

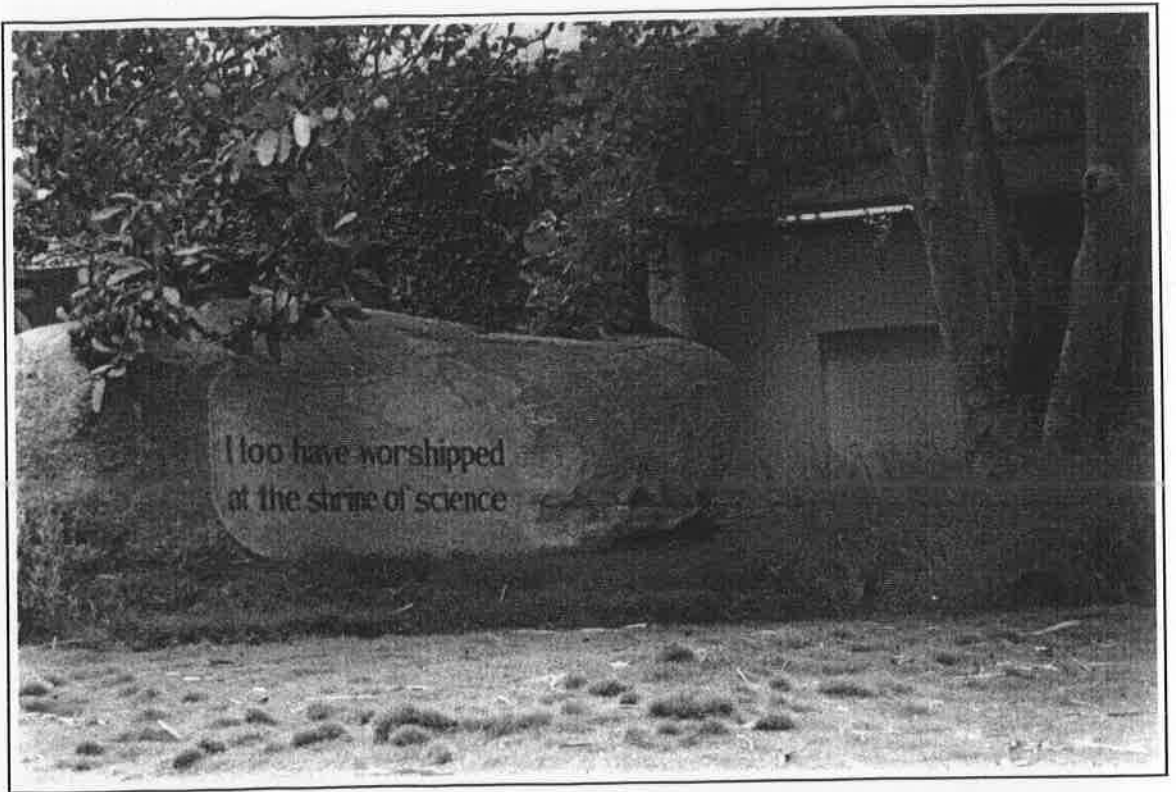


Jawaharlal Nehru Centre for Advanced Scientific Research

JAKKUR, BANGALORE - 560 064.



**ANNUAL REPORT
2000 - 2001**



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2000-2001



**JAWAHARLAL NEHRU CENTRE FOR
ADVANCED SCIENTIFIC RESEARCH**

Jakkur, Bangalore - 560 064.

ANNUAL REPORT

2000-2001

Yes

ADVANCED SCIENTIFIC RESEARCH
AND DEVELOPMENT CENTER FOR

1999-2000

CONTENTS

Page No.

Chapter I : The Centre

1. Forward	1
2. Introduction	3
3. Objectives	4
4. Progress	5
5. Activities Chart	6
6. Organisation Chart	7

Chapter II : The Organisation

1. The Council of Management	8
2. Finance Committee	9
3. Academic Advisory Committee	10
4. Administration	11

Chapter III : Units and Laboratories 113

Chapter IV : Academic Programmes : Part - I

1. Academic Activities	27
2. Discussion Meetings	28
3. Lectures and Colloquia	30
4. Seminars	33

Extension Activities : PART - II

1. Summer Research Fellowship Programmes	37
2. Academic Exchange Programmes	39
3. Visiting Fellowships	40
4. International Programmes	
i) JNCASR-COSTED International Fellowship Programme	41
ii) JNCASR-DST Co-ordinated Programme with National Academy of Sciences, Kazakhstan and Uzbekistan	42

Chapter V : Research Programmes

1. Research Areas	43
2. Research Facilities	43
3. Research Support	44
4. Sponsored Research	45

Chapter VI : Publications

1. Research Publications of Units	50
2. Research Publications of Honorary Faculty/Endowed Professors/ Senior Associates	70
3. Books and Publications	77
4. Special Issue of the Journal of the IISc.	77
5. Proceedings of Discussion Meetings	77

Chapter VII : Awards and Distinctions 78

Chapter VIII : Financial Statements 87

Annexure I

Resume of activities during 2001-2002	III to XII
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CHAPTER I

The Centre

1. FOREWORD

I have great pleasure in presenting the Annual Report of the Centre for the year 2000 - 2001.

The Centre continues to consolidate its research activities in a steady manner. The Centre greatly values its interaction with academics in various universities and other research institutions in India and abroad. It is also establishing new bridges to take up more challenging R&D work in different areas of interest. The Summer Research Fellowship Programme for young students has completed eleven years of operation. For the latest programme, over 10,000 application forms were despatched and they were also available for downloading from the Centre's website. It continues to be an effective medium for exposing young students at an early stage to the methods of research.

With rapid changes occurring in science and technology, it has become necessary for research institutions to attract highly motivated young graduates to science. The Centre participated in JEST programme for the first time, along with twelve other institutions, for joint selection of students; and the results are encouraging. By organising topical programmes, the Centre is striving to be a unique medium for promoting excellence in science education, so that quality science education is within the reach of all strata in the society. With this end in view, the Centre is constantly looking for new ways to strengthen the Ph.D programme so that a larger number of bright research scholars can be motivated to join the Centre every year. The number of students has risen to near 42. Several students completed their work and were awarded their degrees during the year.

The Centre has entered into a joint research programme with National Institute of Mental Health and Neuro Sciences(NIMHANS). The existing arrangements for award of degrees with the Manipal Academy of Higher Education(MAHE), Manipal have been renewed; a new programme of M.Sc(by research) providing opportunities for highly motivated science graduates to take up interdisciplinary research in the areas of engineering

and medicine has been introduced recently. Some more students have been admitted for this unique programme.

The Honorary Faculty of the Centre act as a large networking of eminent scientists in the country helping in the promotion of research activity and training of young scientists.

The Evolutionary and Organismal Biology Unit and Molecular Biology and Genetics Unit have taken shape and have been strengthened with new young faculty. The Advanced Materials Research Laboratory was formally inaugurated by Shri Murli Manohar Joshi, Hon'ble Minister for HRD, Government of India; it has become fully operational.

The excellent atmosphere that prevails in the Centre is the result of the fine work of the students, the faculty, the honorary faculty and other members. I would like to acknowledge the help that the Centre has received from its well-wishers and friends. Their support has kept us going despite various limitations.

V. KRISHNAN

President

2. INTRODUCTION

The Jawaharlal Nehru Centre for Advanced Scientific Research was established in 1989 by the Department of Science and Technology, Government of India, to commemorate the centenary year of Pandit Jawaharlal Nehru, with the main objective of promoting scientific research at the highest level in chosen frontier and interdisciplinary areas of science and engineering. The Centre is registered as a Society under the Karnataka Societies Registration Act and is an autonomous national institution.

The Centre maintains close links and has a special relationship with the Indian Institute of Science (IISc), Bangalore, a renowned institution of advanced training and research. The Centre has its main Campus in Jakkur on the Bangalore-Hyderabad highway, about 11 kms from the Indian Institute of Science campus. Infrastructural facilities established by the Centre at the Indian Institute of Science are used by scientists of both the institutions.

The campus in Jakkur with a congenial atmosphere for research is on a 22 acre (approx) plot gifted by the Government of Karnataka. At the Indian Institute of Science Campus, the Centre has a Lecture hall, Visitors' House (JAWAHAR) and Guest Rooms catering to the academic visitors to the Centre and to the Indian Institute of Science.

The Centre has Fellows and full-time faculty in various areas of interest and has distinguished honorary faculty from prestigious institutions all over India. Students have been admitted for the Master's and the Ph.D degree Programmes. A programme of M.Sc. (by research) introduced in the Academic year 1999 - 2000 for the benefit of highly talented & motivated professional course students, is progressing well.

The Council of Management of the Centre meets twice a year. The General Body meets annually. The Academic Advisory Committee of the Centre meets at least twice a year.

3. OBJECTIVES

The objectives of the Centre are:

- To carry out front-line research in selected thrust areas of science and engineering;
- To promote collaborative research with scientists at the Indian Institute of Science and other institutions in the country;
- To provide a national and international forum for in-depth discussions on important scientific topics in areas of vital interest to scientists of the Centre and in the country at large;
- To organize periodic winter and summer schools in certain areas, where young talented scholars would be associated;
- To provide opportunities for talented young students to carry out research projects;
- To provide facilities to visiting scholars and faculty from all over India and abroad, to work for extended periods with the faculty of the Centre;
- To publish monographs and reports on frontier and futuristic areas of science as well as monographs of educational value.

4. PROGRESS

The Centre has completed 11 years and has made progress in many directions. Research and academic activities in several areas have picked up momentum. Appointments to the core faculty of the Centre have been made in the areas of Life Sciences, Chemical and Materials Science, Theoretical Sciences and Fluid Dynamics.

The main campus of the Centre at Jakkur houses the various Units and Laboratories, the Library and the Computer Laboratory, a seminar/lecture hall and a students hostel, faculty offices and the Administration. The Advanced Materials Research Laboratory (AMRL) was formally inaugurated during the year, and is now fully operational. The newly constructed Animal House has started functioning to a considerable extent.

The Chemical Biology Unit and Condensed Matter Theory Unit of the Centre, a seminar hall and an office of the Centre are located on the IISc. Campus. Regular transport between the two campuses is available. Well-furnished accommodation for visitors and seminar participants is available, besides accommodation for students and faculty.

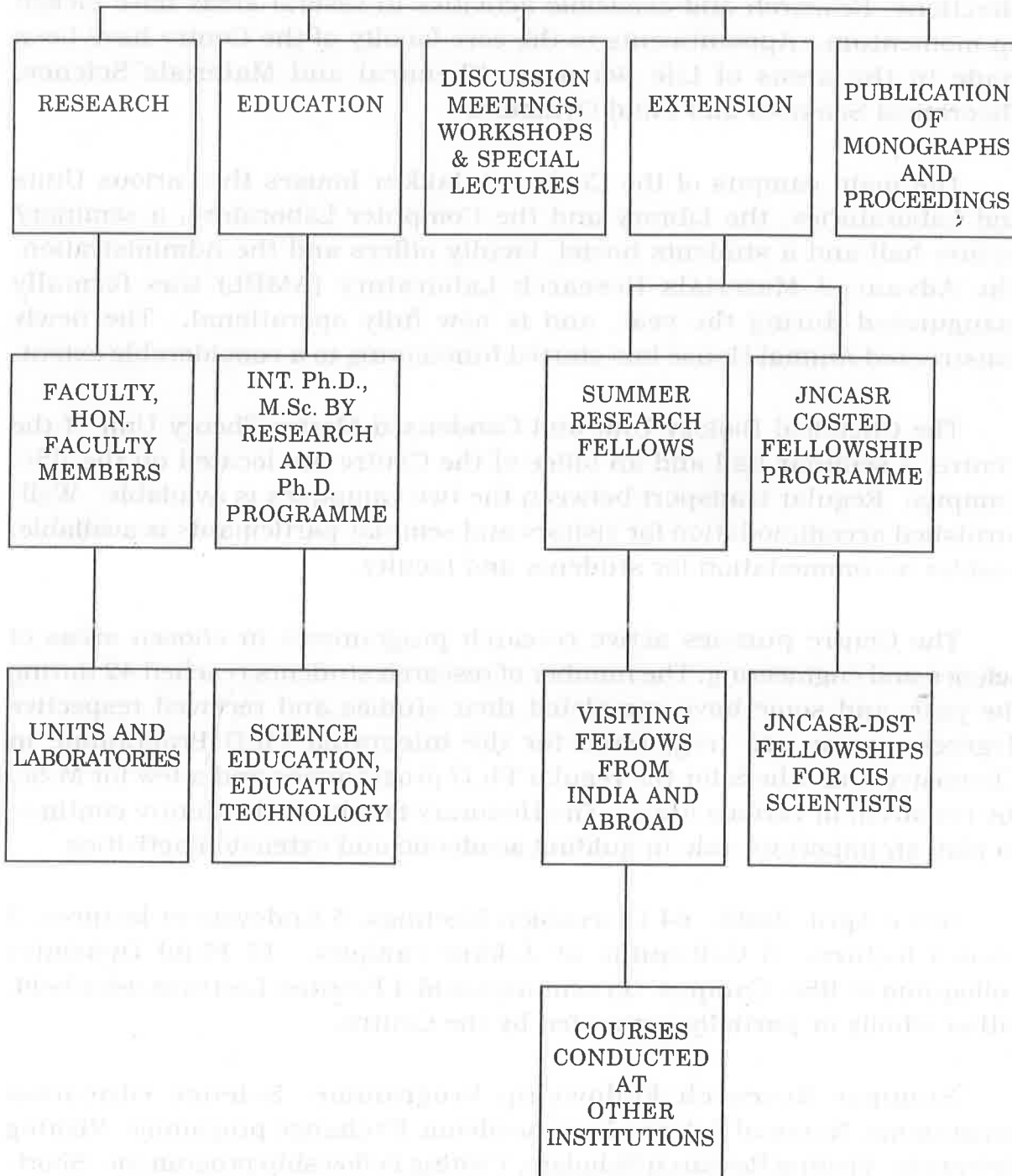
The Centre pursues active research programmes in chosen areas of science and engineering. The number of research students reached 42 during the year, and some have completed their studies and received respective degrees; some are registered for the integrated Ph.D Programme in Chemistry and others for the regular Ph.D programmes and a few for M.Sc. (by research) in various areas. The Honorary faculty of the Centre continue to play an important role in guiding academic and extension activities.

Since April 2000, 24 Discussion Meetings, 5 Endowment lectures, 3 named lectures, 5 Colloquia at Jakkur campus, 15 Fluid Dynamics colloquia at IISc. Campus, 35 seminars and 4 Frontier Lectures were held, either wholly or partially supported by the Centre.

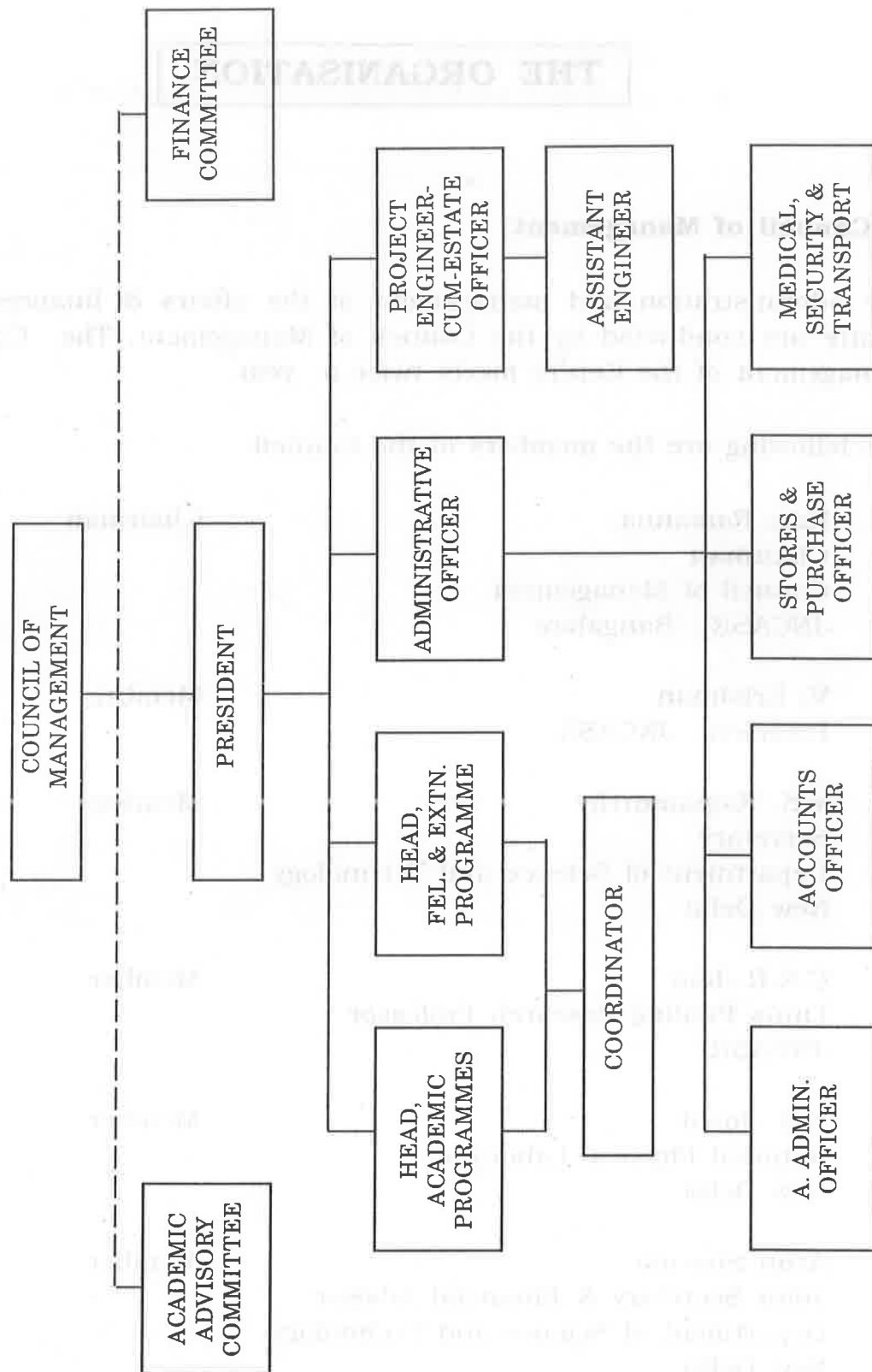
Summer Research Fellowship Programme, Science education programme, National Science Day, Academic Exchange programme, Visiting Scientists, Visiting Research Scholars, Visiting Fellowship programme, Short-term courses, JNCASR-COSTED International Fellowship programme, continue to run well and have been appreciated by the various participants.

5. ACTIVITIES CHART

JAWAHARLAL NEHRU CENTRE FOR ADVANCED SCIENTIFIC RESEARCH



6. ORGANISATION CHART



CHAPTER II

THE ORGANISATION

1. Council of Management

The administration and management of the affairs & finances of the Centre are conducted by the Council of Management. The Council of Management of the Centre meets twice a year.

The following are the members of the Council.

Raja Ramanna
Chairman
Council of Management
JNCASR, Bangalore

Chairman

V. Krishnan
President, JNCASR

Member

V.S. Ramamurthy
Secretary
Department of Science and Technology
New Delhi

Member

C.N.R. Rao
Linus Pauling Research Professor
JNCASR

Member

S.K. Joshi
National Physical Laboratory
New Delhi

Member

Arun Sharma
Joint Secretary & Financial Adviser
Department of Science and Technology
New Delhi

Member

M.M. Sharma
Mumbai

Member

S.Varadarajan

Member

G. Mehta
Director
Indian Institute of Science, Bangalore

Member

A.K. Sood
Indian Institute of Science
Bangalore

Member

N.Nagaraja Rao
Administrative Officer, JNCASR

Secretary

2. The Finance Committee

The Finance Committee of the Centre scrutinizes all financial proposals, and makes recommendations to the Council of Management.

The constitution of the Finance Committee is as follows:

V. Krishnan
President, JNCASR

Chairman

C.N.R. Rao
Linus Pauling Research Professor
JNCASR

Member

Arun Sharma
Joint Secretary & Financial Adviser
Department of Science and Technology
New Delhi

Member

A.K. Sood
Indian Institute of Science
Bangalore

Member

R.S. Gururaj
Accounts Officer, JNCASR

Member

N.Nagaraja Rao
Administrative Officer, JNCASR

Secretary

3. The Academic Advisory Committee

The functions of the AAC include planning, execution and coordination of research & other academic activities of the Centre. It also regulates the courses of study, examination etc. It meets at least twice a year. The Committee makes its recommendations to the Council of Management.

The members of the Committee are :

V.Krishnan
President, JNCASR

Chairman

C.N.R. Rao
Linus Pauling Research Professor
JNCASR

Member

S.S. Jha
Director, TIFR, Mumbai

Member

N. Kumar
Director, RRI, Bangalore

Member

P. Rama Rao
Vice Chancellor
University of Hyderabad
Hyderabad

Member

R.A. Mashelkar
Director-General, CSIR
New Delhi

Member

N. Mukunda
Head, Fellowships & Extn. Programmes
JNCASR

Member

M.R.S. Rao
IISc., Bangalore

Member

M.K. Chandrashekar
AstraZeneca Professor, JNCASR

Member

N. Nagaraja Rao
Administrative Officer, JNCASR

Secretary

The faculties are involved in the academic activities of the Centre and assist the Academic Advisory Committee in the discharge of its functions. The last Annual Faculty Meeting was held in November 2000 which included lectures by the faculty on the advances made in various research areas. Two local faculty meetings were also held in August 2000 and January 2001 to review the progress and provide inputs wherever required.

4. Administration

President

V. Krishnan, Ph.D. (IISc), F.A.Sc., F.N.A.

Head, Fellowships and Extension Programmes

N. Mukunda, Ph.D. (Rochester), F.A.Sc., F.N.A.

Administrative Officer

N. Nagaraja Rao, M. A. (Mysore), M.B.A. (IGNOU)
LL. B., (Bangalore)

Co-ordinator

W.H. Madhusudan, Ph.D. (IISc)

Warden & Student Counsellor

K.S. Narayan, Ph.D. (Ohio State)

Associate Warden

K.R. Sreenivas, Ph.D. (IISc)

Accounts Officer

R.S. Gururaj, B.Sc. (Mysore), M.PEd (Bangalore)

A. Administrative Officer

K. Raghunatha, B.Sc. (Bangalore), LL.B. (Bangalore),
PGD IRPM (Bangalore)

Secretary to President
D.V. Seetharaman

Stores & Purchase Officer
Sripathy Tirupathy, M.Com. (Osmania), M.A. (Kakatiya)

Project Engineer - cum - Estate Officer
S. Chikkappa, B.E. (Mysore)

Consulting Medical Officer
Dr. B.S. Subba Rao, M.B.B.S. (Mysore)

Consulting Lady Medical Officer
Dr. Kavitha Sridhar, M.B.B.S.

Honorary Security Officer
M.R. Chandrasekhar, B.Sc., LL.B.

CHAPTER - III

UNITS AND LABORATORIES

UNITS

1. Chemistry and Physics of Materials

The research activities during the period pertain to various aspects of materials research. In the area of open-framework materials, new insights into the mechanism of formation have been obtained, in addition to the synthesis of large number of new materials. Nanomaterials are another area in which pioneering contributions have been made with synthesis and characterization of novel metal clusters of gold, palladium etc. In the area of nanotubes and related materials, new chemical approaches have been employed successfully for the synthesis of new oxides, chalcogenides etc. Novel approaches such as Brillouin spectra, noise studies have been employed for the characterization of the CMR materials, using single crystals. Photophysics studies have been carried out on conjugated polymers to understand the primary excitations as well as probing new phenomena. Polymers FETs as photoactive elements, Resonant Cavity Photodiodes, External - Geometry induced effects in polymer microcavities and semiconducting polymer heterostructures for opto-electronics are being pursued.

The following are the members of the Unit:

Chair

C.N.R. Rao

F.A.Sc., F.N.A., F.R.S.

Hon. Professor

A.K. Sood

F.A.Sc., F.N.A.

Associate Professor

K.S. Narayan

Ph.D.

Faculty Fellows

S. Balasubramanian	Ph.D.
N. Chandrabhas	Ph.D.
G.U. Kulkarni	Ph.D.
S. Natarajan	Ph.D.
A.R. Raju	Ph.D.

Research Associate

P. Murugavel	Ph.D. (IISc.)
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Technical Assistants

M.K. Renganathan	M.Sc.
V. Sreenath	B.E.
S. Srinivas	B.E.
Usha Govind Tumkurkar	M.Sc.

Lab Assistants

J. Anil Kumar	D.E.E.
B.S. Vasudev	D.E.E.
Basavaraj Devaramani	D.E.E.
Girish Deep	B.Sc.
Alla Srinivasa Rao	L.E.C.E.

R & D Assistants

A. Alagiriswamy	M.Sc.
A. Arulraj	Ph.D. (Submitted)
B. Ayan Guha	Ph.D. (Submitted)
N. Kumar (Project)	B.E.
Pavan Kumar M.	M.Tech.
C.B.C. Satishkumar	Ph.D. (Submitted)
C.P. Vinod	B.Sc.

2. Chemical Biology

During the period the Research activities consisted of :

Design of New Glycomimics: Selective and competitive inhibition of carbohydrate processing enzymes continues to be an active area of research as glycosidase inhibitors have considerable therapeutical potential in the

management of diseases like diabetes, viral infections and cancer among other disorders. We have conceptualized a new family of glycosidase inhibitors based on polyhydroxylated decalins which can be regarded as annulated carbasugars and conduritols. Many such moieties have been synthesized through novel stereo-, regio- and enantioselective routes and their inhibition profile against a variety of glycosidases has been evaluated. Two papers have been published based on this work.

Substantial amount of DNA sequence data from the Human Genome Project as well as from the genome of a variety of other organisms is available. It is of interest to design modular ligands that can bind with high affinity and specificity at pre-determined sequences. These assume significance as they bear the potential of regulating expression of any gene of interest. In this connection, the natural products, netropsin (Nt) and distamycin (Dst) provide good starting points for the design of such ligands. These are oligopeptide antibiotics of bacterial origin that bind to the minor groove of 4 or 5 contiguous AT base pairs. The binding sites of these molecules coincide with that of the TATA box binding protein (TBP), a general transcription factor for RNA polymerase II. We propose to synthesize a number of new Dst analogues and examine their binding with specific sequences of DNA.

The interactions of the E. coli chaperone SecB with a number of protein and peptide substrates was characterized using titration calorimetry and differential scanning calorimetry. In addition the mechanism of disaggregation of the insulin B chain by SecB was elucidated.

Aqueous gels derived from a steroidal tripodal gelator have been investigated using a number of fluorescent and other probes. The existence of deep hydrophobic pockets in these non-polymeric gels has been demonstrated. The sol to gel transition has been detected by a yellow to green color change using bromophenol blue as the reporter dye (U. Maitra, S. Mukhopadhyay, A. Sarkar, P. Rao, S.S. Indi, Angew. Chem. Int. Ed. Engl., 2001, issue #12).

The following are the members of the Unit :

Chair

Uday Maitra

Ph.D., F.A.Sc.

Hon. Professors

P. Balaram	F.A.Sc., F.N.A.
V. Krishnan	F.A.Sc., F.N.A.
G. Mehta	F.A.Sc., F.N.A.

Hon. Faculty

Raghavan Varadarajan	Ph.D., F.A.Sc.
Santanu Bhattacharya	Ph.D., F.A.Sc.

Research Associate

Shital K. Chattopadhyay	Ph.D.
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3. Condensed Matter Theory

The members of the Condensed Matter Theory Unit (CMTU) are engaged in theoretical research on a variety of topics in the general area of Condensed Matter Physics and Chemistry. During 2000-01, members of CMTU made important progress on a wide variety of problems in this area. The research topics pursued by the members of CMTU during this period with support from JNCASR include: electronic structure of strongly correlated systems; *d*-wave superconductivity in cuprates; electronic structure of semiconducting nanomaterials; transport properties of the periodic Anderson model; quasi-one-dimensional frustrated Heisenberg antiferromagnets; magnetization properties of molecular magnets in a time-dependent magnetic field; transport properties of quantum wires; chemical reaction dynamics in liquids and dense gases; transport properties of electrolyte solutions and binary mixtures; electronic and transport properties of conjugated polymers; dynamics of membranes with active ion pumps; dynamics of sedimenting lattices; nonequilibrium dynamics of driven Heisenberg magnets; multiscaling in fluid and magnetohydrodynamic turbulence; control of spiral turbulence and spatiotemporal chaos in a model of ventricular fibrillation; models of origin and evolution of complexity in dynamical networks; equilibrium and dynamical properties of frustrated magnetic systems, the free-energy landscape of simple liquids near the structural glass transition; structure and thermodynamics of classical liquids in a random potential.

The following are the members of the unit:

Chair

Chandan Dasgupta F.A.Sc.

Hon. Professors

Biman Bagchi, F.A.Sc., F.N.A.
H.R. Krishnamurthy F.A.Sc., F.N.A.
N. Kumar F.A.Sc., F.N.A.
T.V. Ramakrishnan F.A.Sc., F.N.A.
S. Ramasesha F.A.Sc.
B. Sriram Shastry F.A.Sc.

Hon. Faculty

G. Ananthakrishna F.A.Sc.
Binny J. Cherayil Ph.D.
Diptiman Sen Ph.D.
Rahul Pandit F.A.Sc.
Sriram Ramaswamy F.A.Sc.
K.L. Sebastian F.A.Sc.
Sanjay Jain Ph.D.
S. Yashonath F.A.Sc.

Research Associate (P)

Abhishek Dhar M.Sc.

R & D Assistant

Chinmay Das M.Sc.

4. Education Technology

The Science popularization programme has two components, holding periodic workshops for school / college science teachers using locally developed experimental kits, and organization of half-a-day programme at various places in the country - 'A Celebration of Chemistry'. This involves lectures / demonstrations and presentation of kits. In this financial year, four workshops were held in the Centre and 4 half - a - day programmes were conducted in Mysore / Chandigarh / Pune / Madurai. The CD-ROM

entitled 'Our Earth in the Sky' was completed and is now available commercially. The multimedia group actively participated in the preparation of brochure of the Centre.

The following are the members of the unit :

Chair

V. Krishnan FA.Sc., F.N.A.

Programme Scientist

Jayanthi Chandrasekaran Ph.D.

Technical Assistants

D.K. Bhaskar B.E.

Jatinder Kaur M.Sc.

Co-ordinator (Hon)

Indumati Rao M.A., M.S.

Multimedia Asst. (Hon)

Sanjay S. Rao B.Sc .

5. Evolutionary and Organismal Biology

The EOBU conducts advanced research in *four* laboratories dedicated to 1) Chronobiology 2) Evolutionary genetics 3) Behavioural Ecology and Sociobiology and 4) Biodiversity, and undertakes graduate level teaching in two of these subjects.

1. **Chronobiology** : Behavioural expressions of biological clocks in fruitflies and different castes of workers of the ant *Camponotus compressus* are being researched in great detail. Ours is the only laboratory anywhere to investigate possible circadian consequences to social organization in ants or in any social animals. The activity running wheels and a second chronobiology laboratory for studying the circadian rhythms in the wheel-running activity of the field mouse *Mus booduga* are built and are in place.

2. **Evolutionary Genetics** : Experimental and theoretical studies on *Drosophila melanogaster* are in progress to better comprehend the dynamic behaviour and demographic stochasticity of very small populations linked by migration (metapopulations).
3. **Behavioural Ecology and Sociobiology** : Field and laboratory studies on the ecology and sociobiology of the queen-less ponerine ant *Diacamma ceylonense* continue.
4. **Biodiversity** : Theoretical, experimental, field and policy research on the biodiversity of India are in progress.

The following are the members of the unit :

Chair

M.K. Chandrashekar Ph.D., D.Sc., F.A.Sc., F.N.A.

Honorary Professors

Madhav Gadgil Ph.D., F.A.Sc., F.N.A.

Raghavendra Gadagkar Ph.D., F.A.Sc., F.N.A.

Vidyanand Nanjundiah Ph.D., F.A.Sc., F.N.A.

Distinguished Fellows

G. Neuweiler

Zoologisches Institut der Universität, München, Germany

Faculty Fellows

Amitabh Joshi Ph.D.

Vijay Kumar Sharma Ph.D.

Jr. Scientific Assistant

A.V. Nagarathnamma M.Sc.

R & D Assistants

D. Anitha M.Sc.

Anuradha Bhat M.Sc.

R. Karthik M.Sc.

Nagamani M. Swamy, (Project) M.Sc.

M. Rajamani M.Sc.

Rangapriya	M.Sc.
Sagar Kathuria	M.Sc.
Yuvana Satya Priya	M.Sc.

Junior Research Fellows

C.R. Akarsh, (Project)	M.Sc.
Lopamudra Bandopadhyay, (Project)	M.Sc.
S.J. Mathew, (Project)	M.Sc.

6. Fluid Dynamics

Atmospheric Fluid dynamics : Work on a new theory of eddy fluxes at low winds in the atmosphere has been completed. The techniques used for wavelet analysis on monsoon rainfall have been further refined during the last year. Wavelet techniques have been used to infer the organization in coherent structures that might be present in plumes with and without off-source heat addition.

Stability and transition : A new instability has been found to occur in miscible two fluid flow. Simulations of turbulent spots in adverse pressure-gradient boundary - layers show evidence for a different scenario of spot breakdown compared to that in the absence of pressure gradients.

Effect of viscosity on the process of erosion in a stable stratified system: Experiments and 2-D numerical simulations of a double diffusive, stable-stratified system with different fluid viscosity have been carried out to know the effect of fluid viscosity on the entrainment and erosion process. This research work, in collaboration with Prof. J. Srinivasan, has resulted in a MSc (Engg) thesis at the Mechanical Engineering Department, IISc.

Wind-tunnel has been installed to study the unsteady aerodynamics of insect flight. An atmospheric field experiment has been started to study the 'lifted temperature minimum'.

The following are the members of the unit :

Chair

R. Narasimha

Ph.D., F.A.Sc., F.N.A., F.R.S.

Distinguished Fellows

Anatol Roshko

C.A.

California Institute of Technology, Pasadena,

Michael Gaster

F.R.S.

Queen Mary & West Field College, London.

Faculty Fellows

Rama Govindarajan,

Ph.D.

K. R. Sreenivas

Ph.D.

Research Associate

K. Sanjeev Rao

Ph.D.

R & D Assistants

Pradeep R. Bhat, (project)

B.E.

Subarna Bhattacharyya,

M.Sc. (Engg.)

7. Geodynamics

Research Activities :

Three projects have been completed and the results published in the form of research papers. These relate to :

- (i) Recognition and delineation of palaeolakes in the Kaveri Basin in Karnataka and palaeoclimatic inferences.
- (ii) River response to neotectonism and tectonogeomorphic evolution of the Western Ghat and Sahyadri mountain in Karnataka, and
- (iii) Fluvial response to reactivation of thrusts, faults and folds in central and eastern Kumaun Himalaya in Uttaranchal.

Detailed coloured geological map of the Ladakh - Karakoram- Kunlun Region in northwestern Himalaya has been submitted to the press for publication.

Book Writing :

The manuscripts of two original books for laymen submitted for publication. The one, entitled "Himalaya : Emergence and Evolution"

(Universities Press) will be out by the middle of the year 2001, and the other "River Saraswati That Disappeared" (Oriental Longman) has been revised in the light of referees' comments and is now in the editorial process.

Chair

K.S. Valdiya

F.A.Sc., F.N.A.

Research Associate

Rajeev Upadhyay

Ph.D.

8. Molecular Biology and Genetics

This unit consists of six independent laboratories looking into diverse areas of research. These include Biochemistry, cell and molecular biology of Plasmodium, design of antimalarial drugs, screening of natural products for mechanisms of neurovirulence of AIDS, gene targeting to liver using non-viral delivery techniques.

The main theme of work in Dr. Hemalatha Balam's lab centers on protein engineering studies of enzymes: Hypoxanthine guanine phosphoribosyltransferase, Adenylosuccinate synthetase, Triosephosphate isomerase and Cysteine proteases. Dr. Namita Surolia's laboratory focuses on identification of parasite protein and heme biosynthetic pathways as targets for antimalarial drug development and studies pIF-2 α , pIF-2 α kinase, ALA-dehydratase, ALA-synthase and ferrochelatase. Dr. Ranga Uday Kumar's laboratory works on the following aspects of HIV biology; epidemiological and molecular characterization of HIV, design and analysis of vaccines for HIV, developing molecular adjuvants for DNA vaccines. Dr. Anuranjan Anand's lab is working on molecular genetic aspects of specific types of epilepsy and trying to find genetic susceptibility factors. It also does projects on non-syndromic hearing loss and is currently screening mutations in some of the known deafness genes. Dr. Maneesha Inamdar's laboratory studies blood vessel formation in mouse in an attempt to understand the processes and signals involved under normal as well as pathological conditions. Dr. Tapas Kumar Kundu's lab investigates transcription regulation by histone modifications and human SWI/SNF complex and has developed a complete reconstituted human transcription system based on HeLa cell culture especially, from flag tag cell lines.

The following are the members of the unit :

Chair

G. Padmanaban F.A.Sc., F.N.A.

Honorary Professor

H. Sharat Chandra F.A.Sc., F.N.A.

Faculty Fellows

Anuranjan Anand Ph.D.

Hemalatha Balaram Ph.D.

Maneesha Inamdar Ph.D.

Namita Surolia Ph.D.

Ranga Uday Kumar Ph.D.

Tapas Kumar Kundu Ph.D.

Research Associate

Aditi Gupta Ph.D.

Senior Research Fellows

B. Chandra Shekar Rajaram M.B.B.S.

N. Roopa M.B.B.S.

Junior Research Fellow

M.S.A. Muthukumar Nadar M.Sc.

R & D Assistants

S. Basanthi M.Sc.

Deepak Jain M.Sc.

R. Nagendran M.Sc.

Prashanth Kumar B.R. M.Sc.

B. Priya M.Sc.

A. Rajesh M.Sc.

H.M. Ravi Shankar M.Sc.

Rehas Habeeb M.Sc.

Saroj Ghosh M.Sc.

C. Sathyan	M.Sc.
Shivashankar	M.Sc.
N.B. Siddappa	M.Sc.
P. Smita	M.Sc.
Sneha Krishna	M.Sc.
S.A. Soloman Shadrack	M.Sc.
Sourav Banerjee	M.Sc.

9. Theoretical Sciences

The research work during 2000 - 2001 has been focussed on the following areas:

Density functional theory of surfaces and calculations of the anomalous properties for particular surfaces. Modeling and simulating disordered ferroelectrics, dynamics of relaxors, chemistry of lone-pair electrons in solids, and metal insulator phase transitions. Slow dynamics in supercooled liquids and the glass transition; structural changes in liquids during supercooling; phase transitions and electronic properties of supercooled silicon. Protein structure analysis via study of void space in sphere packings. Complex magnetic behaviors in cuprates and manganites. Quantum magnetism in low dimensions. Structure-property relationships for design of organic materials for two-photon and electro-absorptions.

The following are the members of the unit :

Chair

N. Mukunda	F.A.Sc., F.N.A.
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Faculty Fellows

Shobhana Narasimhan	Ph.D.
Srikant Sastry	Ph.D.
Swapan K. Pati	Ph.D.
Umesh V. Waghmare	Ph.D.

Research Associate

Abir Bandyopadhyay

Ph.D.

R & D Assistant

M. Mahendra

M.Sc.

LABORATORIES

1. Computer Laboratory

Over the last year, the computer laboratory has been able to satisfy the computing and networking needs of researchers at the Nehru Centre. Fundamental changes in infrastructure, and in access to it, have been made. All facilities of the computer laboratory are equally available to everyone in the Centre, on a 24 x 7 basis, all through the year.

Some recent highlights of accomplishments are:

- High quality printing module with smart, & transparent accounting methods developed indigenously.
- Downloadable Summer Research Fellowship Application Form developed.
- 64 kbps leased line link to internet commissioned.
- 128 kbps VSAT link to internet soon to be commissioned.
- New website for JNC with modular & bandwidth saving features developed.
- Facilities Management Contract with M/s. Computer Maintenance Corporation Ltd., started.

The following are the members of the unit :

Head

S. Balasubramanian

Ph.D.

R & D Assistants

Geetha Francis
Maltesh S. Badiger
T.R. Rajesh Kanna
Shrikant Shankarappa
S. Sreelakshmi

M.C.A.

B.E.

B.E.

M.C.A.

M.Sc.

Endowed Research Professors :

1. AstraZeneca Research Centre India
- Astra Chair in Life Sciences
M.K. Chandrashekar, F.A.Sc., F.N.A.
2. Defence Research and Development Organisation
- D.S. Kothari Chair
M.M. Sharma, F.R.S., F.A.Sc., F.N.A.
3. Council of Scientific and Industrial Research
- S.S. Bhatnagar Chair
K.S. Valdiya, F.A.Sc., F.N.A.
4. IBM World Trade Corporation
- IBM Information Technology Chair
V. Rajaraman, F.A.Sc., F.N.A.
5. Hindustan Lever Ltd.
- Hindustan Lever Chair
R. Kumar, F.A.Sc., F.N.A.
6. Reliance
- Linus Pauling Research Professor
Prof. C.N.R. Rao, F.A.Sc., F.N.A., F.R.S.
7. Department of Atomic Energy
- Vikram Sarabhai Chair
S.K. Joshi, F.A.Sc., F.N.A.

CHAPTER IV

ACADEMIC PROGRAMMES

PART - I

1. Academic Activities

The Centre has signed a Memorandum of Understanding with the Manipal Academy of Higher Education (MAHE) - deemed university which enables the Centre to conduct an integrated Ph.D. programme as well as regular Ph.D. programme in science and engineering. The Centre selects candidates on an all-India basis, offers course work (in collaboration with IISc), provides research facilities and administers the programme, while MAHE awards the degrees. The regular Ph.D. programme in science and engineering is available to post-graduates who have successfully completed the GATE/CSIR-NET/UGC/JRF examination.

For the regular Ph.D. programme, 12 students were admitted for the year 2000 - 2001 to work in the areas indicated against their names :

Kalyan Sasmal

Sandip Chakrabarti

Leonard Deepak F.

Subhasish Chatterjee : Chemistry & Physics of Materials

Mohd. Jamal Dar

Shobana Sai Priya K.S.

Ashis Kapoor

Ram Shankar M.

Sourav Banerjee

Venkatesh Swaminathan

Kavitha Siva : Molecular Biology & Genetics

Dhanashree A. Paranjpe : Evolutionary & Organismal Biology

The following student with engineering background has been admitted for M.Sc (by research) for the year 2000 - 2001

Binaya Kumar Dhar

The Ph.D. degree has been awarded to the following students :

Neeraj S.

Srinivasa Gopalan R.

2. Discussion Meetings :

The Following discussion meetings have been held since the last Annual Report.

1. Discussion meeting on Rural Technology (July 20 - 21, 2000),
Convenor : Prof. B.N. Raghunandan (IISc).
2. XVIII International Symposium on Lattice Field Theory, (August 17-22, 2000), Convenor : Prof. Apoorva Patel (IISc).
3. Workshop on Teaching Analysis and Design of Information systems, (September 20 - 21, 2000, Convenor : Prof. V. Rajaraman (JNCASR)
4. International Seminar on structural masonry for developing countries. (October, 11-13, 2000), Convenor : Prof. K.S. Jagadish (IISc).
5. Discussion meeting on commutative algebra and algebraic geometry, (October 16 - 21, 2000), Convenors : Prof. Phoolan Prasad (IISc), Prof. D.P. Patil (IISc).
6. Course for University and College Teachers, (Oct. 30 to Nov. 19, 2000), Sponsor : NIAS.
7. Workshop on Linkage Mapping of disease genes, (Nov. 27 - Dec. 1, 2000), Convenor : Dr. Anuranjan Anand (JNCASR).
8. Discussion Meeting on DNA Enzymes: Structures and Mechanisms, (December 1 - 3, 2000), Convenor : Prof. V. Nagaraja (IISc)
9. Current Trends in Molecular Magnetism, (Dec. 4 - 10, 2000) Convenor : Prof. S. Ramasesha (IISc.)

10. Frontier Lectures in Chemistry, (Dec. 6- 9, 2000), Sponsor : The American College, Madurai & JNCASR.
11. Workshop on Advanced Microscopic Techniques for Materials Analysis & Conference on Physics of Nanophase Materials, (11- 16, Dec. 2000 & 18 - 20, Dec. 2000), Convenors : Dr. A. Kshirsagar, Dr. S. Mahamuni, University of Pune.
12. International Conference on Knowledge and East-West Transitions (Dec. 11-14, 2000), Convenor : Prof. R. Narasimha (NIAS)
13. National Symposium on Bridging Science to Humanity, (December 12 - 13, 2000), Students' Council, (IISc.)
14. International Workshop on Mesoscopic and disordered systems, (Dec. 18 - 20, 2000), Convenor : Prof. H.R. Krishnamurthy (IISc).
15. Indian Conference on Computer vision, graphics and image processing, (December 20 - 22, 2000), Convenor : Dr. P.J. Narayanan (CAIR)
16. Inservice Training programme for High School Teachers at Gulbarga, (December 2000), Convenor : Prof. H.L. Bhat (IISc)
17. Workshop on Industry oriented software engineering and E-commerce, (December, 27 - 29, 2000), Convenors : Prof. V. Rajaraman (JNCASR) and B.M. Subraya (Infosys).
18. Symposium on Recent Trends in Photo-Chemical Sciences, (Jan. 8-10, 2001), Convenor : Prof. M.V. George(RRL, Trivandrum).
19. Discussion Meeting on Structure and Dynamics of Complex Chemical and Biological Systems, (Jan. 9 - 11, 2001), Convenors : Prof. Guru Row (IISc), Prof. B. Bagchi (IISc)
20. Symposium on Neuro-Aids, (January 16, 2001), Convenors : Prof. Gourie Devi (NIMHANS) and Dr. Ranga Uday Kumar (JNCASR)
20. Workshop on Computational Chemistry, (Jan. 16 - 19, 2001), Convenors : Prof. S. Yashonath (IISc), Dr. S. Balasubramanian (JNCASR)
21. 3rd National Symposium in Chemistry, (Feb. 2 - 4, 2001), Convenor : Prof. B.M. Deb, Panjab Univ., Chandigarh.

22. Discussion Meeting -cum-Workshop on 'Molecular Basis of Deafness' (February 19 - 23, 2001), Convenor : Dr. Anuranjan Anand (JNCASR).
23. Nano Symposium, (March 21, 2001), JNCASR
24. Meeting on Geometric Phases in Physics & Foundations of Quantum Mechanics, (March 28, 2001), Convenor : Dr. Rohini Godbole (IISc)

3. Lectures and Colloquia :

Endowment Lectures :

The Centre organized the following endowment lectures during the period under report:

1. ISRO-Satish Dhawan Lecture by **Thomas Odhiambo** on **The Science Scenario in Africa: Preparing for a Quantum Jump**, Nov. 27, 2000
2. DAE - Raja Ramanna Lecture in Physics by **R. Chidambaram** on **The May 1998 Pokhran tests - Scientific aspects**, Feb. 6, 2001.
3. DAE - Raja Ramanna Prize Lecture in Physics by Prof. **H.R. Krishnamurthy** on **The dynamical cluster approximation for strongly correlated systems**, Nov. 16, 2001.
4. A.V. Rama Rao Foundation Lecture in Chemistry by **R.A. Mashelkar, FRS**, on **putting life into Gels**, Aug. 11, 2001.
5. A.V. Rama Rao Prize Lecture in Chemistry by **Prof. S.S. Krishnamurthy**, on **Journey into the organometallics continent with the torch of phosphorus**, Aug. 11, 2000.
6. C.N.R. Rao Oration Award Lecture by **Dr. Amitabh Joshi**, on **Development and Competition in Fruit Flies: A Tale of Two Densities**, August 16, 2000

Named / Special Lectures

Isaac Newton Lecture

Chaotic and Complex Systems by **Prof. Jacob Palis**, Instituto de Matematica Pura e Aplicada, Brazil, Jan. 16, 2001.

Linus Pauling Lecture

Genes, Instincts and Identity by **Prof. Patrick Bateson**, Provost, King's College, Cambridge, Feb. 6, 2001.

Michael Faraday: Chemist and Popular Lecturer by **Prof. Derek A. Davenport**, Purdue University, USA, February 26, 2001.

Colloquium

The Following Colloquia were held since the last annual report:

1. Everything you wanted to know about turbulence but were afraid to ask by Prof. K.R. Sreenivasan, Yale University, USA, June 29, 2000.
2. Adaptation to Thermal Stresses in *Drosophila* by Prof. Jean R. David, CNRS, France, July 25, 2000.
3. Thermochemical studies of perovskites and other ceramic materials by Prof. Alexandra Navrotsky, University of California at Davis, USA, Nov. 28, 2000.
4. Olfactory discriminations in *Drosophila*-Nurture versus Nature by Prof. Obaid Siddiqi, FRS, NCBS, Bangalore, Jan. 25, 2001.
5. Interdependence of Molecular Structure, Framework Architectures and Physics by Prof. Patrick Batail, Institut des Materiaux Jean Rouxel, France, Feb. 22, 2001.

Colloquium - Fluid Dynamics (at IISc Campus)

The following colloquia were held since last annual report :

6. Fluid Mechanics : Some thoughts at the end of the Century by Prof. R. Narasimha, JNCASR & NIAS, April 12, 2000.
7. Turbulent convection at very high Rayleigh number by Prof. K.R. Sreenivasan, Yale University, USA., June 27, 2000.
8. Supersonic Jet noise Suppression by Water Injection by Dr. L. Venkatakrishnan, NAL, August 9, 2000.

9. Transition Research in Europe: Experiences with PSE and Future Directions by Dr. C.J. Atkin, Defence Evaluation and Research Agency, Farnborough, U.K., Oct.18, 2000.
10. Liquid Sloshing in a 2-Dimensional container by Dr. M.D. Deshpande, CTFD, NAL, Bangalore, Nov.15, 2000.
11. Modeling of some fundamental aspects of particulate flows – motivated by application to simulation of solid rockets by Prof. S. Balachandar, Nov. 22, 2000.
12. Mechanism of High Speed Turbulent Combustion and their Numerical Modelling by Prof. John H.S. Lee, McGill University, Canada, Dec.1, 2000.
13. Rotating Annulus Convection: From a single point to Field Measurements by Prof. George Buzyna, Florida State University, USA, Dec. 26, 2000.
14. On the instability of complaint pipe flow by Prof. J.S.B. Gajjar, Manchester University, Manchester, U.K., Jan. 12, 2001.
15. Moving Surface Boundary-Layer Control: Experiments, Analyses and Applications by Prof. V.J. Modi, University of British Columbia, Vancouver, B.C. Canada, Jan. 24, 2001.
16. Influence of Surface Roughness on Flow and Heat Transfer by Prof. Somnath Bhattacharyya, IIT, Kharagpur, Feb. 23, 2001.
17. Statistically Preserved Structures in Turbulence and the Mechanism for Anomalous Scaling by Prof. Itamar Procaccia, Weizmann Institute of Science, Israel, Mar. 7, 2001.
18. Examination of the eddy viscosity concept regarding its physical justification by Dr. U. Dallmann, Institute of Fluid Mechanics, Göttingen, Mar. 13, 2001.
19. Linear and Weakly Nonlinear Stability of Fluid Flow through Flexible Tubes and Channels by Dr. V. Shankar, University of Minnesota, USA, Mar. 21, 2001.
20. Challenges for Turbomachinery CFD in the 21st Century by Prof. W.N. Dawes, Cambridge University, Cambridge, U.K., Mar. 22, 2001.

4. Seminars

The following seminars were held since last annual report :

1. Role of Orbital Degrees of Freedom on Magnetic Properties by Dr. Swapan Pati, North-Western University, Illinois, USA, Jul. 17, 2000.
2. Origin and evolutionary Biology in the Drosophila Melanogaster sub group by Prof. Jean R. David, France, Jul. 24, 2000.
3. Phenotypic plasticity in Drosophila: Evolution of reaction norms according to growth temperatures by Prof. Brigitte Moreteau, France, Jul. 24, 2000.
4. Organic lasers by Dr. Ananth Dodabalapur, Bell Laboratories, Lucent Technologies, NJ, USA, Aug. 23, 2000.
5. Docile sitters and active fighters in paper wasps: A tale of two queens by Ms. Sujata Kardile, IISc, Sept. 14, 2000.
6. Ekameva Advitayam: The Socio-Ecology of unimale troops of wild Bonnet Macaques by Dr. Anindya Sinha, NIAS, Bangalore, Sept. 21, 2000.
7. Stress, silencing and aging – new tale of an old MAP Kinase by Dr. Nilanjan Roy, The Lerner Research Institute, Cleveland Clinic Foundation, USA, Sept. 26, 2000.
8. Why are there so few magnetic ferroelectrics? By Prof. Nicola A. Hill, University of California, USA, Oct. 12, 2000.
9. Non-equilibrium magnetic dynamics in certain manganites by Prof. Per Nordblad, Uppsala University, Sweden, Oct. 13, 2000.
10. Charge, Spin, Orbital ordering and Phase separation in Manganites by Prof. D.I. Khomskii, University of Groningen, The Netherlands, Oct. 16, 2000.
11. A physical description of Rafts and their role in the endocytosis of cell membranes by Mr. Sarasij, RRI, Bangalore, Oct. 19, 2000.
12. Quantum computation by Prof. Apoorva Patel, IISc, Bangalore, Nov. 8, 2000.

13. Magnetic semiconductors by Prof. Nicola Hill, University of California, Santa Barbara, USA, Nov. 14, 2000.
14. Particles sliding on a fluctuating surface: Phase separation and power laws by Prof. Mustansir Barma, TIFR, Mumbai, Nov. 15, 2000.
15. Structure and Assembly of Spherical Plant Viruses by Prof. H.S. Savithri, Indian Institute of Science, Bangalore, Nov. 30, 2000.
16. Intermolecular interactions in Non-Organic crystal engineering by Prof. Dario Braga, University of Bologna, Italy, Dec. 15, 2000.
17. Organometallic Polymorphism and Phase Transition by Dr. Fabrizia Grepioni, University of Sassari, Italy, Dec. 15, 2000.
18. Multiple functions and controls of the Influenza virus RNA Polymerase by Prof. Akira Ishihama, National Institute of Genetics, Japan, Jan. 2, 2001.
19. A Stochastic prey-predator model with saddle point approximation for Honey Bees and Mites by Prof. James H. Matis, Texas A & M University, USA, Jan. 11, 2001.
20. Protein – Protein interactions in Transcriptional regulation by Prof. Steve J. Busby, The University of Birmingham, U.K., Jan. 12, 2001.
21. Structure and sorption in microporous materials: insights from molecular modelling by Prof. Robert G. Bell, The Royal Institution of Great Britain, U.K., Jan. 19, 2001.
22. Chromatin dynamics during Male Germ Cell differentiation by Prof. M.R.S. Rao, Indian Institute of Science, Bangalore, Feb. 8, 2001.
23. Valence Electronic Structure of some 3d-Metals in their Technologically important Alloys and Compounds from x-ray Emission Spectroscopic Study by Prof. H.C. Padhi, Institute of Physics, Bhubaneswar, Feb. 14, 2001.
24. Tree lies: Deception in wild bonnet Macaques by Dr. Anindya Sinha, NIAS, Bangalore, Feb. 15, 2001.
25. Why are the Biodiversity rich areas where they are ? by Prof. K.N. Ganeshiah, UAS, Bangalore, Feb. 22, 2001.

26. Nanoscale Physics of DNA by Dr. G. Shivshankar, NCBS, Bangalore, Feb. 26, 2001.
27. Chromosomal addresses of the Cohesin component Med 1P: Insights into mitotic chromosome organisation by Dr. Shikha Laloraya, IISc, Bangalore, Mar. 1, 2001.
28. The Enskog theory for transport coefficients of simple fluids with continuous potentials by Dr. Kunimasa Miyazaki, Delht Univ. of Technology, Netherlands, Mar. 2, 2001.
29. Quasicontinuum models for Atomic-scale mechanics by Prof. Vijay B. Shenoy, IIT, Kanpur, Mar. 8, 2001.
30. The Mulberry Silkworm a model *par excellence* for basic studies on Gene Expression and Development by Prof. K.P. Gopinathan, Indian Institute of Science, Bangalore, Mar. 8, 2001.
31. Creativity as seen by a working scientist by Dr. Peter E.D. Morgan, Rockwell International Science Centre, California, USA, Mar. 8, 2001.
32. Structure and dynamics of molecular liquids at interfaces and in confined environment by Dr. Amalendu Chandra, Indian Institute of Technology, Kanpur, Mar. 15, 2001.
33. Metastable Materials: Solid State Chemistry and materials Science by Prof. Paul Hagemuller, University Bordeaux, France, Mar. 15, 2001.
34. Origin and evolution of complexity in dynamical networks by Dr. Sanjay Jain, IISc, Mar. 26, 2001.
35. The many potential uses for Monazite, LaPO_4 by Prof. Peter E.D. Morgan, Rockwell International Science Center, California, USA, Mar. 28, 2001

Frontier Lectures :

1. **An introduction to String Theory** by **Prof. Ashoke Sen**, Mehta Research Institute, Allahabad, Aug. 14, 2000.

2. **Science, Scientists and Society** by **Dr. N.H. Antia**, The Foundation for research in Community health, Mumbai, Nov. 7, 2000.
3. **Networking the future – An Indian opportunity** by **Dr. A.S. Ganguly**, ICI India Limited, Mumbai, Nov. 30, 2000.
4. **Heart and You and telemedicine** by **Dr. Devi Shetty**, Cardiologist, Manipal Heart Foundation, Bangalore, Mar. 7, 2001.

EXTENSION ACTIVITIES

PART - II

1. Summer Research Fellowships/Rajiv Gandhi Science Talent Research Fellowships

The Centre offers these fellowships for two summer months to bright undergraduate and graduate students. For the year 1999 - 2000, 119 students were offered fresh fellowships and 18 renewals. Out of this, 10 students were awarded Rajiv Gandhi Science Talent Research Fellowships.

Scientists in nearly 47 institutions across the country listed below have guided these students:

1. Abasaheb Garware College, Pune
2. Bhabha Atomic Research Centre, Mumbai
3. Centre for Advanced Technology, Indore
4. Centre for Biochemical Technology, New Delhi
5. Centre for Development of Advanced Computing, Bangalore
6. Centre for DNA and Fingerprint & Diagnostic, Hyderabad
7. Centre for Artificial Intelligence & Robotics, Bangalore
8. Central Leather Research Institute, Chennai
9. Defence Research and Developmental Organisation, New Delhi
10. Harishchandra Research Institute, Allahabad
11. Indian Association for Cultivation of Sciences, Calcutta
12. Indian Institute of Astrophysics, Bangalore
13. Indian Institute of Chemical Biology, Calcutta
14. Indian Institute of Chemical Technology, Hyderabad
15. Indian Institute of Science, Bangalore
16. Indian Institute of Technology, Chennai
17. Indian Institute of Technology, Kanpur
18. Indian Institute of Technology, Kharagpur

19. Indian Institute of Technology, Mumbai
20. Indian Statistical Institute, Bangalore
21. Indira Gandhi Centre for Atomic Research, Kalpakkam
22. Institute of Mathematical Sciences, Chennai
23. Institute of Microbial Technology, Chandigarh
24. Inter University Centre for Astronomy & Astrophysics, Pune
25. Jawaharlal Nehru Planetarium, Bangalore
26. Jawaharlal Nehru University, New Delhi
27. M.S. University, Baroda
28. Madurai Kamaraj University, Madurai
29. National Aerospace Laboratories, Bangalore
30. National Centre for Biological Sciences, Bangalore
31. National Chemical Laboratory, Pune
32. National Environmental Engg. Research Institute, Nagpur
33. National Institute of Immunology, New Delhi
34. National Institute of Mental Health and Neuro Sciences, Bangalore
35. Osmania University, Hyderabad
36. Physical Research Laboratory, Ahmedabad
37. Rajiv Gandhi Centre for Bio Tech, Trivandrum
38. Raman Research Institute, Bangalore
39. Regional Research Laboratory, Jammu
40. Saha Institute of Nuclear Physics, Kolkata
41. S.N. Bose National Centre for Basic Sciences, Kolkata
42. Tata Institute of Fundamental Research, Bangalore
43. University of Agricultural Sciences, Bangalore
44. University of Delhi, Delhi
45. University of Hyderabad, Hyderabad
46. University of Mysore, Mysore
47. University of Poona, Pune

Science Education Programme

Three Workshops on 'School Chemistry Kit for Kannada Medium Schools' were held for the benefit of high school teachers and students, during 13.12.2000, Dec. 19 - 20, 2000, 23.2.2001.

"A Celebration in Chemistry" - was conducted at DAV College, Chandigarh under the auspices of INSA Local Chapter & CRSI on 3.2.2001

National Science Day

The National Science Day was held on February 28, 2001, as Linus Pauling Centenary Celebrations. A Series of lectures were arranged jointly with the Chemical Sciences Division, IISc., Bangalore. The following were the topics and speakers :

- Linus Pauling by Prof. D. Davenport, Purdue University
- Linus Pauling and Valence band theory by Prof. S. Ramasesha, IISc.
- Linus Pauling and Protein Structure by Prof. Uday Maitra, IISc.

2. Academic Exchange Programme:

As part of the academic exchange programme, the following scientists/scholars carried out collaborative work with scientists of the Centre and the Indian Institute of Science for varying periods during the year under report:

Visiting Professor

Prof. G. Morandi
Dept. of Physics,
University of Bologna, Italy

Prof. Michael Gaster
Dept. of Engineering
Queen Mary and Westfield College
University of London
LONDON E1 4NS

Visiting Scientists :

Dr. Nicola Hill
Materials Department
University of California
Santa Barbara, CA 93106

Dr. S. Balachandar,
Associate Professor,
Dept. of Theoretical and
Applied Mechanics,
University of Illinois, Urbana

Dr. C.J. Atkin
Aerodynamics Department
DERA Farnborough
HANTS, GU14 0LX, U.K.

Dr. B.N. Upreti
Tribhuvan University
Nepal

Visiting Scholars

Mr. Ayi Anyama Ayi
Nigeria
(TWAS Visiting Scholar)

Dr. Zhou Yun-Shan
Post Doctoral Fellow
P.R. of China
(IUPAC - UNESCO Travel Grants)

Dr. Vanessa Gagliardini
Department of Chemistry
University of Alberta
Edmonton, T6G 2G2, CANADA.

3. Visiting Fellowships:

The Centre offers Visiting Fellowships to research scientists in educational institutions and R&D Laboratories, tenable for 2-3 months, to work with the faculty of the Centre. The following were offered Visiting Fellowships during 2000 - 2001 to work at the institutions as indicated below:

Name & Address

To be associated with

1. Dr. Padmakumar, Lecturer
School of Chemical Sciences
Mahatma Gandhi University
Kottayam 686 560

Prof. P.T. Manoharan
Indian Institute of Technology
Chennai

2. Dr. S.N. Pande, Lecturer
Department of Physics
Sant Longowal Institute of
Engineering & Technology
Longowal, Sangrur 148 106

Prof. S.S. Jha
Tata Institute of Fundamental
Research, Mumbai

- | | |
|--|---|
| 3. Dr. Sheela Berchmans
Central Electrochemical
Research Institute
Karaikudi 630 006 | Prof. C.N.R. Rao
Jawaharlal Nehru Centre for
Advanced Scientific Research
Bangalore. |
| 4. Dr. Suresh Mathew, Reader
School of Chemical Sciences
M.G. University
Kottayam 686 560 | Prof. C.N.R. Rao
Jawaharlal Nehru Centre for
Advanced Scientific Research
Bangalore |
| 5. Dr. Swapan Mandal, Lecturer
Department of Physics
Visva-Bharati
Santiniketan 731 235 | Prof. N. Mukunda
Jawaharlal Nehru Centre for
Advanced Scientific Research
Bangalore |
| 6. Dr. G.V. Vijayagovindan
Senior Lecturer
School of Pure & Applied Physics
Mahatma Gandhi University
Kottayam 686 560 | Prof. R. Kumar
Raman Research Institute
Bangalore |

4. International Programmes:

i) JNCASR-COSTED International Fellowships Programme

Under this programme International Fellowships are awarded to scientists from developing countries in Asia (other than India), Africa and Latin America. This enables scientists to participate in short term research programme, in Physical, Chemical and Biological sciences. The fellowships are for 3 months duration and for a maximum of ten participants in a year, of which six carry travel grants.

The following were awarded fellowships during the year:

Mr. Kul Prasad Dahal
Lecturer in Physics
Prithwi Narayan Campus
Dept. of Physics
Pokhara, NEPAL

Mr. U. Kyi Winn
Lecturer
Dept. of Agricultural Botany
Yezin Agricultural University
Yezin, MYANMAR

Dr. Adio Adewale Martins
Asst. Lecturer, Dept. of Chemistry
University of Ibadan
Ibadan, Nigeria

Dr. Gassama Yaya Kene Dia
Dept. of Vegetable Biology
Dakkar, Senegal

Dr. Pue Aisak Goliath
Lecturer, Dept. of Applied Sciences
PNG University of Technology
PMB, LAE
Papua New Guinea

Dr. Myrna Mahinay
Mindanao State University
Philippines

Mr. Tej Man Lama
National Forensic Laboratory
Nepal

ii) JNCASR-DST Coordinated Programme with National Academy of Sciences, Kazakhstan and Uzbekistan

Under this programme, scientists from various Kazakh and Uzbek Institutions are offered three month placements in chosen Indian institutions to enable them to work under the guidance of scientists/faculty.

The following scientist participated in this programme during the year:

Mr. Andrej Daniltschenko
Solar Energy Laboratory
Almaty, Kazakhstan

CHAPTER V

RESEARCH PROGRAMMES

1. Research Areas

There are ongoing research programmes in several frontier, interdisciplinary areas of science and engineering. The main areas of research interest at present are :

- ❖ Atmospheric Sciences and Theoretical Fluid Mechanics
- ❖ Condensed Matter Theory
- ❖ Ecology and Biodiversity
- ❖ Physics and Chemistry of Materials including Surface Science, Molecular Electronics, Nanomaterials and Carbon Structures
- ❖ Emerging areas of Computer Science
- ❖ Gene Targeting, Gene Therapy and Molecular Parasitology
- ❖ Human Genome
- ❖ Geodynamics
- ❖ Theoretical Sciences
- ❖ Chemical Biology

2. Research Facilities

The Centre has the following state-of-art facilities in some focused areas in science and engineering. The following major equipments are functional :

- Scanning Electron Microscope (LEICA)
- X-ray Diffractometer (SEIFERT)
- Scanning Tunneling Microscope/Atomic Force Microscope
- High Resolution 300 KV Transmission Electron Microscope (JEOL)
- A custom built high resolution electron spectrometer with ultra high-vacuum ESCA, VEELS, LEED and STM/AFM attachments (OMICRON)
- Esterline Augus A620 x 20 channel Event Recorder

- Photomultiplier Unit
- Monochromator with interference filters, neutral density filters
- Thermohygrograph and field binoculars
- TGA/DTA (Metlar)
- A custom built cluster unit
- Single crystal X-ray diffractometer with CCD Camera
- 15 tesla Cryocooled Superconducting Magnet (Cryo Industries of America)
- Floating Zone Melting Crystal Growths (NEC, Japan)
- Indigenously built Cluster Source Apparatus
- Brillouin Spectrometer
- Magnetometer (VSM) and Faraday Balance
- Mossbauer Spectrometer
- Computational facilities that include Silicon Graphics Power Challenger with 4 parallel processors, a Hewlett-Packard Kclass-II with 4 CPUs and a large number of Silicon Graphics Workstations and Indy and O₂.

3. Research Support

The following are some of the areas, for which research support has been provided by the Centre since the last Annual Report.

- Molecular Interactions vital for cell Survival : Prof. V. Nagaraja
- Cytochrome c mediated apoptosis and
Cell death; In vivo and in vitro folding of
cytochrome c by NMR and optical methods : Prof. K. VijayRaghavan
- Quantum Optics : Prof. R.M. Godbole/
Prof. N. Mukunda
- Synthetic Organic Synthesis : Prof. G. Mehta
- Problems of dynamical aspects of Portevin
Le-Chatelier effect : Prof. G. Ananthakrishna
- Synthesis of colloidal oxide particle : Dr. Ram Seshadri

4. Sponsored Research

1. Investigator : R. Narasimha
Title : Direct Numerical Simulation of Flow
Funding Agency : Pratt & Whitney Group, USA
Duration : 3 years
2. Investigator : K.S. Narayan
Title : Preparation and Characterisation of novel electro-optic Polymers for sensor applications (Indo-Israeli Project)
Funding Agency : Department of Science & Technology
Duration : 3 years
3. Investigator : Namita Surolia
Title : Characterisation, Cloning and Regulation of eIF-2 α , and its kinase from *Plasmodium falciparum*
Funding Agency : Department of Science & Technology
Duration : 3 years
4. Investigator : S. Balasubramanian
Title : Molecular Modelling of Discoid Amphiphilic Aggregates
Funding Agency : Council of Scientific and Industrial Research
Duration : 3 years
5. Investigator : Anuranjan Anand
Title : Genetic Variations in Neurotransmitter Genes in Schizophrenia
Funding Agency : Council of Scientific and Industrial Research
Duration : 3 years
6. Investigator : Hemalatha Balaram
Title : Development of plasmodium falciparum hypoxanthine Phosphoribosyl transferase and haemoglobinase as targets
Funding Agency : Council of Scientific and Industrial Research
Duration : 2 years

7. Investigator : Vijay Kumar Sarma
 Title : Investigating the circadian organization of the fruitfly *Drosophila melanogaster*
 Funding Agency : Indian National Science Academy
 Duration : 3 years
8. Investigator : Anuranjan Anand
 Title : Molecular Genetic basis of Juvenile Myoclonic Epilepsy
 Funding Agency : Department of Science & Technology
 Duration : 3 years
9. Investigator : Ranga Uday Kumar
 Title : Construction and Analysis of Eukaryotic Expression of TAT protein of HIV - I/II
 Funding Agency : Department of Science & Technology
 Duration : 3 years
10. Investigator : Hemalatha Balaram
 Title : Elucidation of the Purine Salvage Pathway in plasmodium Falciparum
 Funding Agency : Department of Science & Technology
 Duration : 3 years
11. Investigator : M.K. Chandrashekar
 Title : Light of the Circadian Rhythms in *Drosophila* and ants
 Funding Agency : Department of Science & Technology
 Duration : 3 years
12. Investigator : Namita Surolia
 Title : Elucidation of ALA Synthesis & its regulation in Human Malarial parasite
 Funding Agency : Council of Scientific and Industrial Research
 Duration : 9 months
13. Investigator : K.S. Narayan
 Title : Absorption Photoconduction and Emission in Certain polymeric systems
 Funding Agency : Council of Scientific and Industrial Research
 Duration : 2 years

14. Investigator : V. Rajaraman
 Title : The development of modular self study material
 In basics of information technology
 Funding Agency : Infosys
 Duration : 3 years
15. Investigator : R. Narasimha
 Title : Development of practical method for transition
 prediction
 Funding Agency : ARDB
 Duration : 2 years
16. Investigator : R. Narasimha
 Title : Commercial Airplane Group, the Boeing
 company Aerodynamics studies
 Funding Agency : Boeing Company, Seattle, USA
 Duration : 3 years
17. Investigator : Rama Govindarajan
 Title : Numerical Simulation of Turbulence and
 transition for flow around Arbitrary shaped
 underwater bodies
 Funding Agency : NRB
 Duration : 3 years
18. Investigator : C.N.R. Rao
 Title : Materials based on transition metal oxides
 Funding Agency : DAE (BRNS)
 Duration : 4 years
19. Investigator : C.N.R. Rao
 Title : Storage of Hydrogen using graphitic Nano fibres
 Funding Agency : DST
 Duration : 2 years
20. Investigator : Anuranjan Anand
 Title : A Genome search for deaf genes and mutations
 in India and Israel
 Funding Agency : DBT
 Duration : 1 year

21. Investigator : Amitabh Joshi & V.K. Sharma
 Title : Empirical Investigation of Adaptation to different light Regimes in Laboratory Population of *Drosophila Melanogaster*
 Funding Agency : DST
 Duration : 3 years
22. Investigator : Hemalatha Balaram
 Title : Development of Metabolic Enzymes as potential drug Targets in plasmodium Falciparum
 Funding Agency : SIG
 Duration : 1 year
23. Investigator : K.R. Sreenivas
 Title : Unsteady Aerodynamics of Insect flight
 Funding Agency : SIG
 Duration : 1 year
24. Investigator : Ranga Uday Kumar
 Title : Development of Indigenous Diagnostic ELISA Kits based on Capsid Antigen capture Assay for HIV - 1 and HIV - 2
 Funding Agency : DST
 Duration : 2 years
25. Investigator : K.N. Ganeshiah
 Title : A Digitized Inventory of Plant Resources other than Medicinal sciences
 Funding Agency : DBT
 Duration : 1 year
26. Investigator : Maneesha Inamdar
 Title : Signalling Mechanisms in the Development of Blood vessels
 Funding Agency : CSIR
 Duration : 3 years

27. Investigator : Tapas Kumar Kundu
 Title : Mechanism of Transcription Regulation by Human SWI/SNF complex and Histone Acetylation/Deacetylation
 Funding Agency : CSIR
 Duration : 3 years
28. Investigator : Hemalatha Balaram
 Title : Characterization of Plasmodium falciparum inosine Monophosphate dehydrogenase(IMPDH) as drug target
 Funding Agency : Indian Council for Medical Research
 Duration : 2 years
29. Investigator : Rama Govindarajan
 Title : Flow Stabilization and Destabilization using viscosity Stratification as a Flow Control Option
 Funding Agency : DRDO
 Duration : 2 years
30. Investigator : Namita Surolia
 Title : New Molecules through Genomic Research
 Funding Agency : Indian Council of Medical Research
 Duration : 2 years

CHAPTER VI

PUBLICATIONS

1. Research Publications :

Units :

i) Chemistry and Physics of Materials Unit

1. Slow orientational dynamics of water molecules at a micellar surface, Balasubramanian, S., and Bagchi, B., J. Phys. Chem. (Communicated).
2. Slow Solvation Dynamics Near an Aqueous Micellar Surface, Balasubramanian, S., and Bagchi, B., J. Phys. Chem. (Communicated).
3. A Brillouin Scattering Study of the Quasi-One-Dimensional Blue Bronze, $K_{0.3}MoO_3$: Murugavel, P., Chandrabhas Narayana, Ajay K. Sood, and Rao, C.N.R., J. Phys: Condens. Matter 12, L225 (2000).
4. Brillouin Scattering from C_{70} and C_{60} films: a Comparative Study of Elastic Properties: Murugavel, P., Chandrabhas Narayana, Govindaraj, A., Ajay K. Sood, and Rao, C.N.R., Chem. Phys. Lett. 331, 149 (2000).
5. Magnetic Excitations in Charge-Ordered $Nd_{0.5}Ca_{0.5}MnO_3$: a Brillouin Scattering Study: Murugavel, P., Chandrabhas Narayana, Ajay K. Sood, Parashar, S., Raju, A.R., and Rao, C.N.R., Europhys. Lett. 52, 461 (2000).
6. Bhorium - A new element in the period table, Natarajan, S., Resonance, 5, 95-100 (2000) (invited article).

7. Isolation of a Zinc Phosphate Primary Building Unit, $[C_6N_2H_{18}]^{2+}[Zn(HPO_4)(H_2PO_4)_2]^{2-}$, and its transformation to an Open-Framework Phosphate, $[C_6N_2H_{18}]^{2+}[Zn_3(H_2O)_4(HPO_4)_4]^{2-}$, Neeraj, S., Natarajan, S., and Rao, C.N.R., J. Solid State Chem. (letter), 150, 417-422 (2000).
8. A Hybrid Open-Framework Aluminum Phosphate-Oxalate Possessing Large Circular 12-membered Channels, Kedarnath, K., Choudhury, A., and Natarajan, S., J. Solid State Chem., 150, 324-329(2000).
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10. Three-dimensional Open-Framework Co^{II} and Zn^{II} Phosphates Synthesized via the Amine Phosphate Route, Natarajan, S., Neeraj, S., and Rao, C.N.R., Solid State Sciences, 2, 89-100(2000).
11. A New Three-dimensional Open-Framework Iron(III) Phosphate, $[C_2N_2H_{10}][Fe_2(HPO_4)_4]$, Choudhury, A., and Natarajan, S., Int. J. Inorg. Mater., 2, 217-223(2000).
12. The Direct Synthesis and Characterization of the Pillared Layer Indium Phosphate, $Na_4[In_8(HPO_4)_{14}(H_2O)_6] \cdot 12H_2O$, Attfield, M.P., Cheetham, A.K., and Natarajan, S., Mater. Res. Bull., 35, 1007-1015 (2000).
13. Three-dimensional Open-Framework Cobalt(II) Phosphates by Novel Routes, Natarajan, S., Neeraj, S., Choudhury, A., and Rao, C.N.R., Inorg. Chem., 39, 1426-1433(2000).
14. Exploration of a Simple Universal Route to the Myriad of Open-Framework Metal Phosphates, Rao, C.N.R., Natarajan, S., and Neeraj, S., J. Am. Chem. Soc., 122, 2810-2817(2000).
15. Building Open-Framework Metal Phosphates from Amine Phosphates and a Monomeric 4-membered ring Phosphate, Rao, C.N.R., Natarajan, S., and Neeraj, S., J. Solid State Chem., 152, 302-321(2000).
16. Inorganic Hybrid Open-Framework Structures: Synthesis and Structure of a Cobalt Phosphate-Oxalate, $[C_4N_2H_{12.0.5}][Co_2(HPO_4)(C_2O_4)_{1.5}]$, Choudhury, A., and Natarajan, S., Solid State Sciences, 2, 365 - 372(2000).

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18. Synthesis and Structure of an Open-Framework Chlorophosphate, $[C_6NH_{14}]_2[ZnCl(HPO_4)]$, Neeraj, S., and Natarajan, S., J. Mater. Chem., 10, 1171-1175 (2000).
19. An Unusual Open-framework Cobalt(II) phosphate with a channel structure exhibiting a structural and a magnetic transition, Choudhury, A., Neeraj, S., Natarajan, S., and Rao, C.N.R., Angew. Chem. Int. Ed. 39, 3091-3093(2000).
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21. Simple Linear Chain Cobalt Phosphates, Choudhury, A., Natarajan, S., and Rao, C.N.R., J. Chem. Soc., Dalton Trans., 2595-2598(2000).
22. Synthesis and Structure of the First Open-Framework Cadmium Oxalate Possessing Channels, Prasad, P.A., Neeraj, S., Natarajan, S., and Rao, C.N.R., Chem. Commun., 1251-1252(2000).
23. Three-dimensional Zinc Phosphates with Open Architectures, Neeraj, S., and Natarajan, S., Chem. Mater., 12, 2753 - 2762(2000).
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25. Layered Cobalt Phosphates by the Amine Phosphate Route, Choudhury, A., Natarajan, S., and Rao, C.N.R., J. Solid State Chem., 155, 62 - 70(2000).
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27. Solution-Mediated Synthesis of a Three-dimensional Zinc Phosphate in the Presence of a Monoamine, Ayi, A.A., Choudhury, A., Natarajan, S., and Rao, C.N.R., J. Mater. Chem., 10, 2606 - 2609(2000).

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29. *In-situ* investigations of the Photocatalytic Decomposition of NO on the Ti-HMS under flow and Closed Reaction Systems, Zhang, J., Minagawa, M., Ayusawa, T., Natarajan, S., Yamashita, H., Matsuoka, M., and Anpo, M., *J. Phys. Chem. B*, 104, 11501 – 11505(2000).
30. Inorganic – Organic Hybrid Framework Solids, Natarajan, S., *Proc. Indian Acad. Sci. (Chem. Sci.)*, 112, 249-272(2000).
31. *Aufbau* Principle of Complex Open-framework Structures of Metal Phosphates with Different Dimensionalities, Rao, C.N.R., Natarajan, S., Choudhury, A., Neeraj, S., and Ayi, A. A., *Acc. Chem. Res.*, 34, 80-87(2001).
32. Synthons and Design in metal phosphates and oxalates with open-architectures, Rao, C.N.R., Natarajan, S., Choudhury, A., Neeraj, S., and Vaidhyanathan, R., *Acta. Crystallogr. Sec. B.*, B57, 1-12(2001).
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34. Cyclic Acetate Dimers with C – H ... O hydrogen bonds forming an Open-framework Zinc phosphate-acetate with channels, Ayi, A.A., Choudhury, A., Natarajan, S., and Rao, C.N.R., *New J. Chem (Letter)*., 213 – 215(2001).
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39. Transformations of Low-dimensional Zinc Phosphates to Complex Open-Framework Structures – Part 1: Zero-dimensional to One-, Two- and Three-dimensional Structures, Ayi, A.A., Choudhury, A., Natarajan, S., Neeraj, S., and Rao, C.N.R., J. Mater. Chem., 11, 1181 – 1191(2001).
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(ii) Chemical Biology Unit :

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(iii) Condensed Matter Theory Unit

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251. Dynamics of (He, H₂⁺) collisions, Maiti., B., and Sathyamurthy, N., PINSA, A 66, 59 (2000).
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AWARDS \ DISTINCTIONS

3. Books authored /edited:

1. V. Rajaraman, Analysis and Design of Information Systems (2nd Edition) (Revised and rewritten), Prentice Hall of India, New Delhi, September 2000.
2. V. Rajaraman, Self-Study Manual for Analysis and Design Information Systems (with CDROM), Prentice Hall of India, New Delhi, Jan.2001
3. K.S. Valdiya, Himalaya : Emergence and Evolution, Universities Press, Hyderabad.
4. R. Narasimha : IGBP In India 2000 : A Status Report on Projects (edited), Indian National Science Academy.

4. Special Issue of the Journal of the Indian Institute of Science:

Open Architectures - Is there a Rationale
in their Formation?

- S. Natarajan

Exploring molecular genetic basis of
idiopathic generalized epilepsy

- Anuranjan Anand

Supramolecular Association as the basis
for Materials Design

- S. Bhattacharya

Surprises in the Physics of Surfaces

- Shobana Narasimhan

Fragility, thy name is Glass

- K.J. Rao

5. Proceedings of the Discussion Meeting :

Proceedings of the XVIIIth International Symposium on Lattice field theory,
Editors: Bhattacharya, T., Gupta, R., Patel, A., (2000).

CHAPTER VII

AWARDS/DISTINCTIONS

The following Faculty and Honorary Faculty Members of the Centre have won various distinctions and awards both at the national and international level in recognition of their research and developmental work:

Awards

- Dr. Darshan Ranganathan** : TWAS Award in Chemical Sciences at Iran
Hon. Faculty Member
Tehran 10th Jawaharlal Nehru
Visiting Fellowship (INSA award)
Professor SukhDev Endowment (7th)
Lectureship.
- Prof. N.K. Ganguly** : SASAT, Distinguished Career Award
Hon. Professor
Prem Chand Dandiya Endowment
Trust, Citation
Padmabhushan Dr. P. Siva Reddy
Endowment Award - Eminent
Medicalman-cum-Statesman by Andhra
Pradesh Academy of Sciences
Sir Ronald Ross Memorial Oration by
Institute of Post-Graduate Medical
Education & Research, Calcutta
Pharmaceutical Oration by Punjabi
University, Patiala
- Dr. K. Kasturirangan** : Aryabhata Medal Award 2000 conferred by
Hon. Professor Indian National Science Academy,
New Delhi.

M.N. Saha Birth Centenary Award for
1999-2000 Conferred by 87th Indian
Science Congress (2000)

“Padma Vibhushan” National Recognition
by the Govt. of India (2000)

P.S. John Endowment Award, Conferred
by Ernakulam Press Club, Cochin (2001)

Dr. Maneesha S. Inamdar : Wellcome travel Award to visit U.K.
Faculty Fellow

Prof. R.A. Mashelkar : “Padmabhushan” award National
Hon. Professor recognition by the Govt. of India, (2000)

Material Scientist of the year 2000,
Materials Research Society of India

H.K. Florida Award (2000) for excellence in
Science and Technology

Shanti Swarup Bhatnagar Medal Award
(2001) by Indian National Science
Academy, New Delhi & Indian Science
Congress Association, Calcutta.

JEPPIAR Educational Trust Award (2001)
for Excellence of Science & Technology

Prof. T.V. Ramakrishnan : Padmasri by the President of India.
Hon. Professor

Prof. C.N.R. Rao : Hari Om Ashram Prerit Senior Scientist
Linus Pauling Research Award, (2000)
Professor

Millennium Plaque Of Honour,
Indian Science Congress (2001).

Prof. N. Sathyamurthy : C.V. Raman Award, Hari Om Ashram
Hon. Professor Trust, UGC., New Delhi

- Prof. M.M. Sharma** : Padma Vibhushan by the President of
Hon. Professor India.
- Dr. Sriram Ramaswamy** : NASI Young Scientist Millenium Award
Member, CMTU
- Prof. M. Vijayan** : K.S. Krishnan Memorial Lecture Award of
Hon. Professor the Indian National Science Academy,
2001

Om Prakash Bhasin Award, 2000

Editorial Boards

- Prof. N.K. Ganguly** : Member, Editorial Board, Molecular and
Hon. Professor Cellular Biochemistry
- Member, Editorial Board, Quarterly
Journal, Proceedings of the National
Academy of Sciences, India (Section B
Biological Sciences)
- Member, Editorial Board, Indian Journal
of Allergy and Applied Immunology
- Dr. Seyed E. Hasnain** : Co-Editor, Infectional Genetics and
Hon. Faculty Member Evolution, Elsevier Press (Netherlands)
- Member, Editorial Board, Current Science
- Member, Editorial Board, Indian Journal
of Medical Microbiology
- Member, Editorial Board, Emerging
Infectious Diseases
- Member, Editorial Board, Journal of
Bio-Sciences

Fellowships

Prof. S. Bhattacharya : Elected Fellow, Indian Academy of Sciences
Hon. Faculty Member

Prof. Diptiman Sen : Fellow, Indian Academy of Sciences,
Member, CMTU
Bangalore.
Senior Associate, S.N. Bose National
Centre for Basic Sciences, Calcutta

Prof. Gadagkar R : Schering-Fellow, Wissenschaftskolleg zu
Hon. Professor
Berlin, Germany
Elected Fellow, Third World Academy of
Sciences

Prof. Chandan Dasgupta : Fellow, National Academy of Sciences
Hon. Professor

Prof. N.K. Ganguly : Fellow, Indian National Science Academy,
Hon. Professor
New Delhi

Fellow, Indian Academy of Sciences,
Bangalore

Fellow, National Academy of Medical
Sciences, New Delhi

Fellow, National Academy of Science,
Allahabad

Fellow, Indian School of Applied
Immunology & Allergy, New Delhi

Prof. S.S. Jha : Fellow, Third World Academy of Sciences,
Hon. Professor
Triesty, Italy

Prof. Kasturirangan : Honorary Fellow, Indian Institute of
Hon. Professor
Chemical Engineers, Mumbai

- Prof. C.N.R. Rao** : Honorary Fellowship, Indian Institute of
Linus Pauling Research Chemical Engineers, Mumbai (2001)
Professor
- Dr. D.D. Sarma** : Fellow, Indian National Academy and
Member, CMTU National Academy of Sciences.
- Dr. Seyed E. Hasnain** : Fellow, National Academy of Sciences,
Hon. Faculty Member India
Fellow, Indian National Academy of
Sciences
Fellow Indian Academy of Sciences
Fellow Third World Academy of Sciences
- Dr. Tapas Kumar Kundu** : Fellow, International Union Against
Faculty Fellow Cancer (UICC), Switzerland
Human Frontier Research fellowship
- Prof. K.S. Valdiya** : Honorary Fellow, Indian Geophysical
Bhatnagar Research Union
Professor
Honorary Fellow, Geological Society
of Nepal

Memberships

- Prof. M. Barma** : Member, IUPAP Commission on Statistical
Hon. Professor Physics
- Prof. S. Bhattacharya** : Member, Research Council, Indian
Hon. Faculty Member Institute of Chemical Biology, Calcutta
- Prof. N.K. Ganguly** : Council Member, Federation of
Hon. Professor Immunological Societies of Asia-Oceania
(FIMSA) for 2000-2003

Member, WHO, Scientific and Technical Advisory Committee for a period of three years w.e.f. 1st January 2000

Member, British Association of Study of Liver

Member, The New York Academy of Sciences, USA

Member, International Association of Adaptive Medicine, Canada

Member, American Society of Microbiology

Member, Executive Committee of International Society For Heart Research.

Dr. K. Kasturirangan

Hon. Professor

: Chairman, Board of Governors of Indian Institute of Technology, Madras

Member, Inter-departmental Committee constituted by Dept. of Science & Technology to achieve effective Co-ordination between different government departments

Life Member, Indian Science Congress Association

Member, IISc Court - Council Member for the year 1998- 2001

Member, Advisory Committee of the Symposium on 'Role of Physics in National Security' of the Indian Physics Association

Chairman, Advisory Committee for Shanti Swarup Bhatnagar Prize (2000) constituted by CSIR, New Delhi

Member, Search-cum-Selection Committee for the Selection and appointment of Executive Director, C-DOT Constituted by Dept. of Telecommunications

Chairman, National Committee for Committee on Space Research (COSPAR) 2000 - 2003 constituted by Indian National Science Academy

Ex Officio Chairman, Programme Council of Astronautical Society of India for the year 2000 - 03

Chairperson, Research Council of NAL, Bangalore

President, Indian Academy of Sciences for the years 2001 - 2003

Member, Working Committee of the Current Science Association for the triennium 2001 - 2003

Dr. Maneesha S. Inamdar : Member, Indian Society of Developmental
Faculty Fellow Biologists 2000-2002

Prof. P.T. Manoharan : Chairman, Research Council for RRL,
Hon. Professor Trivandrum

Prof. R.A. Mashelkar : Chancellor, Assam University 2000 - 2004
Hon. Professor

General President, Indian Science Congress, 1999-2000

Chairman of the Board of Governor of NIPER, Chandigarh

Chairman of National Innovation Foundation, Ahmedabad

- Dr. S. Natarajan** : Elected Member, The Royal Society of
Faculty Fellow Chemistry
- Prof. T.V. Ramakrishnan** : Elected Fellow of the Royal Society
Hon. Professor (London)
- Elected Vice-President, Indian National
Science Academy
- Prof. C.N.R. Rao** : Foreign Member, French Academy of
Linus Pauling Research Sciences
Professor
- Hon. Membership, The Indian Institute of
Metals (2000)
- Dr. Sanjay Jain** : Member of the External Faculty of the
Member, CMTU Santa Fe Institute USA for 2000 - 2003
- Dr. Tapas Kumar Kundu** : Member, American Chemical Society.
Faculty Fellow
- Dr. Umesh V. Waghmare** : Associate of the Indian Academy of
Faculty Fellow Sciences, Bangalore.
- Prof. M. Vijayan** : Re-elected to the Council of the Indian
Hon. Professor Academy of Sciences, 2001
- Founder President, Indian Crystallographic
Association 2001.

Prizes and Medals

- Prof. S. Bhattacharya** : CRSI Medal of Chemical Research Society
Hon. Faculty Member of India
- Prof. D. Chatterji** : Millennium medal in Indian Science
Hon. Professor Congress - 2000
- Prof. B.M. Deb** : Chemical Research Society of India Silver
Hon. Professor Medal 2000

- Prof. H.R. Krishnamurthy** : DAE - Raja Ramanna Prize of the year
Hon. Professor 2000
- Prof. N. Kumar** : The Meghnad Saha Medal for 2000
Hon Professor (Indian National Science Academy)
- Prof. P.T. Manoharan** : The Chemical Research Society of India
Hon. Professor Medal (2000) for extensive and outstanding
research in Chemistry
- Dr. S. Natarajan** : The Chemical Research Society of India
Faculty Fellow bronze Medal
- Prof. T.V. Ramakrishnan** : C V Raman Medal, Indian Science
Hon. Professor Congress Association
- Prof. C.N.R. Rao** : Centenary Lectureship and Medal, Royal
Linus Pauling Research Society of Chemistry, London (2000)
Professor
- HUGHES Medal for Physical Sciences,
The Royal Society, London (2000)
- Dr. Sriram Ramaswamy** : Shanti Swarup Bhatnagar Prize for the
Member, CMTU. Physical Sciences for 2000
- Prof. A. Surolia** : Professor GN Ramachandran 60th
Hon. Faculty Member Birthday Commemoration Medal (2000)
by INSA.



CHAPTER VIII

FINANCIAL STATEMENTS



NAME : **JAWAHARLAL NEHRU CENTRE FOR
ADVANCED SCIENTIFIC RESEARCH**

ADDRESS : **JAKKUR POST, BANGALORE 560 064**

YEAR ENDED : **31ST MARCH 2001**

ASSESSMENT YEAR : **2000-2001**

P. V. PRABHU & CO.,
CHARTERED ACCOUNTANTS
Panduranga Nilaya
No. 91/1, 1st Floor, 2nd Main,
Venkataramappa Block, Govindarajnagar,
BANGALORE 560 040

PARTNERS :

P.V. PRABHU D.Com., F.C.A.

Phone : Resi. : 3381502

NAGARAJA B.Sc., A.C.A.

Phone : Resi. : 3396234

M/s P. V. PRABHU & CO.

CHARTERED ACCOUNTANTS

"Panduranga Nilaya"

No. 91/1, I Floor,

II Main, Venkatramappa Block

Govindaraj Nagar

Bangalore 560 040

AUDIT REPORT

We have examined the Balance Sheet of JAWAHARLAL NEHRU CENTRE FOR ADVANCED SCIENTIFIC RESEARCH, Jakkur Campus, Jakkur, Bangalore 560 064, as on 31st March 2001 and the Income and Expenditure Account for the year ended on that date which are in agreement with the Books of Accounts maintained by the said Centre.

We have obtained all the information and explanations which to the best of our knowledge and belief were necessary for the purpose of our audit and in addition the certificate from the bankers regarding the cash balance obtained and verified. In our opinion, proper books of accounts have been kept by the Centre, so far as it appears from our examination of the books of accounts.

In our opinion and to the best of our information and according to the explanations given to us, and subject to stating of fixed assets at their acquisition cost without depreciation, and accounting for expenditure and fixed assets amounting to Rs. 1 crore on the basis of budgetary proposals, the said accounts give true and fair view :

- (i) In the case of Balance Sheet of the state of affairs of Jawaharlal Nehru Centre for Advanced Scientific Research as at 31st March 2001 ;

AND

- (ii) In the case of the Income and Expenditure Account of the excess of Expenditure over Income for the year ended on that date.

For **P. V. Prabhu & Co.,**
CHARTERED ACCOUNTANTS

Place : Bangalore

Date : 31.8.2000

Sd/-
(NAGARAJA)
Partner

INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDING 31.03.2001

1999-2000		EXPENDITURE		2000-2001		1999-2000		INCOME		2000-2001	
Rs.	Ps.	Rs.	Ps.	Rs.	Ps.	Rs.	Ps.	Rs.	Ps.	Rs.	Ps.
154367	00	TO INT ON SUBSCRIPTION	207072	00	809465	00					
174027	00	TO ADVERTISEMENTS	9309	00	9309	00					
171116	00	TO DOMESTIC TRAVEL ALLOW.	937379	00							
10245	00	TO FOREIGN TRAVEL EXPENSES	79765	00	1017144	00					
2692225	00	TO BUILDING MAINT.	3098666	00							
632171	00	TO GARDEN MAINT.	492130	00							
1785344	00	TO EQUIPMENT MAINT.	3196347	00							
210885	00	TO GUEST HOUSE MAINT.	386048	00							
30318	00	TO VEHICLE MAINT.	16292	00							
264633	00	TO OFFICE MAINT.	129766	00							
104647	00	TO CANTEEN MAINT.	66475	00							
984409	00	TO ELECTRICITY & WATER MAINT.	1303831	00	8689555	00					
517731	00	TO COSTED PROGRAMME	550755	00							
1649868	00	TO DISCUSSION MEETINGS	1704576	00							
82770	00	TO PUBLICATIONS	81554	00							
1812012	00	TO PHD PROGRAMME	1627723	00							
53848	00	TO SRF 98									
3510	00	TO CTSSSP 98									
314318	00	TO SRF 1999									
204769	00	TO SRF 2000									
		TO PATENT FEES	377955	00							
		TO ETU MULTIMEDIA	250000	00							
		TO CTSSP 2000	41250	00							
			15890	00							
4278912	00	TO CONSUMABLES LAB	5232984	00	4649703	00					
30673930	42	TO SURPLUS C/O			5232984	00					
82028128	00	TOTAL Rs.			77002657	17	82028128	00	TOTAL Rs.	77002657	17

SCHEDULE No. 1 CREDITORS

No.	Particulars	Rupees	Ps.	Rupees	Ps.
	A				
	<u>SECURITY DEPOSIT/EMD</u>				
1.	MUNISWAMY R.	5267	00		
2.	DODDAMANE BROTHERS	7,775	00		
3.	HARISH KUMAR	6,575	00		
4.	KUMAR ELECTRONICS	26650	00		
5.	TOMAS AND CO.	19,019	00		
6.	WCI SHIPPING CORPN	10,000	00		
7.	SRINIVASAMURTHY N.M.	1,375	00		
8.	BABU TRADERS	1,000	00		
9.	CHANDRASHEKAR M.P.	10,800	00		
10.	RAMESH Y.	13397	00		
11.	VINAYAKA ENTERPRISES	2700	00		
12.	INDIRA ELECTRICALS	18000	00		
13.	M S MAINTENANCE	19419	00		
14.	BIT BYTE COMPUTERS	5948	00		
15.	DIESEL TECH ENGINEERS	170	00		
16.	VENKATA REDDY Y S	141159	00		
17.	PURUSHOTHAM RAJU	10800	00		
18.	RAVI CONSTRUCTIONS	75778	00		
19.	B & B ESTATES AND INFRASTRUCTURE	44221	00		
				420053	00
	B				
	<u>OUTSTANDING LIABILITIES</u>				
1	IT - TDS	13536	00		
2	AUDIT FEES PAYABLE	21000	00		
3	CPF & INTEREST PAYABLE	820694	00		
4	KST - TDS	683	00		
				855913	00
	C				
	<u>OTHERS</u>				
1	IISC - CEMENT	508242	45		
2	CAUTION MONEY DEPOSIT	182470	00		
3	DST/INT/IL TP	418803	00		
4	IUPAC	136736	00		
5	DST-POTABLE WATER	93000	00		

SCHEDULE No. 1, CREDITORS

No.	Particulars	Rupees	Ps.	Rupees	Ps.
6	INSA	140800	00		
7	INDO FRENCH CPAR	39375	00		
8	DR. AMIT JOSHI	4963	00		
9	PROF. V. RAJARAMAN	10000	00		
10	DR. ANURANJAN ANAND	6320	0		
11	DR. RANGA UDAYA KUMAR	1500	00		
12	DR. V. GOVINDARAJ	4902	00		
				1547111	45
	D				
1	SUNDRY CREDITORS-SUSPENSE	92904	00		
2	SUNDRY CREDITORS-END/SD	124124	00		
3	SUNDRY CREDITORS-LC'S/BOOKS /JRNLS	1000000	00		
				10217028	00
	TOTAL CREDITORS A + B + C + D			13040105	45

Sd/-	Sd/-	As per our report of even date for M/s P V Prabhu & Co. Chartered Accountants Sd/- (Nagaraja) Partner	
Place: Bangalore Date : 31.8.2001	R.S. GURURAJ Accounts Officer	V. KRISHNAN President	

SCHEDULE No. 2 Fixed Assets

No.	Name of the Asset	As on 31.03.2000		Additions during the year		As on 31.03.2001	
		Rs.	Ps.	Rs.	Ps.	Rs.	Ps.
A							
1.	Land at Jakkur Granted by Govt. of Karnataka Free of Cost 1.37 Acres						
2.	Buildings	7,96,58,165	26			7,96,58,165	26
3.	Infrastructure	28341179	32	2514236	00	30855415	32
4.	Off. Equip/Appliances	3671895	63	15000	00	3686895	63
5.	Science Equipments	101415747	47	8217673	00	109633420	47
6.	Furniture	6205955	87	603368	00	6809323	87
7.	Vehicles	772304	10			772304	10
8.	Library Books	4504567	21	437963	00	4942530	21
9.	Library Journals	15441344	80	8340516	00	23781860	80
10.	JNC/HOSTEL Block Building	12113281	00	3296904	00	15410185	00
11.	Building New Lab	22323847	00	3053225	00	25377072	00
12.	Computer	6195329	00	88570	00	6283899	00
13.	Animal House Building	4032837	00	679229	00	4712066	00
14.	Staff Housing	3203321	00	859206	00	4062527	00
15.	Additional Land - Jakkur	6605521	00	124632	00	6730153	00
16.	Sci.Equip - Adv Tech Lab	20202562	00			20202562	00
17.	Sci. Equipment Magnet	7090855	00			7090855	00
TOTAL A		321778712	66	28230522	00	350009234	66
B							
1.	Core Group on Carbon and Nano Materials Sci. Equipments - CNM	34179930	00			34179930	00
TOTAL B		34179930	00			34179930	00
C							
Unit of Physics and Chemistry of Materials							
1.	Sci. Equipments	9869295	00			9869295	00
2.	Furniture	8800	00			8800	00
TOTAL C		9878095	00			9878095	00
D							
1.	Cluster Studies Sci. Equipments	2620413	00	26700	00	2647113	00
TOTAL - D		2620413	00	26700	00	2647113	00

As per our report of even date
for M/s P V Prabhu & Co.
Chartered Accountants

Place: Bangalore
Date : 31.8.2001

Sd/-
R.S. GURURAJ
Accounts Officer

Sd/-
V. KRISHNAN
President

Sd/-
(Nagaraja)
Partner

SCHEDULE No. 3 ADVANCES & DEPOSITS

No.	Particulars	Rupees	Ps.	Rupees	Ps.
A	<u>DEPOSITS</u>				
1.	S.CRS. DEPOSIT	2,61,025	00	2,61,025	00
B	<u>LOANS & ADVANCES</u>				
1.	ASIATIC INDL. GASES	13,500	00		
2.	Dr. NARAYAN K.S.	17000	00		
3.	Dr. A. RAMANAN	5540	00		
4.	Dr. NAMITHA SUROLIA	27170	00		
5.	Dr. RAGHURAMA RAJU	11000	00		
6.	DR. S.K. JOSHI	5094	00		
7.	PROF. K. S. VALDIA	5000	00		
8.	DR. HEMALATHA BALRAM	5876	00		
9.	PROF. CNR RAO	15000	00		
10.	SHRIPATHI TIRUPATHI	35030	00		
11.	AMIT BASU	5000	00		
12.	CHAANDANDAS GUPTHA	1000	00		
13.	CYLINDER DEPOSIT	10000	00		
14.	MIGA GASES (P) LTD	2000	00		
15.	RAJAPPA	2000	00		
16.	Prof. R. GADKAR	10000	00		
17.	Prof. MADUSUDAN	1407	00		
18.	Prof. R. NARASIMHA	6575	00		
19.	MOUDGAL N.R.	5000	00		
20.	NANJUNDAIAH	9000	00		
21.	ITTYACHEN M.A.	15000	00		
22.	UMAPATHY. S.	5000	00		
23.	RAHUL PANDIT	2000	00		
24.	ASIATIC INDL. GASES	5000	00		
25.	KRISHNAN V	21857	00		
26.	SINHA K.B.	550	00		
27.	SAC (C) CNR	26834	00		
28.	RAMA GOVINDARAJAN	3000	00		
29.	JNC STUDENTS RES	7087	00		
30.	ISRO/RAMANATHAN R.N.	33153	00		
31.	SRIDHARAN. A.	10000	00		
32.	KUNTHALA JAYARAM	32500	00		
33.	SHARMA V.K.	10220	00		
34.	MYS UNIVERSITY	117200	00		
35.	MANEESHA INAMDAR	9323	00		
36.	Dr. K.R. SRINIVAS	10500	00		
37.	GAYATHRI B. KALIYA	75000	00		
38.	MANGALORE UNIVERSITY	22000	00		

SCHEDULE No. 3 ADVANCES & DEPOSITS

No.	Particulars	Rupees	Ps.	Rupees	Ps.
39.	LTC ADVANCE	4761	00		
40.	SAJO. P. NAIK	8250	00		
41.	Dr. GANESHAIA K.N.	5000	00		
42.	RAGHUNATHA K.	7500	00		
43.	RAJEEV UPADHYAY	7000	00		
44.	CPF RECEIVABLE	11229	00		
45.	OTHER ADVS. TDS	11785	00		
46.	DST/HB/EPSPPF/98	874	00		
		654815	00	654815	00
	1 PERMANENT IMPREST			25500	00
	1 FESTIVAL ADVANCE			54900	00
				996240	00

Place: Bangalore
Date : 31.8.2001

Sd/-
R.S. GURURAJ
Accounts Officer

Sd/-
V. KRISHNAN
President

As per our report of even date
for M/s P V Prabhu & Co.
Chartered Accountants
Sd/-
(Nagaraja)
Partner

SCHEDULE No. 4 - Professorship Endowments

No.	Particulars	Rupees	Ps.	Rupees	Ps.
1	IBM PROFESSORSHIP FUND	1020289	46		
2	HINDUSTAN LEVER PROFESSORSHIP FUND	2862867	68		
3	GHARDA PROFESSORSHIP FUND	752835	38		
4	ASTRA RESEARCH CENTRE PROFESSORSHIP FUND	1000424	70		
5	DAE VIKRAM SARABHAI PROF. FUND	1434125	00		
6	DRDO D S KOTHARI PROF. FUND	1620250	00		
7	CSIR BHATNAGAR PROF. FUND	1620775	00		
8	SHANTA SEETHARAMAIAH FUND	167218	12		
9	JNC CORPUS FUND	9306209	84		
10	JNC CNR CORPUS FUND	287331	00		
11	JNC ROYALTY FUND	133890	90		
12	BAPU NARAYANASWAMY PRIZE FUND	63840	00		
13	DEPARTMENT OF SPACE FUND	1620228	00		
14	RAMARAO A.V. LECTURES - FUND	591543	00		
15	ISRO MULTIMEDIA PACKAGE	800987	00		
16	ISRO DHAWAN LECTURE	443493	00		
17	RELIANCE INDUSTRIES	6047678	00		
18	DAE RAJARAMANNA LECTURE	519555	00		
19	TATA EDUCATION TRUST	5347597	00		
20	ISRO SCIENCE EDUCATION PROGRAMME	1500000	00		
				37141138	08
DEPOSITS ENDOWMENT PROFESSORSHIP FUND					
1	ICCI	1790000	00		
2	IDBI	6500000	00		
3	HDFC	7050000	00		
4	CRB CAPITAL	12000	00		
5	CANARABANK	10240000	00		
6	IFCI	400000	00		
7	STEEL AUTHORITY OF INDIA	200000	00		
8	UTI	2000000	00		
9	IDBI FLEXIBONDS	600000	00		
10	SYNDICATE BANK	2500000	00		
				31292000	00

Place: Bangalore
Date : 31.8.2001

Sd/-
R.S. GURURAJ
Accounts Officer

Sd/-
V. KRISHNAN
President

As per our report of even date
for M/s P V Prabhu & Co.
Chartered Accountants
Sd/-
(Nagaraja)
Partner

SCHEDULE No. 5 - Scheme Balances

No.	Particulars	Rupees	Ps.	Rupees	Ps.
1	RGF INNOVATIVE IDEAS	262488	00		
2	RGF SUMMER PROGRAMME	79000	00		
3	CSIR - KS VALDIA	15830	05		
4	INSA	42054	00		
5	LIST - R NARASIMHA	11852	00		
6	LIST - V NANJUNDAIAH	23815	00		
7	AIRFORCE OFFICE - KS NARAYAN	2336	00		
8	MONTBLEX/DST/R NARASIMHA	1577	00		
9	IAS - LIFESCAPE	52045	00		
10	DST/ELF-2/NS	176284	00		
11	CSIR GRANT-SAJI VARGHESE	9904	00		
12	EMR - NAMITA SUROLIA	12498	00		
13	JNC/CSIR/98/ KS NARAYAN	117828	00		
14	DST/INDO/ISRAEL/KSN	263509	00		
15	BOEING - R NARASIMHA	157560	00		
16	DST/SRFP - 98	50000	00		
17	JNC/CSIR/98/HEMALATHA BALARAM	212585	00		
18	DST/HB/EPSPFF/98	314036	00		
19	DST/MKC/LCRD	768547	00		
20	CSIR - SUJAYA SUBBAIAH	341	00		
21	CSIR - NG PRASAD	16569	00		
22	CSIR/GVNGS/A. ANAND	260041	00		
23	UTC/P&W/USA - R NARASIMHA	17685	00		
24	UGC-A. G. MANOJ	134535	00		
25	INFOSYS-RAJARAMAN	434565	00		
26	CSIR/MMDAA/S BALASUBRAMANIAN	149711	00		
27	INSA - V.K. SHARMA	39082	00		
28	CSIR - R. JAYALAKSHMI	5011	00		
29	JNC/NAL/ARDB/RAMA GOVINDARAJAN	17074	00		
30	ARDB/DPMTR/RN	907252	00		
31	JNC/DBT/R UDAY KUMAR	389382	00		
32	DBT/MGBJME/A. ANAND	781181	00		
33	SCHOOL CHEMISTRY KIT	68300	00		
34	NRB/NSTT/RAMA G/4057	69986	00		
35	DST/AJ/4058	484648	00		
36	SIG/HB/4059	409406	00		
37	SIG/KRS/4061	245037	00		
38	CSIR/TKK/4062	264403	00		

SCHEDULE No. 5 - Scheme Balances

No.	Particulars	Rupees	Ps.	Rupees	Ps.
39	DAE/CNRR/4063	846395	18		
40	DST/CNR/4064	1437275	00		
41	CSIR/NS/DRD/4065	173331	00		
42	DBT/A. ANAND/DG/4066	319612	00		
43	ISRO/K.S. VALIDIYA/4067	5000	00		
44	CSIR/GENERAL/4068	444167	00		
45	ETU/MULTIMEDIA/4069	78480	00		
46	DRDO/CNR/4070	4753583	00		
47	DST/RUK/4071	3238123	00		
48	DBT/KNG/4072	3432885	00		
49	CSIR/MI/4073	17545	00		
50	REL/CNR/4074	661500	00		
51	ICMR/HB/4076	320000	00		
52	CSIR/COE/CNR/5100	732082	00		
	TOTAL RS.	23727935	23		

Place: Bangalore
Date : 31.8.2001

Sd/-
R.S. GURURAJ
Accounts Officer

Sd/-
V. KRISHNAN
President

As per our report of even date
for M/s P V Prabhu & Co.
Chartered Accountants
Sd/-
(Nagaraja)
Partner

CPF AND GRATUITY FUND STATEMENT AS ON 31.03.2001

Particulars	Rs.	Rs.	Particulars	Rs.	Rs.
<u>SUBSCRIPTIONS</u>					
Opening Balance	3034073		Canara Bank	1265000	
Subscriptions during the year	1453842		ICICI	100000	
Interest on Subscriptions	405340		IDBI Flexi bonds	2200000	
Total	4893255		KBJNL	200000	
Less Withdrawals	- 697300		UTI	400000	4165000
	<u>4195955</u>	4195955	Cash at Bank		
<u>CONTRIBUTION</u>			SB A/c No. 17513		2774205
Opening Balance	1980844		Canara Bank, IISc branch		
Contribution during the year	602393		Contribution receivable from JNC		820694
Interest on total contributions	207072				
Total	2790309				
Payments	- 63365				
Total	<u>2726944</u>	2726944			
Gratuity fund		837000			
Total		7759899	Total		7759899

As per our report of even date
for M/s P V Prabhu & Co.
Chartered Accountants

Sd/-

V. KRISHNAN
President
(Nagaraja)
Partner

Sd/-

R.S. GURURAJ
Accounts Officer

Place: Bangalore
Date : 31.8.2001

ANNEXURE

Resume of activities during 2000-2001

New insights into the mechanism of formation of open-framework materials were obtained. Synthesis and characterization of novel gold and palladium clusters were completed. New chemical approaches for synthesis of oxide and chalcogenide nano tubes were achieved. CMR materials have been studied using Brillouin scattering and single crystals. Photophysics studies have been carried out on conjugated polymers.

Unique investigations of possible circadian consequences to social organizations are under way. In evolutionary genetics, dynamic behaviour and demographic stochasticity of very small populations are being studied by experimental and theoretical approaches.

Wavelet techniques and analysis have been used for monsoon rainfall studies, as well as for inferring organization in coherent structures in plumes. New instability in miscible two-fluid flow has been found.

Studies on paleo lakes and paleo climatic inferences in the Kaveri basin and river responses to neotectonism and tectonogeomorphic evolution in South India have been completed.

In molecular biology and genetics, new poly cyclitols to study greater inhibitory activity have been examined, with possible chemical and biological applications. The antibacterial drug triclosan has been identified as a promising new antimalarial agent.

Density functional theory has been used to calculate anomalous surface properties. Slow dynamics in supercooled liquids and the glass transition have been studied. Complex magnetic behaviours in cuprates and manganites, and quantum magnetism in low dimensions, have been investigated.

The Centre supported 24 Discussion Meetings and arranged 14 Endowment Lectures, Special Lectures and Colloquia. Four Frontier Lectures and 35 Seminars are also arranged. The Summer Research Fellowship Programme for students, the Visiting Fellowships Programme and the JNCASR-COSTED International Fellowships Programme are continuing as very valuable extension activities of the Centre.

Assessment Report

The Centre has established itself as a Centre of excellence in research and teaching. All the units have been functioning with commendable efficiency and newer and younger faculty have been recruited in different units. The student strength has grown to a good number, and the various Fellowships and Extension Programmes and publication activities are functioning well.

1. Reservations and Concessions

Regarding the reservations/concessions for the SC/ST employees, the Centre is following cent percent reservations policy of Government of India. The Centre strictly follows the Roaster system to safeguard the interests of these communities as per norms and guide lines of the G.O.I.

2. Personal Matters of Employees

All the personnel matters are monitored by the Head of the Institution. All the personnel matters relating to the employees are being dealt then and there. At present there are no pending papers regarding personnel matters relating to the employees of the Centre.

3. Official Languages Policy

The Centre is implementing the official language policy wherever necessary and has taken note of instructions issued by the Government of India in this behalf from time to time. Annual Report and other relevant documents of the Centre are brought out in the official language.

4. Employees' Grievances

As regards redressal of grievance of the employees, a Committee has been constituted which looks after the grievances of the employees for redressal. So far no grievances have been reported to the Committee till date (October 2001).

5. Welfare Measures

The Centre provides primary medical care to its employees. A consultant Lady Medical Officer and a Consultant Medical Officer attends to the employees and the students community at the Centre. Apart from this, the employees of the Centre are being treated by their Family Physicians. Most of the well-known hospitals and diagnostic laboratories are recognised as per the guidelines of CGHS. The employees of the Centre are covered by Group Insurance Scheme. The students of the Centre are insured under the Students Insurance Scheme. Transport facility is provided for transportation of the employees/students of the Centre. The Centre runs a very good

canteen which caters to the needs of the students/staff at subsidised rates. From 7.00 p.m. to 7.00 a.m., a vehicle is provided to meet medical emergencies of the staff/students. Oftenly, the Centre organises recreational and sports activities. A few staff quarters have been built to meet the housing requirements of the staff. Students are housed in the hostel built on the campus.

6. Staff Strength

Group Wise	Administrative	Technical	SC/ST/OBC A + T	Remarks
A	5	22	-	All academic positions are exemptd from reservation Since AO's post is an isolated post, it is also exempted from reservation.
B	2	5	1	
C	31	7	14	
D	15	--	8	

7. The composition of Council of Management (GC, GB, FC, RAC and Grievance) Committees are as under :

Members of the Council of Management

Dr. Raja Ramanna
Chairman

Prof. V. Krishnan
President, JNCASR

Shri Arun Sharma
Joint Secretary & Financial Adviser
Ministry of Science & Technology
Department of Science & Technology
Technology Bhavan
New Mehrauli Road
New Delhi - 110 016.

Prof. S.K. Joshi
Vikram Sarabhai Research Professor
National Physical Laboratory
Dr. K.S. Krishnan Road,
New Delhi - 110 012.

Prof. G. Mehta
Director, IISc.

Prof. V.S. Ramamurthy
Secretary to G.O.I.
Ministry of Science & Technology
Department of Science & Technology
Technology Bhavan
New Mehrauli Road
New Delhi - 110 016.

Prof. C.N.R. Rao
Linus Pauling Research Professor
JNCASR

Prof. M.M. Sharma
Kothari Research Professor
502, Saurabh
Plot No. 39, Kunder Marg
Swastik Park, Chembur
Mumbai 400 071.

Prof. A.K. Sood
Dept. of Physics
IISc.

Dr. S. Varadarajan
Indian National Science Academy
Bahadur Shah Zafar Marg
New Delhi 110 002.

Mr. N Nagaraja Rao
Administrative Officer/Secretary

Members of the General Body (Society)

Dr. Raja Ramanna
Chairman

Prof. V. Krishnan
President, JNCASR

Shri Arun Sharma
Joint Secretary & Financial Adviser
Ministry of Science & Technology
Department of Science & Technology
Technology Bhavan
New Mehrauli Road
New Delhi 110 016.

Prof. S.K. Joshi
Vikram Sarabhai Research Professor
National Physical Laboratory
Dr. K.S. Krishnan Road
New Delhi 110 012.

Prof. G. Mehta
Director, IISc.

Prof. R. Narasimha
Director, National Institute of Advanced Studies
IISc Campus
Bangalore 560 012.

Prof. A. Ramachandran
No. 3, Crescent Road,
High Grounds,
Bangalore - 560 001.

Prof. V.S. Ramamurthy
Secretary to G.O.I.
Ministry of Science & Technology
Department of Science & Technology
Technology Bhavan
New Mehrauli Road, New Delhi 110 016.

Prof. C.N.R. Rao
Linus Pauling Research Professor
JNCASR

Prof. M.M. Sharma
Kothari Research Professor
502, Saurabh
Plot No. 39, Kunder Marg,
Swastik Park, Chembur
Mumbai - 400 071.

Prof. A.K. Sood
Dept. of Physics
IISc.

Dr. S. Varadarajan
Indian National Science Academy
Bahadur Shah Zafar Marg
New Delhi 110 002.

Mr. N. Nagaraja Rao
Administrative Officer/Secretary

Members of the Finance Committee

Prof. V. Krishnan
Chairman
President, JNCASR

Shri Arun Sharma
Joint Secretary & Financial Adviser
Ministry of Science & Technology
Department of Science & Technology Bhavan
New Mehrauli Road, New Delhi 110 016.

Mr. R.S. Gururaj
Accounts Officer, JNCASR

Prof. C.N.R. Rao
Linus Pauling Research Professor
JNCASR

Prof. A.K. Sood
Dept. of Physics
IISc.

Mr. N. Nagaraja Rao
Administrative Officer/Secretary

Members of the Academic Advisory Committee

Prof. V. Krishnan
Chairman
President, JNCASR

Prof. M.K. Chandrashekar
AstraZeneca Research Professor
JNCASR

Prof. S.S. Jha
Director
Tata Institute of Fundamental Research
Homi Bhabha Road
Mumbai 400 005.

Prof. N. Kumar
Director
Raman Research Institute
Bangalore 560 080

Dr. R.A. Mashelkar
Director - General, CSIR
and Secretary, G.O.I., DSIR
Anusandhan Bhavan
2, Rafi Marg
New Delhi 110 001.

Prof. N. Mukunda
Head, Academic, Fellowships and
Extension Programme
JNCASR

Dr. P. Rama Rao
Vice-Chancellor
University of Hyderabad
Central University P.O.
Hyderabad 500 046.

Prof. C.N.R. Rao
Linus Pauling Research Professor
JNCASR

Prof. M.R.S. Rao
Dept. of Biochemistry
IISc.

Mr. N. Nagaraja Rao
Administrative Officer / Secretary

Members of the Grievance Committee

Prof. N. Mukunda
Chairman
Head, Academic, Fellowships and
Extension Programme
JNCASR

Dr. Anuranjan Anand
Faculty Fellow, MBGU
JNCASR

Mr. K. Bhaskara Rao
Asst. Stores & Purchase Officer
JNCASR

Mr. N. Nagaraja Rao
Administrative Officer / Secretary
JNCASR

The Centre has constituted other important Committees such as Assessment Committee, Recruitment Committee, Nuclear Safety Committee, Bio-Safety Committee, Ethics Committee, Tender Committee,

Internal Administration & Finance Committee, Communication Systems (EPABX) Committee, Purchase Committee, Equipment Committee, Library Committee and Student's Welfare Committee.

The President is empowered to constitute the above said Committees as per the norms of the Centre.

8. Grant-in-aid

A Plan Grant of Rs. 7.5 Crores was received by this Centre, as Grant-in-Aid for the year 2000-2001 from the Department of Science and Technology, New Delhi.

Members of the Grievance Committee

* * * * *

The Centre has constituted other important Committees such as Assessment Committee, Recruitment Committee, Nuclear Safety Committee, Bio-Safety Committee, Ethics Committee, Tender Committee.