstrated by JWO PN Mishra AF/Fit and SGT Manoj RS Eng/Fit of this unit. Tea and snacks to cadets were arranged by Air Force Tambaram at Roopavani theatre. Flt Lt Dharival, F(P) of FIS motivated the visiting cadets by highlighting achievements of IAF and cheered them to join IAF for rewarding carrier.
- f. Range Firing practice: The Range firing practice was conducted with 0.22 Rifle, 12 Bore gun (Skeet shooting) for all cadets from 02 Dec 2003 to 06 Dec 2003 at Miniature range, IIT Madras. Necessary Range safety Precautions were observed by all the cadets. Flt Cadet V Barath of SVCE was adjudged Best Shooter and awarded with prizes and merit certificate.
- g. Interflight Competitions:
- (i) Drill Competition: An inter-flight drill competition was held on 07 Dec 2003 in which Flt 'A' was adjudged 1<sup>st</sup> and 2<sup>nd</sup> position went in favour of Flt 'B'. Winner and runners up were awarded with prizes and merit certificates
  - (ii) Best Flight Trophy: During the inter flight competitions, Flt 'A' was over all champions and lifted the "Best Flight Trophy" for Annual Training Camp -2003. The trophy was presented by the Chief Guest Cmde PP Singh VSM, DDG, NCC Dte (TN,P&AN).
  - (iii) Drawing Competition: An inter-flight drawing competition was conducted on 08 Dec 2003 at 1400 hrs on the following theme and winners were awarded with prizes and merit certificates.
    - Vigilance awareness
    - India Vision By 2020
  - (iv) Volley Ball Competition: An inter flight volley ball match championship was conducted from 03 Dec 2003 to 07 Dec 2003. In which Flt 'B' and Flt 'A' were adjourned as winner and runner respectively. Prizes and merit certificates were given to both the flights.
- h. Quiz Competition: Two Inter Flight Quiz competitions were organized at 1400 hrs and 2000 hrs on 07 Dec 2003 on "Current affairs and NCC" by Prof. L S Ganesh of IIT Madras and Mr Krishnamoorthy of SVCE, Sriperumbudur. The 1<sup>st</sup> and 2<sup>nd</sup> rankers in both the quiz were awarded merit certificates and prizes.
- i. Cross Country Race: A cross-country race was organized on 08 Dec 2003 at 0600 hrs in which all NCC cadets participated and first ten cadets of the race were awarded with prizes and merit certificates.
- j. Visits by Director/ Ddg/ Gp Cdr:
- (i) Gp Cdr visit: Gp Capt SH Kulkarani, GP Cdr, NCC Gp HQ Madras 'B' visited this camp at 1000 hrs on 04 Dec 2003. NCC cadets at Quarter Guard Area in the camp presented a Guard of honour. Later, Gp Cdr inspected Quarter Guard, Line and Tent areas, aero models, miniature range and a model class on "Principles of flight" conducted by JWO P N Mishra AF/Fit. Impressed with the Model class, Gp Cdr, a flier himself shared his experiences in this field with the cadets.
  - (ii) DDG and Director visit: The Chief guest, Commodore PP Singh, VSM had visited the camp site along with Prof. M S Ananth, Director, IIT Madras on 08 Dec 2003 at 1630 hrs. Air NCC cadets at IIT Stadium presented a Guard of honour to them. Camp Commandant Wg Cdr T Mohanakrishnan and Prof Idichandi, Dean of Students, IIT Madras accompanied the Chief guest. Chief Guest inspected the Quarter Guard, Line and Tent area and various Catapulted aero models and emphasized for procurement of required material for the improvement of aero modeling training.
  - (iii) Later the Chief guest inspected the Aero modeling training conducted by Mr. Radha Kamallakharan, Civilian Aero modeler to 29 Air NCC Cadets. Flt Cadet M Navaneetha Krishnan of IIT Madras was appreciated by the Chief Guest put up an excellent performance in remote controlled aero model.
  - (iv) Cultural evening by Air NCC Cadets: A Cultural show was presented to the Chief Guest Cmde PP Singh, VSM by the Air NCC Cadets on 08 Dec 2003 at 1700 hrs in the Central Lecture Theatre of IIT Madras. All participants were awarded with prizes and merit certificates. The show was concluded with NCC Song and National Anthem.

### III. NCC Certificate Exam:

It was held on 28 March 2004 and 04 Apr 2004 at IIT Madras for NCC cadets this institution. A total of 200 cadets were enrolled, under-gone vigorous training, examined and successfully completed the NCC training.

### IV. Conclusion:

Cadets were trained in different types of military tasks. The cadets had shown their interest in all the fields during the camp despite of hectic schedule there by displaying a high morale and sense of responsibility and devotion towards their duty.

### 9.4 N.S.S.:

#### I. During this year a new Coordinating Committee was appointed by the Institute:

- B. Subramanian, Coordinator
- John Bosco Lourdusamy, Member
- Venkatesh Balasubramaniam, Member
- R. Gnanamoorthy, Member

#### II. Twentyfour Student Coordinators were appointed by the Committee for the following NSS programmes:

1. HEADQUARTERS
2. SSA ("PRIME MINISTER'S EDUCATION FOR ALL") + RURAL SERVICES
3. LAKESIDE GROVE, DOS, LOW COST HOUSING
4. CAMPUS PATROL, ST.JOHN'S AMBULANCE
5. TEACHING
6. SOCIAL ENTREPRENEURSHIP, RURAL BAZAAR, E-PACKAGE FOR SHG
7. BANYAN (Interaction with NGO)

#### III. Charter:

The NSS charter has been revised by the new committee to read as follows:

- The NSS provides each student with a significant context in which he /she can arrive at a deeper understanding of social reality in India today.
- The NSS encourages the search for the meaning of life through service.
- By the spirit of SEVA, the NSS Volunteers try to attain to the real knowledge of the person and the environment and to a set of values integral to the Indian Way of Life.
- The NSS programmes offer rich value additions to undergraduate studies: for instance Certificate level courses in Social Entrepreneurship, Teachers' Training, Public Administration and Public Management, - all accented towards field work.

In all one hundred and eightyone first Year B.Tech. students were selected as volunteers. Based on their interests and qualifications, they were divided into seven groups. Each group took up one of the programmes listed above. NSS team started its activities on 3<sup>rd</sup> September 2003 with a grand inaugural. The guests invited were Prof. P.N. Devarajan and Rev. Father Dr. A. Amaldoss S.J.. The guests gave brief talks on the spirit of 'Seva'. After the function, volunteers were given a brief introduction to their programmes.

#### IV. Activities:

##### a. Headquarters:

There are seven volunteers and one coordinator in this group. The main aim of this group is to create the NSS website. They are also responsible for maintaining all the administrative work of NSS, the NSS- Notice Board, updating the bills and the attendance of all Volunteers.

##### b. SSA ("Prime Minister's Education for all") + Rural Services:

It's a scheme founded by the Hon. Prime Minister of India. There are thirty eight volunteers working under this programme along with three co-coordinators. Their work includes helping the children in KOGS (Keelottivakkam Grama Sangam, a home for disabled children) in their studies. The volunteers campaigned with the children to create awareness among people about the SSA programme in the village. The ticket sales for the Charity show organized by the Ladies Club of IIT Madras was also successfully taken up by this group. A huge collection of old clothes in the hostels adds to the remarkable services of this group. Now the group is engaged in a new programme: D-O-S, collection of dal, oil and sugar along with the cooperation of Ladies Club of IITMadras. Further it has also gone about collecting useful books for children of school going age.

##### c. Lakeside Grove, Dos, Low Cost Housing:

There are forty two volunteers and two co-coordinators in this group. This group has taken up the mega project of laying a path around the institute lake. The volunteers were sent for two days coaching classes to Kancheepuram on Low-Cost Housing Technology. After completing the camp successfully, the volunteers started their mega project on

27<sup>th</sup> September. The path is around 100 meters in length and 1.5 meters in width. One layer of mud and a layer of red sand gravel on it were laid on the path. Now the volunteers are lining the path with bricks on either side.

**d. Campus Patrol, St.Johns Ambulance:**

There are seventeen volunteers and two co-coordinators in this group. Under the guidance of Lt.Col.C. Rajendran (CSO), this group has been learning security drills and routines. They have also gone through a course on first-aid offered by St.John's Ambulance.

**e. Teaching:**

There are fortythree volunteers and twelve co-coordinators in this group. They conduct classes in Telugu and Tamil for Two Hundred and Fifteen Students at five centres at Taramani, Velachery and at the Institute. A training programme has been planned for all teaching volunteers from 9<sup>th</sup> April to 11<sup>th</sup> April 2004 with the help of resource persons from Olcott Memorial School

**f. Social Entrepreneurship, Rural Bazaar, E-Package for SHG:**

This programme focuses on interacting with self-help women's groups in Damal, Keezhambi and other outer areas of Kanchipuram. There are twentyfour volunteers and two co-coordinators in this group. The main objectives of this group includes an exposure of the students to the present living conditions of poor rural women, development activities for improving their living in Kancheepuram and developing a software programme for savings and micro-credit operations of SHGs

**g. Banyan:**

There are ten volunteers with one co-coordinator in this group. The prime aim of this group is to develop a comprehensive Management Information System (MIS), encompassing all the activities of the "Home for the Destitute Women". They had a field visit to the Home which enabled them to understand the ground realities of managing the day to day activities of the "Home for the Destitute Women". The proposed MIS should be able to manage Finance, Records and all other administrative activities of the home.

**V. Courses:**

In addition students have attended courses on Public Administration and Management by Prof. Jeeva (Head of Department of Public Administration, Madras Christian College), on Banking and Financial Accounting organized by Prof. S.Madhumathi. and the course on Social Entrepreneurship offered by Shri.P.N.Devarajan of CSIM.

**VI. Extramural Programmes:**

- The NSS Volunteers were given a chance to have an interactive session with Dr. Sandeep Pandey (Raman Magsaysay Award winner).
- Renowned Social Worker Padmashree P.Rajaram addressed NSS Volunteers on Social Consciousness.

**9.5 Gymkhana:**

The Institute Gymkhana takes care of general welfare, the Sports and Cultural activities of students in particular.

Students activities, health and welfare are looked after by a Board of Students constituted for the purpose with the Dean of Students as the chairman of the Board, Advisor (Sports) and Advisor (Cultural) look after sports and Cultural respectively.

**Sports Activities:**

Sports activities form an integral part for the overall development of personality which prepares the students to overcome challenges in their walk of life after their graduation. Hence the students are encouraged for maximum participation in the Sports Tournaments, i.e.

- The Inter Collegiate Invitation Tournament
- IIT Sanmar Inter-Collegiate Invitation Cricket Tournament
- Inter IIT Sports meet
- All India Inter Collegiate Basket Ball Tournament for men (Gerhard Fischer Trophy) and for women (Mrs. Kokila Rajaiah Trophy)
- Inter Hostel Tournaments
- Institute Open Bridge Tournament, etc.

are spread over the Academic year

**Inter IIT Aquatic Meet:**

Inter IIT Aquatic meet was held from 7<sup>th</sup> to 9<sup>th</sup> October 2003 at IIT Bombay. Six IITs, excluding IIT Guwahati participated in the above meet. IIT Madras declared as Runner up in Water Polo and won the overall championship in Swimming.



**Inter IIT Sports Meet:**

The 39<sup>th</sup> Inter IIT Sports meet held at IIT Bombay from 13<sup>th</sup> to 19<sup>th</sup> December 2003 and IIT Madras stood FIRST and declared as over all champion. Our boys won Gold in Badminton, Hockey, Swimming, and Athletics; Silver in Table Tennis, Basket Ball, Football, Cricket, Tennis and Water Polo; Bronze in Volleyball. Our Girls made a sincere effort in all the sports. They won Silver Medal in Badminton.

SPECIAL MENTION: Our Athletic Team performed very well and stood first place (98 points) with a big margin. Hockey Team also won all the encounters and placed in first. In Swimming, our team won the Trophy with a great margin. Our Badminton team won the match in splendid performance. Mr.V.M. Biju, Sports Secretary was declared as Individual Champion in Athletics and won Mr.Inter IIT 2003.

**All India Inter Collegiate Invitation Basket Ball Tournament 2004:**

This tournament was conducted from 31<sup>st</sup> January to 4<sup>th</sup> February 2004, attracted outstation teams from South India. The large number of spectators who attended this tournament witnessed many exciting matches. Our boys displayed excellent performance against other teams and entered into the round robin league. G.R. Damodaran College of Arts and Science, Coimbatore won the Gerhard Fischer Cup for Men Colleges, and M.O.P. Vaishnav College for Women, Chennai won the Kokila Rajaiah Trophy for the Women College.

**IIT SANMAR CRICKET TOURNAMENT:**

The most prestigious IIT Sanmar Inter Collegiate Cricket Tournament for city college students sponsored by "Sanmar Group" the IIT Sanmar Cricket Tournament was conducted from 12<sup>th</sup> February to 6<sup>th</sup> March 2004 with 18 teams participating for top honour witnessed a high level of competition. Gurunanak College won the Trophy and Pachaiyappas College stood in second position.

The Inter Hostel Tournament were conducted in all the games / events throughout the academic year and were keenly contested for the Schroeter Trophy for General Championship in Inter IIT Sports events and a separate Dean's Trophy events were also conducted for non media and non Inter IIT sports events. Jamuna Hostel won the Schroeter Trophy and the Dean's Trophy goes to Alakananda Hostel.

**Non Media Tournaments:**

The following non media Tournaments were conducted for the students. 9-a-side Tennis ball Cricket, 6-a-side Hockey, 6-a-side Football, 3-a-side Basketball and 3-a-side Volleyball. Institute Open events i.e. Road race, Cycle race, Triathalon etc. This has promoted larger number of participation and chance for every one in the Hostel. As usual, attracted large participants with more number of student spectators witnessed and encouraged their teams.

All Gymkhana Clubs like Fitness Club with newly added facilities, Badminton Club, Tennis Club and Swimming Pool Club functioned well during the period. The Swimming pool renovation work is in progress.

**National Sports Organisation:**

NSO is functioning as per the Government of India's decision for improving sports with special reference upkeep the Fitness of students. Our Institute took necessary steps for encouraging students to participate in various games and sports events and in Physical Fitness activity as well.

This year nearly 150 first year undergraduate students were registered under this scheme. Officials / experts from various sports Federation were engaged for coaching our students.

The note worthy performance of sizable first year students at the various tournaments viz Inter IIT Sports Meet and All India Inter Collegiate Invitation Tournament for their due efforts here.

**Annual Bridge Open Tournament:**

IIT Gymkhana conducted the Open Bridge Tournament. Large number of students and staff team participated.

Sportfest was conducted for the city colleges in selected sports and games during 29<sup>th</sup> September to 3<sup>rd</sup> October 2003. They are Badminton, Basket Ball, Table Tennis, Tennis, Volley Ball, Foot Ball and Hockey. Our boys played extremely well in most of the games resulting IIT Madras won the over all Championship in 39<sup>th</sup> Inter IIT Sports meet at IIT Bombay.

**9.6 Advisor, Foreign Students and Weaker Section:**

This institute has nominated one Advisor to take care of the welfare of the foreign national and weaker sections students. He periodically meets these students in his designed office and counsels them for various academic and non-academic requirements. During the period under report, 4 students in the weaker section and one foreign national student could not do well and they were counseled. Due to this counseling, they performed very well in their subsequent semesters.

In addition, the Advisor arranged for extra classes in Physics and Mathematics between August and October 2002 for the weaker section and foreign national student of B.Tech programme as they expressed difficulty in understanding during normal teaching hours. Also drawing instruments have been issued to all the first year students belonging to weaker section.

This year a new Mentor programme has been introduced to help the weaker section students. In this programme each First Year Student belonging to weaker section is attached with a mentor (from Senior Students) for discussion and guidance on the academic matters. The reports will be periodically reviewed and discussed with the Advisor.

### 9.7 Guidance and Counselling Unit

A Campus information booklet – "IIT Life – A Glance" was prepared for all the fresh students and were made available to all of them.

The first year B.Tech students were distributed to various student counselors and faculty counselors for individual attention.

The first year students with their parents or guardians were received by the student counselors at the railway station and helped to settle down in their stay quickly.

Student problems were solved by the counselors by applying individual attention.

The unit attended few emotional counseling since such problems are more during the first year.

The unit arranged, whenever possible, instruction classes by senior students to the needy first year students who wanted guidance in subjects like Mathematics, Physics and Chemistry.

### 9.8 Women's Forum

The Women's Forum of IIT Madras (WFIITM) has formed to address issues related to the work, welfare and development of the women of IIT Madras. The forum was formally inaugurated by the Director Prof. M.S. Ananth on November 6<sup>th</sup>, 2002. The response from various sections of women of the institute has been enthusiastic and encouraging.

#### Special Lectures

1. Dr. Prema Rajagopalan, Assistant Professor, Department of Humanities and Social Sciences, IIT Madras spoke on "Women and Work" in the meeting of the Women's Forum held on 21<sup>st</sup> of August 2003 at CLT. Dr. Usha Titus, Registrar, IIT Madras, presided over the meeting.
2. Dr. Susy Varghese, Assistant Professor, Department of Chemical Engineering, IIT Madras delivered an enchanting slide show and talk on "Exploring the Sanctuary, IIT Madras" at CLT
3. The first anniversary celebrations of the Women's Forum took place on November 7<sup>th</sup> 2003 at CLT. The Chief guest Dr. V. Vasanth Devi Chairperson, Tamil Nadu State Commission for Women, spoke on the Responsibility of Educated Women.

#### International Women's Day Celebrations in March 2004

1. In connection with the International Women's Day the following programmes were conducted : A Special programme on Yoga and Better Health was organized for the women employees of the Institute through the HRD wing. It was held at the IC & SR auditorium on march 8<sup>th</sup>. About 60 women employee participated in the programme and found it very useful and interesting.
2. Dr. Suniti Solomon, Founder-Director YRG CARE, Chennai, gave a very interesting and illuminating talk on "Combination of Science and Commitment to caring for People Living with HIV/AIDS, on 19<sup>th</sup> March, 2004 at CLT.

A Workshop was held by Dr. Aarti Kawlra, national institute of Fashion Technology, Chennai, on "FASHIONING IDENTITY : Some 20<sup>th</sup> Century Expressions" for the students on 23<sup>rd</sup> March, 2004.

#### Meeting attended by members

1. Dr. Devaki Reddy, Assistant professor, Department of Humanities and Social Sciences, attended an International Conference on "Women in the Digital era : Challenges and opportunities" and presented a paper titled "Women's empowerment and Language" at the Annamalai University, Chidambaram, T.N. during 10-12<sup>th</sup> December 2003.
2. Dr. Malathy Duraisamy, professor, Department of Humanities and Social Sciences, presented a paper on "Women's participation in Scientific and Technical Education and Labour markets in India" at the International Conference on Women in Sciences, at NISTADS, Delhi, march 8<sup>th</sup>, 2004.
3. Dr. Malathy Duraisamy delivered a lecture on "Profile of Women in higher Education and Women Mangers in India" in a three day training programme organized by the National Institute of Port Management in Chennai, March 29, 2004.

## 10. STUDENTS PLACEMENT

### 10.1 Introduction:

Placement Office of this Institute maintains a symbiotic, vibrant and purposeful interaction with industries across the country. About 200 industries drawn both from the private and public sectors are in this office list. This year 90 companies visited our Campus for conducting interviews. These can be either hardcore engineering industries, software companies, manufacturing organizations, engineering consultancy firms, management consultancy setUps or R and D laboratories.

Similarly, the types of jobs available to the graduates are of a wide variety – it can be a graduate engineer trainee, a management trainee, a software professional, a purely R & D job or a career involving consultancy or design.

Details of the number of students placed during the period under report are given below as against those registered during 2003 – 2004.

Department	B.Tech	Dual Degree	M.Sc	M.Tech	M.B.A	M.S.	Ph.D	Total
Aerospace Engineering	13	2	-	1	-	4	-	20
Applied Mechanics	-	-	-	3	-	2	-	5
Chemical Engineering	32	9	-	8	-	-	-	49
Chemistry	-	-	4	-	-	-	-	4
Civil Engineering	29	1	-	8	-	2	-	40
Computer Sc. & Engg.	22	5	-	29	-	16	-	72
Electrical Engineering	74	20	-	35	-	8	1	138
Humanities & Soc. Sci.	-	-	-	-	31	2	1	34
Mathematics	-	-	7	2	-	-	-	9
Mechanical Engg.	60	18	-	44	-	14	1	137
Met. & Mat. Engg.	18	2	-	1	-	2	-	23
Ocean & Naval Arch.	13	2	-	-	-	1	-	16
Physics	-	-	4	1	-	-	-	5
<b>Total</b>	<b>261</b>	<b>59</b>	<b>15</b>	<b>132</b>	<b>31</b>	<b>51</b>	<b>3</b>	<b>552</b>

During the year under report 552 students / scholars were placed in different industries. Besides, above, 1 Systems Trainee of Computer Centre and 11 seniors students who have been permitted to re-register were also placed.

## 11. FINANCIAL ASSISTANCE TO STUDENTS

Financial assistance in the form of scholarships and fellowships is given 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 2003-04 are as follows:

### 11.1 Assistance to B.Tech students:

Merit-cum-means scholarships of Rs.300 p.m. were sanctioned to the B.Tech. students whose parental income is less than Rs.One lakh besides the exemption from payment of tuition fees. During the period under report 197 students benefitted. The year-wise details of number of students benefitted are given in Table 11.1.

SC/ ST students admitted to B.Tech programme upto July 2003 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 Government of India post-matric scholarship rules. As on 31.3.2004, 35 students benefitted. The year-wise details of number of students benefitted also are given below:

No. of MCM and SC/ST scholarships

Batch	MCM Scholarship	SC/ST Scholarship
2003	47	8
2002	66	2
2001	50	12
2000	34	13
Total	197	35

In addition to the above, the Institute sanctioned notional prize of Rs.1000/- to 29 first B.Tech top ranking (in the JEE 2002) students whose parental income is more than Rupees One lakh.

### 11.2 Other Scholarships:

Scholarships were sanctioned by NCERT, GOI and State Governments to meritorious students pursuing B.Tech programme in this Institute. The batch-wise details of number of students benefitted by these scholarships are given below:

No. of NCERT Scholarship obtained by B.Tech students

Batch	Total no. of Students
2003	19
2002	40
2001	40
2000	62
Total	161

No. of State Government Scholarship obtained by B.Tech students

State	Batch / Total no. of students			
	2003	2002	2001	2000
Andhra Pradesh	197	145	112	21
Delhi	-	-	4	6
Karnataka	1	2	-	-
Kerala	2	-	2	-
Tamil Nadu	-	1	1	1
Other States	1	-	9	7
Total	201	148	128	35

#### 11.3.1 M.Tech:

Students who joined M.Tech programme through GATE were awarded Half-time Teaching Assistantship (HTTA) at Rs.5000/- per month. During the period under report 252 fresh assistantships and 232 renewed assistantships were given. The department-wise details are given below:

## No. of HTTA awarded

Sl. No.	Discipline	Fresh – 2003 batch		Renewal - 2002 batch
		I Sem.	Non-HTTA got HTTA	
1	Aerospace Engineering	9	2	6
2	Applied Mechanics	11	2	8
3	Chemical Engineering	24	5	37
4	Civil Engineering	29	6	17
5	Computer Science & Engg.	37	-	35
6	Electrical Engineering	59	6	44
8	Indl. Maths & Sc.Computing	5	3	6
9	Mechanical Engineering	53	9	58
10	Metallurgical & Mat. Engg.	14	2	13
11	Ocean Engineering	7	2	3
12	Solid State Technology	4	1	5
<b>Total</b>		<b>252</b>	<b>38</b>	<b>232</b>

## 11.3.2 M.Tech Dual Degree

Students who joined M.Tech programme under Dual Degree of 1999 batch were awarded Half-time Teaching Assistantship (HTTA) at Rs.5000/- per month based on their obtaining valid GATE score. During the period under report 77 students were awarded fresh assistantships of Rs.5000/- per month in July 2003 and 77 renewed assistantships in Jan. 2004, out of which 69 students were renewed HTTA at the rate of Rs.5000/- p.m. and 8 students at the rate of Rs.2858/- p.m. since they obtained CGPA of less than 6.5 in July-Nov. 2003 semester. The department-wise details are given below:

Sl. No.	Discipline	1999 batch	
		Fresh (9 <sup>th</sup> Sem.)	Renewal (10 <sup>th</sup> Sem.)
1	Aerospace Engineering	6	6
2	Chemical Engineering	13	13
3	Infrastructural Civil Engg.	7	7
4	Computer Science & Engg.	5	5
5	Electrical Engineering	19	19
6	Mechanical Engineering	18	18
7	Met. & Mat. Engineering	5	5
8	Naval Arch. & Ocean Engg.	4	4
<b>Total</b>		<b>77</b>	<b>77</b>

## 11.4 M.Sc.:

Students admitted to M.Sc programme were sanctioned Rs 300/- p.m. merit scholarship as per rule. Exemption from payment of tuition fee was also given to certain students. During the period under report 53 students benefitted. The department-wise details are given below:

## No. of Merit Scholarship and freship awarded

Sl. No.	Course	Merit scholarship		Freship (tuition fees waiver)	
		1 <sup>st</sup> Year	2 <sup>nd</sup> Year	1 <sup>st</sup> Year	2 <sup>nd</sup> Year
1.	Chemistry	6	5	2	2
2.	Mathematics	6	6	3	3
3.	Physics	7	6	4	3
<b>Total</b>		<b>19</b>	<b>17</b>	<b>9</b>	<b>8</b>

## 11.5 M.S.:

The scholars admitted to MS programme through GATE are given Half-time Teaching Research Assistantship (HTRA) of Rs 5000/- p.m. for three years. During the period under report 268 scholars received this assistantship of whom 127 were fresh scholars. The department-wise details of the assistantships awarded and renewed are given below:

## No. of HTRA awarded

Sl. No.	Discipline	Fresh	Renewal	Total
1	Aerospace Engineering	6	8	14
2	Applied Mechanics	15	16	31
3	Chemical Engineering	5	6	11
4	Civil Engineering	16	15	31
5	Computer Sc. & Engg.	18	25	43
6	Electrical Engineering	20	22	42
7	Humanities & Soc. Sc.	4	4	8
8	Mechanical Engineering	20	22	42
9	Metallurgical & Mat. Engg.	11	11	22
10	Ocean Engineering	12	17	29
	<b>Total</b>	<b>127</b>	<b>146</b>	<b>273</b>

## 11.6 Ph.D:

The Scholars admitted to Ph.D. full time programme in Engineering are sanctioned Half-time Teaching / Research Assistantship (HTRA) of Rs.9500/- p.m. for first 2 years and Rs.10000/- p.m. for next 2 years. Scholars admitted to the Ph.D fulltime programme in the Science subjects through GATE or other equivalent exams are sanctioned Rs.8000/- p.m. for first 2 years and Rs.9000/- p.m. for next 2 years. During the period under report 408 students obtained assistantships of whom 142 were fresh scholars. The department-wise details of the assistantships awarded and renewed are given below:

## No. of HTRA awarded

Sl. No.	Discipline	Fresh	Renewal	Total
1	Aerospace Engineering	2	3	5
2	Applied Mechanics	7	9	16
3	Chemical Engineering	6	19	25
4	Chemistry	15	56	71
5	Civil Engineering	14	29	43
6	Computer Science & Engg.	3	11	14
7	Electrical Engineering	16	16	32
8	Humanities & Soc. Sciences	11	17	28
9	Mathematics	8	23	31
10	Mechanical Engineering	28	43	71
11	Metallurgical & Mat. Engg.	9	20	29
12	Ocean Engineering	9	10	19
13	Physics	14	34	48
	<b>Total</b>	<b>142</b>	<b>290</b>	<b>432</b>

## 11.7 Financial Assistance to Research Scholars/Students for presentation of papers (abroad):

This Institute is encouraging the Research Scholars to present papers in international conferences for which they are given financial assistance. The financial assistance provided to M.S. & Ph.D. scholars is given under:

Adhoc amount	:	Rs. 10,000/-
Registration fee	:	US \$ 300

## National conference/International conference in India:

Research scholars and students of course programmes are given the following financial assistance for presentation of papers in National/International Conferences in India:

## Registration fee:

National conference	:	Rs. 2,000/-
International conference	:	Rs. 3,000/-
Travel	:	Second class rail fare
Daily allowance	:	Rs. 120/- per day irrespective of the city subject to a maximum of 10 days.

## 12. WEAKER SECTION & FOREIGN NATIONAL STUDENTS

### 12.1 B.Tech programme:

As per the GOI orders 15% and 7.5% of seats are reserved for SC and ST students respectively in the B.Tech. programme. These students are admitted through the Joint Entrance Examination with a relaxation. These students have to get only 60% of the marks obtained by the last student of the general category to get qualified for admission. During counselling prior to admission, the Adviser explained to each student the requirements of different branches. This helped the students to choose a suitable branch based upon their capability and interest. When a student finds the chosen branch is tough, he is allowed to switch over to lower JEE cut-off branch at the end of his first semester.

The following are the details of number of SC/ST students admitted to B.Tech programme through JEE and Preparatory Course in July 2003:

Total Sanctioned Intake	Sanctioned Intake		No. joined through				
			Programme	JEE		Preparatory Course	
	SC	ST		SC	ST	SC	ST
432	68	30	B.Tech	35	5	14	14
			Dual Degree	8	-	4	6

SC/ST students admitted against reservation are given the following benefits:

- Travelling allowance (II Class train fare/ordinary bus fare) from the place of residence to Chennai to join the B.Tech programme.
- Tuition fee waiver.
- Free lodging and messing (basic menu only) and pocket allowance of Rs.70/- p.m. provided their parents' income is Rs.1,00,000/- net per annum or less.
- A Book Bank as part of Central Library is maintained for the benefit of the SC/ST students. The students are issued 12 tickets for taking books from the Book Bank. Books are issued for a semester.
- Drawing instrument (Mini-drafter) free of cost.
- Help in getting placement. Wherever possible, industries are requested to conduct separate interviews for SC/ST students and the requirements for these students are lower than those for the general category.

### 12.2 Preparatory Course for admission to B.Tech programme:

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 Joint Entrance Examination list of SC/ST students who did not qualify for admission. Upon successfully completing the preparatory course at the IIT, they would be eligible to join the B.Tech programme and they will not require to write the JEE again. Following are the details of admission in July 2003:

Offer issued for PC		No. joined	
SC	ST	SC	ST
85	19	38	13

In July 2002, 34 SC and 22 ST candidates were offered admission, but 28 SC and 21 ST students only joined. Of this, all 28 SC and 21 ST students successfully completed the course and joined B.Tech programme.

### 12.3 M.Tech programme:

Seats are reserved for SC and ST candidates as per the Government of India orders. They are admitted through GATE by a separate merit list. Following are the details of admission in July 2003:

Offer issued		No. joined	
SC	ST	SC	ST
110	49	46	21

#### 12.4 M.Sc programme:

Admission was made to the M.Sc. programme through entrance examinations only. 3 students were admitted in SC category. These students were given tuition fee waiver.

M.Tech and M.Sc students admitted against reservation are given the following benefits:

- Book Bank facility with 12 library tickets. Books are issued for a semester.
- Both Public Sector and Private Sector industries were requested to recruit SC and ST students. Other special steps were also taken to enhance the recruitment of this category of students.
- Scholarship is given to these students as per Govt. of India norms.

#### 12.5 Admission of Foreign National Students and Indian National Residing Abroad:

In July 2003, 8 foreign national students joined M.Tech programme.

At the end of March 2004, 14 foreign nationals and 49 Indian nationals residing abroad were on the rolls of the Institute. The programme and country-wise details are given below:

Country	I Year	II Year	III Year	IV Year	V Year	Total
<b>1. Foreign National Students</b>						
<b>B.Tech</b>						
Guinea	-	-	1	-	-	1
Sri Lanka	-	-	1	-	-	1
Thailand	-	1	-	-	-	1
USA	-	-	1	1	-	2
<b>M.Tech</b>						
Ethiopia	8	-	-	-	-	8
Nepal	-	1	-	-	-	1
<b>Total</b>	<b>8</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>-</b>	<b>14</b>
<b>2. INRA students</b>						
Abu Dhabi	-	1	-	-	-	1
Bahrain	-	3	-	-	1	4
Dubai	-	-	5	-	-	5
Kuwait	-	4	2	2	-	8
Kenya	-	1	-	-	-	1
Muscat	-	-	2	-	-	2
Oman	-	1	-	2	1	4
Qatar	-	1	-	-	-	1
Saudi Arabia	-	1	3	1	1	6
Singapore	-	1	-	-	-	1
UAE	-	5	-	9	1	15
Zambia	-	-	1	-	-	1
<b>Total</b>	<b>-</b>	<b>18</b>	<b>13</b>	<b>14</b>	<b>4</b>	<b>49</b>

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.

In addition to the above, IIT Madras Alumni Association provides financial assistance to students under IITMAANA Travel grant program to assist 4 or 5 IITM students per year to visit USA and present their papers at nationally recognized technical conferences. The grant will cover airline ticket charges and visa fees but exclude payment of conference registration fees.



### 13. CAMPUS AMENITIES

IIT Madras is a residential Institution. It is housing about 3044 Students and 992 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.

#### 13.1 Major Works:

The following are the major works completed during the year 2003-04:

Sl. No.	Name of the work	Amount (Rupees in lakhs)
1.	Construction of additional rooms & Toilets for Krishna & Cauvery Hostel	339.92
2.	Modification of toilets at Institute area	82.00
3.	Modification of toilets at Hostel area	286.00
4.	Renovation toilet at Workshop Zone	135.00
5.	Renovation toilet at Residential Zone	160.00
6.	Construction of 1st, 2nd & 3rd floor over New Library Building	303.92
7.	Providing Scooter /cycle shed in various places	109.00
8.	Construction of Underground sump for Hostel Zone	44.00
9.	Extention of Canara Bank	14.48
10.	Construction of 2nd floor for CCE at TGH	19.60
11.	Construction of Additional Class Rooms for Civil & CSE	24.35
12.	2nd floor at Chemical Kinetic and Catalysis lab	26.11
13.	Construction of two substations	18.28
14.	Extension of G.F. FF. And SF of Taramani Guest House Easter wing	46.58
15.	Proposed extension of class room in 2 Floor at Central School	12.52
16.	Extension of First and second floor for civil Engineering and Computer science Engineering	23.92
17.	Deepening the approach canal from peeliamman temple and Lare well area	46.24
18.	Modification & Renovation of D1 type Quarters into C1 type quarters	23.21
19.	Deepening the canals near east side of compound wall Desalting the lake area and Strengthening the lake bunts at IIT campus	12.60
20.	Constructions of additional class Room for civil & CSE in BSB	22.42
21.	Improvement of Students Rooms (Brahmaputra Hostel )	34.40
22.	Improvement of Students Rooms(Alakananda Hostel )	34.40
23.	Improvement of Students Rooms at Narmada Hostel	34.40

#### Work in progress:

1.	Proposed construction of lift well for BSB & CLT at IIT M Campus Additional.	5.05
2.	IIT madras Providing Laying weathering course and leak proof treatment for Expansion joints.	46.10
3.	Proposed Additional construction to central Electronics center	55.14
4.	Deepening Approach canal from the North side of the lake.	12.17
5.	Providing wardrobe shutters in students Rooms at Hostel	30.48
6.	Proposed construction of life well for machine design Block Structural Engineering Department at CSD at IIT campus.	11.38
7.	Proposed Construction of Research scholar Room in TTML (Ground & first Floor)	6.43
8.	Proposed interior works for Dean's students at IITM Campus.	20.81
9.	Renovation of Bath & Toilets at E type Quarters.	31.27
10.	Construction of Quarters for Married Research Scholars 48 Quarters 4 Block & 12.	105.89
11.	Proposed construction of three substations at madras avenue near substation thermodynamics Lab at IITM camps	20.62
12.	Improvement of CAD/CAD Lab and stair case area & Proposed Construction	13.91
13.	Proposed construction well for Ocean Engineering Department at IITM.	2.52
14.	Providing RCC Fins at Administrative Block	23.92
15.	Construction of additional stair case for V.V.M.H.S School	6.45
16.	Constructions of Proposed Ladies Club 1 <sup>st</sup> floor	16.62
17.	Improvement of Students Rooms (Saraswathi Hostel)	34.4
18.	Improvement of Students Rooms (Tapti Hostel)	34.4
19.	Renovation of Kitchen quarters 82 Flats	28.67
20.	Proposed Expansion of Canara Bank	14.48

21.	Appointment of project management consultants for const. Of New Hostel Block at IITM	60.00
22.	Construction of proposed additional III floor for Ganga, Jamuna and Godavari Hostels	264.00
23.	Project management consultant for construction of Mega Mess II	14.25
24.	Appointment of Architects for the work of Building and Infrastructure for Biotechnology Department	7.30
25.	Appointment of consultants for Providing consultancy service for a sewage treatment of IITM	2.50

### 13.2 Housing Facilities:

As on 31.03.2004, there were 992 quarters in the Campus out of which 24 D1 type quarters are being converted into 12 C1 type quarters and balance 968 quarters are available for accommodation to the staff members. In addition to this 140 servant quarters were also in the campus.

### 13.3. Horticulture:

A separate horticulture unit is functioning under Engineering Unit. During the year 2003-2004, grassland was developed in front of SAC Building to facilitate grazing by blackbuck deer and another new lawning is being developed in front of Alumni building.

### 13.4 Telephone Facilities:

A new Telephone Exchange was commissioned by BSNL, Chennai Telephones Division in the Campus. All direct lines of this institute which were linked from Raj Bhavan Telephone Exchange were linked to this Exchange.

### 13.5 Central Supplies Unit:

It functions under the administration of a warden. This unit procures milk from Tamil Nadu Co-operative Milk producers' Federation and distributes to the student hostels. Under the provision supply scheme, the unit procures the items of major consumption from the wholesale suppliers and distributes them to the hostels, thus economizing the mess expenditure in the hostel.

### 13.6 Guest House:

There are two Guest House in the Campus viz. the Main Guest House and Taramani Guest House which have 7 suites and 84 rooms respectively.

### 13.7 Hospital:

Institute hospital serves for about 1500 employees, 5500 dependents, 4800 students, 600 retired staff and about 500 project staff. In total about 12,900 persons are registered in the hospital.

#### Doctors:

Dr. N.A.Jayavelan	Chief Medical Officer i/c
Dr. S.Aruna	Medical Officer
Dr. C.Sridevi	Medical Officer
Dr. Mahalakshmi Ravi	Medical Officer
Dr. D.Vindhya	Junior Medical Officer
Dr. R.Gopinath	Junior Medical Officer

#### Part-time Consultants:

Dr.S.Rathnamala	Ophthalmologist
Dr.R.Rajkumar	Psychiatrist
Dr.Jayashree Murthy	Gynaecologist
Dr. Indira Chaturvedi	Paediatrician
Dr. M.S.Somam	Gynaecologist
Dr. V.Rajakumar	General Surgeon
Dr. Sudhakar Williams	Orthopaedic Surgeon
Dr. P.V.Jayashankar	Orthopaedic Surgeon
Dr. Vijayakumar Menon	Cardiologist
Dr. V.Sumathi	ENT
Dr. K.N.Sarveswari	Dermatologist
Dr. Nirupa Somasundaram	Diabetologist

**Paramedical Staff:**

Staff Nurses	8
Pharmacists	2
Lab. Technician	1
Male & Female Helpers	16
Others	4

**Out-patient service:**

Institute hospital has fully computerized O.P. card registration system for all the staff/students and others. In 2003-04, 46,153 out-patients were treated in the hospital.

**In-patient service:**

Institute hospital has 35 beds for treating in-patients. In 2003-04, 489 patients were treated as in-patients.

**Emergency service:**

Emergency service is available round the clock on all the days with a duty doctor and supporting staff. 2177 emergency cases were attended during non-OP hours in 2003-04. An ambulance service is available on call.

**Clinical Laboratory service:**

A well-equipped clinical laboratory with a qualified Laboratory Technician is available. 15,985 clinical laboratory tests and 5970 biochemical tests (blood sugar and urea) were done in 2003-04. A modern computerized ECG recorder facility is available round the clock. 680 ECGs were recorded during 2003-04.

**Computerisation:**

The hospital software which was developed during 1989-91, had been upgraded by rewriting it using new software by the Computer Centre. Registration module was completed and implemented which now stores all photos of students, staff and their dependants. We have printed new hospital case records with photos. Other modules are under development.

**Treatment for Non-entitled:**

Non-entitled guests of a staff member/student when accompanied by the staff member/student or his authorized dependent, can avail emergency treatment on payment basis subject to the Institute rules. About Rs.30,000/- was collected in the year 2003-04.

**Stores and Dispensary:**

A medical cum surgical stores manned by a qualified pharmacist is available. It had dealt with the purchase worth more than Rs. 12 lakhs in 2003-04. X-ray machine and accessories was purchased for Rs. 4, 93,112/-. Dental chair and instruments was purchased for Rs. 3,21,317/-. An eye refraction unit was purchased for Rs. 88,000.00.

All drugs purchased at the hospital are decided by the hospital drug committee. To ensure that the drugs are of superior quality, quotations were called for from recognized drug manufacturing companies only.

**Out Sources:**

Apollo Hospital Pharmacy had started functioning at our hospital from 18.3.2004. Hence the medical claim for the drugs bought outside had been stopped with effect from 1.4.2004.

Our Director inaugurated the services of Sundaram Medical Foundation Laboratory, Trauma Care Consortium Ambulance Services and Casualty on 1.3.2004.

The New India Assurance Co Ltd is providing 'Mediclam' coverage for the staff and their dependants and retired staff and their spouses. This scheme was implemented with effect from 1<sup>st</sup> February 2004.

**Hospital Office:**

Apart from dealing with the administration of the hospital, this office processes medical reimbursement claims. Medical claims were scrutinized, processed and passed on for payment to the tune of Rs.60.22 lakhs in the year 2003-04. Registration of new hospital case records and updating is taken care at this office. In 2003-04 about 3000 new case records were registered or updated.

**13.8 Bank:**

State Bank of India IIT branch is functioning on the campus. Canara Bank branch is also functioning on the campus.

**13.9 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 needs of the staff, students and residents of the campus.

**13.10 Schools:**

Vanavani Matriculation Higher Secondary School (VVMHSS) administered by IIT Madras Employees' Educational Society is functioning on the campus besides a Kendriya Vidyalaya (K.V.) VVMHSS school is offering courses from LKG to XII Standards and the KV is offering courses from I standard to XII standard.

**13.11 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.

**13.12 Student Activities Centre:**

This building is used for indoor games of the students as well as for the conduct of important functions such as Convocation, orientation programme for freshers etc.

**13.13 Cafeteria:**

Two Canteens, viz. IIT Staff Canteen and Nandhiniee 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.

**13.14 Creeche:**

A Creeche is functioning in the campus for the benefit of staff/ working women. There were about 50 children in the Creeche during the period under report.

**13.15 Transport Services:**

The Institute has 5 buses which provide transport facility to the staff, students and residents of the campus.

**13.16 Campus News:**

A Campus News is published every Friday highlighting the important events of the Institute.

## 14. FINANCE AND ACCOUNTS

The financial year of the Institute corresponds with that of Government of India i.e., 1<sup>st</sup> April to 31<sup>st</sup> March of the following year. The Accounts of the Institute are annually audited by the Principal Accountant General, (Tamil Nadu & Pondicherry), Chennai on behalf of the Controller & Auditor General of India.

The 66<sup>th</sup> Finance Committee of the Institute in its meeting held on 7.2.2004 recommended Non Plan Revised Estimates of Rs.9750 Lakhs (Gross) for 2003-04 and Budget Estimates of Rs.9280 Lakhs (Gross) for the year 2004-05. The committee also recommended Plan Revised Estimate of Rs.3690 Lakhs for 2003-04 and Rs.4000 Lakhs Plan Budget Estimate for 2004-05.

The following are the summary of Revised Estimates for 2003-04 and Budget Estimates for 2004-05 approved by the Board of Governors of the Institute in their 184<sup>th</sup> Meeting held on 7<sup>th</sup> February 2004.

(Rs. in lakhs)

Head	BE 2003-04	RE 2003-04	BE 2004-05
<b>I. Non-Plan</b>			
Income	2020.00	2750.00	2600.00
Grant from MHRD	7200.00	7000.00	7000.00
<b>Total</b>	<b>9220.00</b>	<b>9750.00</b>	<b>9600.00</b>
Expenditure:			
Recurring	9220.00	9750.00	9600.00
<b>Total</b>	<b>9220.00</b>	<b>9750.00</b>	<b>9600.00</b>
<b>II. Plan:</b>			
Grant from MHRD	4100.00	3690.00	4000.00
<b>Total</b>	<b>4100.00</b>	<b>3690.00</b>	<b>4000.00</b>
Expenditure: Non-Recurring	4100.00	3690.00	4000.00
<b>Total</b>	<b>4100.00</b>	<b>3690.00</b>	<b>4000.00</b>

### Audit:

The Annual Accounts of the Institute for the year 2002-03 was audited by Accountant General (Tamil Nadu & Pondicherry) between June 2003-August 2003. The certified copy of Accounts and Audit Report were sent to MHRD, New Delhi for placing before Parliament during December 2003.

Summary of Plan/Non-Plan funds utilization for 2002-2003 is as below:

### PLAN :

Opening Balance	:	15.95 Crores
Grant sanctioned during 2002-2003	:	20.00 Crores
<b>Total available</b>	:	<b><u>35.95 Crores</u></b>

### Payment during 2002-2003

Equipments	:	13.42 Crores
Motor Vehicle	:	1.78 Crores
Network Activity/Computing Facilities	:	1.36 Crores
Buildings Constructed	:	10.91 Crores
Roads Laid	:	0.32 Crores
<b>Total Utilized</b>	:	<b><u>27.79 Crores</u></b>

Balance available	:	8.16 Crores
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**NON-PLAN**

Opening Balance	:	3.53 Crores
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Grant sanctioned	:	68.25 Crores
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<b>Total available</b>	:	<b><u>71.78 Crores</u></b>
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**Payment during 2002-2003**

Pay and Allowances	:	26.77 Crores
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Scholarship	:	5.03 Crores
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Journals and Periodicals	:	3.44 Crores
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Hostel Subsidy	:	3.03 Crores
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TA/DA	:	0.70 Crores
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Departmental Expenses	:	2.25 Crores
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Entrance Examination Expenses	:	2.81 Crores
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Works and Maintenance	:	7.55 Crores
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Terminal benefits, Pension, etc.	:	12.75 Crores
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Provident Fund	:	2.99 Crores
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Administrative Expenses & Estate Maintenance	:	8.59 Crores
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Other Expenses	:	4.61 Crores
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<b>Total Utilized</b>	:	<b><u>80.52 Crores*</u></b>
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\*Expenditure over and above the grant met from the Institute generated Income.

## 1. THE SENATE

### Chairman

**PROF. M.S. ANANTH**

### Members

Prof Ajit Kumar Kolar	Prof R Kalyana Krishnan
Prof R Ambalavanan	Prof V Kalyanaraman
Prof R N Anantharaman	Prof (Mrs) Kamala Krithivasan
Prof Anumolu Meher Prasad	Prof T J Kamalanabhan
Prof Ashok Jhunjhunwala	Prof S Karmalkar
Prof Ashok Kumar Mishra	Prof P Kesavan Nair
Prof A Avudainayagam	Prof Koshy Varghese
Prof V Balabaskaran	Prof M P Kothiyal
Prof A R Balakrishnan	Prof K Krishnaiah
Prof V Balakrishnan	Prof O V Krishnaiah Chetty
Prof Balasundaram Subramanian	Prof R Krishnakumar
Prof Bhallamudi Sreenivasa Murty	Prof R Krishnamurthy
Prof Bhaskar Ramamurthy	Prof Krishnan Balasubramanian
Prof S K Bhattacharyya	Prof N R Krishnaswamy
Prof Bimalendu Guha	Prof S H Kulkarni
Prof T S (Mrs) Chandra	Prof S Kumaraswamy
Prof N Chandra Kumar	Prof B H Lakshmana Gowda
Prof S C Chaudhary	Prof J Lakshminarasimhan
Prof M Chidambaram	Prof K (Mrs) Lalitha
Prof S A Choudum	Prof D Loganathan
Prof V Damodara Das	Prof M Madhusudhana Rao
Prof P C Deshmukh	Prof (Mrs) Maha Seshasayee
Prof Devdas Menon	Prof (Mrs) Malathy Duraisamy
Prof R Dhamodharan	Prof A Mani
Prof Dharanipragada Janaki Ram	Prof J S Mani
Prof K Elango	Prof M S Mathews
Prof Elizabeth N Kurian	Prof Megha Singh
Prof (Mrs)Evangeline Manickam	Prof S Mohan
Prof S R Gandhi	Prof K M Muraleedhara Prabhu
Prof N Ganesan	Prof V R Muraleedharan
Prof V Ganesan	Prof C R Muthukrishnan
Prof L S Ganesh	Prof R Nagarajan
Prof K Ganesh Babu	Prof T Nagarajan
Prof C V Gokularathnam	Prof K Narayana Bhat
Prof T A Gonsalves	Prof S Narayanan
Prof D R Gopalakrishna Achar	Prof K Narayanasamy
Prof K Gopinath	Prof T T Narendran
Prof M S Gopinathan	Prof T S Natarajan
Prof M Govardhan	Prof N R Neelakantan
Prof K Hariharan	Prof Neelima Madhukar Gupte
Prof V G Idichandy	Prof R Palaninathan
Prof V Jagadeesh Kumar	Prof T Panda
Prof P A Janakiraman	Prof C Pandu Rangan
Prof S Jayachandran	Prof Paramanand Singh
Prof Job Kurian	Prof P R Parthasarathy
Prof S (Mrs) Kalpakam	Prof S D Pathak
Prof T Pradeep	Prof N Sivaprasad
Prof M Prakash Maiya	Prof C Siva Ram Murthy
Prof Pramod S Mehta	Prof Y G Srinivasa
Prof BVSSS Prasad	Prof S Srinivasa Murthy

Prof K Prasad Rao  
 Prof T S Prasanna Kumar  
 Prof U S Premananda Shet  
 Prof S Pushpavanam  
 Prof J Raamachandran  
 Prof S Radhakrishnan  
 Prof K Radhakrishna Rao  
 Prof S Raghavan  
 Prof S V Raghavan  
 Prof K Rajagopal  
 Prof K Rajagopalan  
 Prof C Rajendran  
 Prof Raju Sethuraman  
 Prof K V S Rama Rao  
 Prof A Ramachandraiah  
 Prof V S Ramachandra Rao  
 Prof Ramakrishna Mokkalapati  
 Prof V Ramakrishnamurthy  
 Prof B Ramamoorthy  
 Prof K Ramamurthy  
 Prof S Raman  
 Prof S Ramaprabhu  
 Prof M Ramasubba Reddy  
 Prof A Ramesh  
 Prof K Ramesh  
 Prof N Ramesh Babu  
 Prof V Ramjee  
 Prof A Rangan  
 Prof G Rangarajan  
 Prof Ravinder David Koil Pillai  
 Prof V R Rengaraju  
 Prof M V Sangaranarayanan  
 Prof S Sankara Narayanan  
 Prof S Sankararaman  
 Prof S Santhakumar  
 Prof Sarit Kumar Das  
 Prof P Sasidhara Rao  
 Prof K N Satyanarayana  
 Prof D V Seetharamamurthy  
 Prof S K Seshadri  
 Prof P Sessa Talpa Sai  
 Prof Shankar Narasimhan  
 Prof M S Shunmugam  
 Prof M Singaperumal  
 Prof R S Sirohi

Prof G Srinivasan  
 Prof K Srinivasan  
 Prof S Srinivasan  
 Prof P Sriram  
 Prof G Subramanian  
 Prof M S Subramanian  
 Prof S P Subramanian  
 Prof A Subrahmanyam  
 Prof P V Subrahmanyam  
 Prof V Sundar  
 Prof T Sundararajan  
 Prof G Sundararajan  
 Prof R Sundaravadivelu  
 Prof M N Sudeendra Rao  
 Prof C Sujatha  
 Prof T Swaminathan  
 Prof S Swarnamani  
 Prof M Thamban Nair  
 Prof V Thamizh Arasan  
 Prof B S Thandaveswara  
 Prof E G Tulapurkara  
 Prof R Usha  
 Prof S Vancheesan  
 Prof T K Varadarajan  
 Prof U V Varadaraju  
 Prof P R Vaya  
 Prof P Veeramani  
 Prof C P Vendhan  
 Prof V Venkat Rao  
 Prof G Venkatarathnam  
 Prof C Venkateshaiah  
 Prof S P Venkateshan  
 Prof P Venugopal  
 Prof L Vijayaraghavan  
 Prof R P Viswanath  
 Prof B Yegnanarayana  
 Dr Harish Chandra

**Student Representatives:**

G Madhukar Reddy  
 G Apoorva  
 C Krishnamurthy

**Invitees:**

Dr T Suryakumar, Dy. Registrar (Acad.)

**Secretary:**

Dr Usha Titus



## 2. BOARD OF ACADEMIC COURSES

### Chairman:

Prof K. Elango, Dean (Academic Courses)

### Ex-officio Members:

Prof S Narayanan, Dean (Academic Research)  
Prof V G Idichandy, Dean (Students)  
Prof M S Ananth, Previous Dean (Academic Courses)  
Prof S Mohan, Advisor, FN & WS Students, CE  
Prof A Mani, Head, Guidance & Counselling Unit, ME

### Members:

Prof S Kumaraswamy, ME, Director's nominee  
Dr K Bhaskar, Aerospace Engineering  
Prof S Swarnamani, Applied Mechanics  
Dr Guhan Jayaraman, Biotechnology  
Dr Abhijit P Deshpande, Chemical Engineering  
Prof G Sundararajan, Chemistry  
Dr S R Sathish Kumar, Civil Engineering  
Prof D Janaki Ram, Computer Science & Engineering  
Dr R Aravind, Electrical Engineering  
Prof G Srinivasan, Humanities & Social Sciences  
Prof M Thamban Nair, Mathematics  
Dr M M Mayuram, Mechanical Engineering  
Prof B Guha, Metallurgical & Materials Engineering  
Dr V Anantha Subramanian, Ocean Engineering  
Dr M V Satyanarayana, Physics

### Student Members Ex-officio:

Sri C Apoorva, Academic Affairs Secretary  
Sri G Madhukar Reddy, Students General Secretary

### Secretary Ex-officio

Dr T Suryakumar, Deputy Registrar (Acad)

### 3. BOARD OF ACADEMIC RESEARCH

**Chairman:**

Prof S Narayanan, Dean (Academic Research)

**Members Ex-officio:**

Prof K. Elango, Dean (Academic Courses)  
Prof V G Idichandy, Dean (Students)  
Prof V Ganesan, Previous Dean (Academic Research)  
Prof A Mani, Head, Guidance & Counselling Unit, ME

**Members:**

Prof M Singaperumal, ME, Director's Nominee  
Prof Job Kurian, Aerospace Engineering  
Prof B H L Gowda, Applied Mechanics  
Prof Shankar Narasimhan, Chemical Engineering  
Prof T K Varadarajan, Chemistry  
Prof K Lalitha, Chemistry (Biotechnology)  
Prof Devdas Menon, Civil Engineering  
Prof Kamala Krithivasan, Computer Science & Engineering  
Dr R Manivasakan, Electrical Engineering  
Prof V R Muraleedharan, Humanities & Social Sciences  
Prof P Veeramani, Mathematics  
Prof Y G Srinivasa, Mechanical Engineering  
Prof T S Sampath Kumar, Metallurgical & Materials Engineering  
Prof J S Mani, Ocean Engineering  
Dr V Sankaranarayanan, Physics  
Dr S K Malhotra, COMPTEC  
Prof S Vancheesan, MSRC

**Student Members Ex-officio:**

Sri C Krishnamoorthy, Research Affairs Secretary  
Sri G Madhukar Reddy, Students General Secretary

**Secretary Ex-officio:**

Dr T Suryakumar, Deputy Registrar (Acad)

#### 4. BOARD OF STUDENTS

**Chairman:**

Prof V G Idichandy, Dean (Students)

**Members Ex-officio:**

Prof B Viswanathan (Previous Dean, Students)

Prof S Narayanan, Dean (Academic Research)

Prof K Elango, Dean (Academic Courses)

**Members:**

Dr R I Sujith, Aerospace Engineering (Director's nominee)

Prof T K Varadarajan, Advisor (Sports), Chemistry

Prof L Vijayaraghavan, Advisor (Cultural), Mechanical Engineering

Prof S Mohan, Advisor, Foreign & Weaker Section students, Civil Engg.

Prof S P Subramanian, Chairman, Council of Wardens

Prof A Mani, Head, Guidance & Counselling Unit, ME

**Student Members:**

Sri G Madhukar Reddy, Students General Secretary

Sri C Krishnamoorthy, Research Affairs Secretary

Sri C Apoorva, Academic Affairs Secretary

Sri Nimish Agarwal, Hostel Affairs Secretary

Sri Sai Sarath Chandra, Cultural Affairs Secretary (Lit.)

Sri Kalyan Chakravarthy, Cultural Affairs Secretary (Arts)

Sri V M Biju, Sports Secretary

Sri C Rohit Acharya, Speaker, SAC

Ms Mayuri Duggirala, Student Member, SAC

Sri Venkatesh Acharya B.S., Student Member, SAC

Ms Priyanka Jain, General Secretary (Sharavati Hostel)

**Secretary Ex-officio:**

Dr T Suryakumar, Deputy Registrar (Academic)

## 5. BOARD OF INDUSTRIAL CONSULTANCY & SPONSORED RESEARCH

### Chairman:

Prof V Kalyanaraman, Dean (IC & SR)

### Members Ex-officio:

Prof S Narayanan, Dean (Academic Research)  
Dr Usha Titus, Registrar

### Members:

Prof C P Vendhan, Engineering (Director's nominee)  
Prof S Santhakumar, Aerospace Engineering  
Dr R I Sujith, Aerospace Engineering  
Prof S Swarnamani, Applied Mechanics  
Prof D V S Murthy, Chemical Engineering  
Prof G Sundararajan, Chemistry  
Prof R Dhamodharan, Chemistry  
Prof S R Gandhi, Civil Engineering  
Dr A Boominathan, Civil Engineering  
Prof B Yegnanarayana, Computer Science & Engg.  
Prof Ashok Jhunjhunwala, Electrical Engineering  
Prof K N Bhat, Electrical Engineering  
Prof G Srinivasan, Humanities & Social Sciences  
Dr Y V S S Sanyasi Raju, Mathematics  
Prof Krishnan Balasubramanian, Mechanical Engineering  
Prof A Ramesh, Mechanical Engineering  
Prof K Prasad Rao, Metallurgical & Materials Engineering  
Prof R Sundaravadivelu, Ocean Engineering  
Prof K Ganesh Babu, Ocean Engineering  
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