



JAWAHARLAL NEHRU CENTRE  
FOR ADVANCED SCIENTIFIC RESEARCH

ANNUAL  
REPORT

1990-91

Indian Institute of Science Campus  
Bangalore 560 012

THE UNIVERSITY OF CHICAGO  
FOR ADVANCED STUDY

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## FOREWORD

The Centre entered its second year during 1990-91. The academic programmes launched during the first year have been augmented and intensified during the year with the organisation of over a dozen seminars and discussion meetings. The Centre has become well known already in scientific circles all over the country for its role as a forum for seminars and discussion meetings on important scientific topics in frontier and emerging areas. Research work has been initiated with the participation of its honorary faculty, the visiting faculty and the faculty of the Indian Institute of Science who are contributing to the activities of the Centre. The publication programme of the Centre has also commenced. A summer research programme for talented students announced for the summer of 1991 attracted nearly a thousand students, and about 20 students were selected. During the year a number of scientists spent a few weeks to a few months each at the Centre interacting with our faculty members and others on various topics of scientific research. The Centre, which has the support of a galaxy of renowned scientists of the country who are honorary members of the faculty, besides others, looks forward to a bright and purposeful future.

The office building, a lecture hall and a dining hall-cum-lounge on the campus of the Institute have become ready in all respects. The office has been furnished and the library--which is housed in the same building--is now being equipped with books in the areas of interest to the Centre.

I would like to express my sincere thanks to the Indian Institute of Science for its continued support to the activities of the Centre and to the Department of Science & Technology, Government of India, for financial support.

C.N.R. Rao  
President

## INTRODUCTION

This Centre, devoted to research in frontier and emerging areas of science and engineering, was established by the Government of India to commemorate the Centenary Year (1989) of Pandit Jawaharlal Nehru, who fostered science in India in a big way. The Department of Science and Technology evinced active interest in the establishment of the Centre and has been fully supporting it.

The Centre was registered as a Society under the Karnataka Societies Registration Act, 1960. It started functioning in June 1989 and initiated various academic activities with the help of the faculty of the Indian Institute of Science and also the honorary faculty of the Centre. It functions as an independent, autonomous national Centre devoted to research, without however awarding any degrees. It is governed by a Council of Management consisting of distinguished scientists and administrators.

The Centre, located on the campus of the Indian Institute of Science, has strong academic links with the Institute, and this association with an established scientific research institution undoubtedly assures the growth of the Centre.

Certain essential infrastructural facilities for the Centre are being created at the Indian Institute of Science campus. The main campus of the Centre is being developed on lands gifted by the Government of Karnataka in Jakkur, which is in the proximity of the Indian Institute of Science.

## OBJECTIVES

The main objectives of the Centre are:

- (a) To carry out and promote front-line research in selected areas of science;
- (b) To promote collaborative research with scientists at the Indian Institute of Science and other institutions in the country;



- (c) 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;
- (d) To organize periodic winter and summer schools in certain areas, where young talented scholars would be associated;
- (e) To provide opportunities for talented young students to carry out research projects;
- (f) To provide facilities to visiting scholars and faculty from all over India and abroad, to spend extended periods at the Centre;
- (g) To publish monographs and reports on frontier and futuristic areas of science as well as monographs of educational value.

The Centre will generally promote emerging as well as interdisciplinary areas of science and engineering. This is sought to be achieved by making use of the facilities at the Indian Institute of Science and other advanced research institutions nearby and by developing such facilities of its own for theoretical studies and laboratory work as are essential.

#### SOCIETY

The membership of the Society of the Jawaharlal Nehru Centre for Advanced Scientific Research is given below. The Annual General Meeting of the Society was held on 24th November 1990. Besides, two special general meetings were held on 20th April and 24th November 1990, when certain amendments to the Memorandum of Association and the Rules & Regulations of the Centre were adopted.

Society: Jawaharlal Nehru Centre for Advanced Scientific Research

Dr. Raja Ramanna  
Chairman of the Council of Management  
Jawaharlal Nehru Centre for Advanced Scientific Research  
Bangalore (*ex-officio*) (Chairman)

Mr. B.K. Chaturvedi  
Joint Secretary & Financial Adviser,  
Department of Science & Technology  
Government of India, New Delhi

Dr. Vasant Gowariker  
Secretary, Department of Science & Technology  
Government of India, New Delhi

Prof. N. Mukunda  
Chairman, Division of Mathematical & Physical Sciences  
Indian Institute of Science, Bangalore

Prof. R. Narasimha  
Director, National Aeronautical Laboratory  
Bangalore

Mrs. Neerja Rajkumar<sup>1</sup>  
Secretary, Department of Science & Technology  
Government of Karnataka, Bangalore

Prof. C.N.R. Rao  
Director, Indian Institute of Science &  
President of the Centre (*ex-officio*)

Mr. T.R. Satish Chandran  
Director, Institute of Social & Economic Change  
Bangalore.

Prof. H. Sharat Chandra  
Dept. of Microbiology & Cell Biology  
Indian Institute of Science, Bangalore

Prof. M.M.Sharma  
Director, University Department of Chemical Technology  
Bombay

Prof. O. Siddiqi  
Professor of Molecular Biology  
Tata Institute of Fundamental Research, Bombay

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1. Member until 14th November 1990, when she resigned.

COUNCIL OF MANAGEMENT

Dr. Raja Ramanna  
Chairman of the Council of the  
Indian Institute of Science  
(*ex-officio*) (Chairman)

Prof. C.N.R. Rao,  
Director, Indian Institute of Science &  
President of the Centre

Dr. Vasant R. Gowarikar  
Secretary  
Department of Science & Technology, New Delhi

Mr. B.K. Chaturvedi  
Joint Secretary & Financial Adviser  
Department of Science & Technology, New Delhi

Prof. N. Mukunda  
Chairman  
Division of Mathematical & Physical Sciences  
Indian Institute of Science

Prof. O. Siddiqi  
Professor of Molecular Biology  
Tata Institute of Fundamental Research  
Bombay

Prof. M.M. Sharma  
Director  
University Department of Chemical Technology  
Bombay

Prof.H. Sharat Chandra  
Professor  
Department of Microbiology & Cell Biology  
Indian Institute of Science

Mr. L. Raghavendra Rao  
Administrative Officer  
(*ex-officio*) (Secretary)

The Council held its meetings on 20th April and  
24th November 1990.



ACADEMIC ADVISORY COMMITTEE

Prof. C.N.R. Rao  
President of the Centre (Chairman)

Dr. S.K.Joshi  
National Physical Laboratory, New Delhi

Prof. P.Rama Rao  
Defence Metallurgical Laboratory, Hyderabad

Prof. M.S. Narasimhan  
Tata Institute of Fundamental Research  
Bombay

Prof. A. Chakravorty  
Indian Association for the Cultivation  
of Science, Calcutta

Prof. N. Kumar  
Indian Institute of Science

Prof. R. Kumar  
Indian Institute of Science

Prof. G. Padmanaban  
Indian Institute of Science

Prof. T.V. Ramakrishnan  
Indian Institute of Science

Prof. V. Rajaraman  
Indian Institute of Science

Mr. L. Raghavendra Rao  
Administrative Officer .. (Secretary)

The Committee held its meetings on 3rd September  
1990 and 1st March 1991.

## HONORARY PROFESSORS

### Biological Sciences

Prof. B.K. Bachhawat, F.A.Sc., F.N.A.  
University of Delhi, Delhi

Prof. Madhav Gadgil, F.A.Sc., F.N.A.  
Indian Institute of Science

Prof. G. Padmanaban, F.A.Sc., F.N.A.  
Indian Institute of Science

Prof. V. Sasisekharan, F.A.Sc., F.N.A.  
Indian Institute of Science

Prof. H. Sharat Chandra, F.A.Sc., F.N.A.  
Indian Institute of Science

Prof. O. Siddiqi, F.A.Sc., F.N.A., F.R.S.  
Tata Institute of Fundamental Research  
Bombay

Prof. M.S. Valiathan, F.A.Sc., F.N.A.  
Sree Chitra Tirunal Institute for  
Medical Sciences & Technology, Trivandrum

Prof. M.A. Viswamitra, F.A.Sc., F.N.A.  
Indian Institute of Science

### Chemical Sciences

Prof. A. Chakravorty, F.A.Sc., F.N.A.  
Indian Association for the Cultivation of  
Science, Calcutta

Prof. M.V. George, F.A.Sc., F.N.A.  
Regional Research Laboratory, Trivandrum

Prof. V. Krishnan, F.A.Sc., F.N.A.  
Indian Institute of Science

Prof. G. Mehta, F.A.Sc., F.N.A.  
University of Hyderabad, Hyderabad

Prof. C.N.R. Rao, F.A.Sc., F.N.A., F.R.S.  
Indian Institute of Science

## Engineering Sciences

Prof. R. Kumar, F.A.Sc., F.N.A.  
Indian Institute of Science

Prof. R.A. Mashelkar, F.A.Sc., F.N.A.  
National Chemical Laboratory, Pune

Prof. R. Narasimha, F.A.Sc., F.N.A.  
National Aeronautical Laboratory,  
Bangalore

Prof. V. Rajaraman, F.A.Sc., F.N.A.  
Indian Institute of Science

Prof. P. Rama Rao, F.A.Sc., F.N.A.  
Defence Metallurgical Research Laboratory  
Hyderabad

Prof. M.M. Sharma, F.A.Sc., F.N.A., F.R.S.  
University Department of Chemical Technology  
Bombay

## Physical and Mathematical Sciences

Prof. S. Chandrasekhar, F.A.Sc., F.N.A., F.R.S.  
Raman Research Institute, Bangalore

Prof. R. Chidambaram, F.A.Sc., F.N.A.  
Bhabha Atomic Research Centre, Bombay

Prof. S.K. Joshi, F.A.Sc., F.N.A.  
National Physical Laboratory, New Delhi

Prof. N. Kumar, F.A.Sc., F.N.A.  
Indian Institute of Science

Prof. N. Mukunda, F.A.Sc., F.N.A.  
Indian Institute of Science

Prof. M.S. Narasimhan, F.A.Sc., F.N.A.  
Tata Institute of Fundamental Research  
Bombay

Prof. J.V. Narlikar, F.A.Sc., F.N.A.  
Inter-University Centre for  
Astronomy and Astrophysics, Pune



Prof. T.V. Ramakrishnan, F.A.Sc., F.N.A.  
Indian Institute of Science

Prof. Virendra Singh, F.A.Sc., F.N.A.  
Tata Institute of Fundamental Research  
Bombay

#### HONORARY SENIOR FELLOWS

Prof. C. Dasgupta  
Indian Institute of Science

Prof. H.R. Krishnamurthy, F.A.Sc.  
Indian Institute of Science

Prof. V. Nanjundiah, F.A.Sc.  
Indian Institute of Science

Prof. M.R.S. Rao, F.A.Sc.  
Indian Institute of Science

#### APPOINTMENTS/VISITING ASSIGNMENTS

The following scientists joined the Centre during the year and were engaged in the activities indicated against their names:

##### VISITING PROFESSOR

Dr. A. Jayaraman (AT&T Bell Labs.): Advanced research in high pressure Raman scattering on oxides and semi-conductors/Department of Physics, IISc/One year from 5th December 1990.

##### SENIOR ASSOCIATES

Prof. G.V. Anantha Iyer (Retired Professor of IISc): Writing of a monograph on Precambrian Crustal Evolution for use by geologists, chemists and other researchers in the field/Two years from 1st October 1990.

Dr. Radhakrishna (Laboratoire Leon Brillouin): Experiments on magnetism, in association with Prof.K.J.Rao/Materials Research Centre, IISc/Two years from 5th December 1990.

Dr. B.V. Subbarayappa (Retired Executive Secretary, INSA and an historian of Science): Writing of a book on the history of the Indian Institute of Science/One year from 20th February 1991.

FELLOW

Dr. Amit Basu (Department of Mechanical Engineering, University of Houston, Texas, USA): Research in Fluid Dynamics, in association with Prof. R. Narasimha/One year from 4th February 1991.

VISITING FELLOW

Dr. E.Grantscharova (Bulgarian Academy of Sciences): Research in Physical Chemistry, in association with Prof. C.N.R. Rao/Solid State & Structural Chemistry Unit of IISc/7th December 1990 to 15th March 1991.

JUNIOR RESEARCH FELLOW

Mr. G.V. Shivashankar (a young scientist): Research in scanning tunneling microscopy, under the guidance of Prof. N. Kumar and Dr. A.K.Raychaudhuri/Department of Physics at IISc/One year from 1st October 1990.

**CHAIR BY INDUSTRY**

Messrs. Hindustan Lever Ltd. have instituted a chair in the Centre with a donation of Rs.15 lakhs. The first instalment of Rs.7.5 lakhs has been received.

**ANNUAL GET-TOGETHER OF THE FACULTY**

On 23rd November 1990, an annual get-together of the honorary faculty was held. Apart from discussing academic matters of interest to the Centre, a programme of lectures by five of the faculty members on the status of and the latest developments in their respective fields of interest had been arranged for an open audience. The texts of these talks are being published as a Special Issue of the Journal of the Indian Institute of Science.



## ADMINISTRATIVE AND SUPPORT SERVICES

An office has been established with the minimum staff. Services of some members of the staff of the Indian Institute of Science are being utilized in several ways. The construction programme of the Centre is being supervised by the Engineering staff of the Institute.

The Centre also has the benefit of the advice of some of the scientists who have been associated with it as Honorary Professors.

## LAND AND BUILDINGS

A small building with an adjacent structure (which was earlier being used by the Department of Space as an Exhibition Hall) and the open space in between, was made available by the Indian Institute of Science for locating the office and other utilities of the Centre. The Centre has renovated this building and located its office and a library therein, modified the Exhibition building to serve as a lounge-cum-dining hall, and constructed a lecture hall in the open space between these two structures. These three buildings have been tastefully furnished with the assistance of an interior decorator. The entire area now wears a pleasing and refreshing look with plants and flowering climbers all round. The construction of a few more buildings on the campus of the Indian Institute of Science has been progressing. These are:

### Estimated cost

|   |             |
|---|-------------|
| 1. Guest Rooms, office and stores .. .. .     | Rs.40 lakhs |
| 2. Visitors' hostel .. .. .                   | Rs.75 lakhs |
| 3. President's house .. .. .                  | Rs.20 lakhs |
| 4. Staff housing .. .. .                      | Rs.60 lakhs |
| 5. Laboratory office of the President .. .. . | Rs.10 lakhs |

The main campus of the Centre is being developed on the land (15.55 acres gifted to the Centre by the Government of Karnataka) near Jakkur, about 11 kms from the Indian Institute of Science. Noted architect, Mr. Charles Correa has drawn up a master plan as well as designs of the buildings on this campus. Most of the area has now been enclosed with a boundary wall.



## RESEARCH SUPPORT

The following support has been extended by the Centre to the faculty and other scientists:

- Prof. N.Kumar/Dr. A.K. Raychaudhuri - Rs.4 lakhs for equipment for research in STM/AFM.
- Prof. K.J.Rao/Dr. S.A. Shivashankar - Rs. 20 lakhs also for research in STM/AFM.
- Prof. V. Krishnan/Dr. S. Umapathy - Rs.8 lakhs for equipment for research in Time-resolved Resonance Raman Spectroscopy.
- Prof. G.Mehta - Rs. 1 lakh per year as recurring expenses for research in the new state-of-the-art projects in Organic Chemistry.
- Prof. Madhav Gadgil - Rs.30,000 needed for expenses in connection with research in the human use of plant species of the Western Ghats.

## RESEARCH

The main areas in which research work was carried out during the year are:

- (a) **High Pressure Laser Raman Spectroscopic Studies** (Prof. A.K. Sood, Prof. A. Jayaraman and group): Several diamond cells operating in the range of one to a few hundred kilobars were set up and the following systems were studied: (i) CsIO<sub>4</sub>; (ii) ReO<sub>3</sub>; (iii) Ferroelectrics; and (iv) Molecular Crystals. [Part of the financial support for these studies came directly from DST].
- (b) **Scanning Tunneling Microscopy** (Dr. A.K. Raychaudhuri and group)<sup>1</sup>: Scanning Tunneling Microscopy and Spectroscopy facilities were set up. Tunneling spectroscopic work was carried out in normal conducting perovskite oxides and high temperature superconducting oxides. Eight papers resulted from these studies. [This project was funded also by agencies like DST, DAE and CSIR].

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1. The group included Mr. G.V. Shivashankar, a Junior Research Fellow of the Centre.

- (c) **Computational Fluid Dynamics** (*Dr. Amit Basu and Prof. R. Narasimha*): Research was carried out in two different directions, viz., viscous vortex methods and direct numerical simulation of turbulence.
- (d) **Experiments in Magnetism** (*Dr. Radhakrishna, Prof. C.N.R. Rao, Dr. A.M. Umarji, Prof. A.K. Sood and Prof. S.V. Subramanyam*): Studies were carried out on the magnetic properties of certain samarium and neodymium compounds, and phosphate glasses containing 3-D magnetic ions.

#### SYMPOSIA, WORKSHOPS AND DISCUSSION MEETINGS

During the previous year the Centre started a programme of seminars, workshops and discussion meetings on important and exciting topics in science and engineering in order to promote interaction and collaboration among scientists of the Centre in general and those in the country at large, and to stimulate young talented scholars. During the year under report, 13 such academic programmes were organised, keeping the number of participants small. Experts from overseas also participated in a few of these programmes and added to their value. In this regard, the Indo-US Workshop on Membrane Structure & Function: The State of the Art and the Indo-EEC Discussion Meeting on Superconductivity, deserve special mention. Some of the other areas covered include optics, signal processing and communication, separation science and engineering, protein structure and interaction and history and philosophy of science.

#### SUMMER RESEARCH FELLOWSHIP PROGRAMME

Earlier during the year it had been decided that a fellowship programme for talented students be organised during summer every year so that selected young talented students could be initiated into research under the guidance of honorary professors in Bangalore or elsewhere in the country. About 1,000 applications were received and 18 students were selected to undergo this novel experience during 1991 summer.



## PUBLICATION PROGRAMME

The publication programmes of the Centre are of the following types:

- (a) Advanced monographs aimed at promoting the publication of scientific books of an international standard and at research level;
- (b) Educational monographs consisting of short publications (about 100 pages each) aimed at Indian students in science at graduate and post-graduate levels;
- (c) Popular science books meant for the general reader. Where possible, these books will be produced in Hindi also.
- (d) Proceedings of Conferences/Meetings/Workshops.

Monographs/books by several honorary professors and others were at the various stages of preparation. Arrangements have been made with the Madhya Pradesh Council of Science & Technology for the publication of the first Hindi book on Computers in the Popular Science Books series.

The Proceedings of the Workshop on 'Signal Processing, Communications & Networking' (23-26 July 1990) were published through Tata McGraw-Hill. The Proceedings of a few more conferences/discussion meetings were at various stages of publication.

## FACULTY PUBLICATIONS

There were 24 scientific papers published by the faculty during the year.

## LIBRARY

The Centre has been subscribing to 8 current journals on Science and Engineering to meet the essential needs of the faculty and others. Books are being procured to build up the Library in a purposeful manner.



## RECOGNITION

The Centre has been recognised as a scientific/ industrial research organisation by the Ministry of Scientific & Industrial Research (Department of Scientific & Industrial Research). It has also been approved for the purpose of Section 35(1)(ii) of the Income Tax Act, 1961.

## FINANCES

The Department of Science & Technology, Government of India sanctioned a grant-in-aid of Rs.181 lakhs for the year 1990-91, out of which a sum of Rs.100 lakhs was released during the year. The total receipts were Rs.1,15,43,134.01 (including the balance held on 1st April 1991, the interest on deposits and other receipts). An expenditure of Rs.1,16,58,273.99 was incurred on both recurring and non-recurring items. Thus the Centre spent a sum of Rs.1,15,139.98 over and above the grant released, which will be set off against the grants to be released during 1991-92.

## AUDIT

The audit of the accounts of the Centre for the year was carried out by Messrs B.R.V. Goud & Co.

B.R.V. GOUD & CO.,  
Chartered Accountants

'Shivaprasad Complex'  
I Floor, 1/1, Museum Road  
Bangalore 560 001  
Date: 03.08.1991

FORM NO.10B  
AUDIT REPORT UNDER SECTION 12A(b) OF THE  
INCOME TAX ACT, 1961

We have examined the Balance Sheet of JAWAHARLAL NEHRU CENTRE FOR ADVANCED SCIENTIFIC RESEARCH, Indian Institute of Science Campus, Bangalore 560 012, as at 31st March, 1991, and the Income and Expenditure Account for the year ended on that date which are in agreement with the Books of Account maintained by the said Institute.

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. 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 subject to the comments given hereunder:

In our opinion and to the best of our knowledge, and according to information given to us, the said accounts give a true and fair view:

- (i) In the case of the Balance Sheet, of the state of affairs of the Centre as at 31st March, 1991

AND

- (ii) In the case of the Income & Expenditure Account, of the Excess of Income over Expenditure for the year ended that date.

for B.R.V. GOUD & CO.

Sd. B.R.V. Goud  
Partner

**INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH 1991**

| EXPENDITURE                            | Rs. P.            | Income                       | Rs. P.            |
|--|-------------------|------------------------------|-------------------|
| To Salaries & Allowances..             | 1,65,419.00       | By GRANT-IN-AID:             |                   |
| " Honorarium ..                        | 2,09,345.00       | From Department of Science & |                   |
| " Reimbursement of Medical Expenses    | 1,571.59          | & Technology, Government of  |                   |
| " Seminars & Workshops ..              | 7,30,133.90       | India, New Delhi .. ..       | 1,00,00,000.00    |
| " Discussion Meetings ..               | 2,44,334.40       | " INTEREST:                  |                   |
| " Summer Research Fellowship Programme | 44,849.75         | On Term Deposits 2,85,205.25 |                   |
| " Publication of Books etc. ..         | 26,322.25         | On Savings Bank 64,588.40    | 3,49,793.65       |
| " Council and Other Committee Meeting  |                   | " Miscellaneous Income ..    | 30,549.75         |
| Expenses.. ..                          | 94,015.70         |                              |                   |
| " Registration and Other Charges       | 4,160.00          |                              |                   |
| " Postage .. ..                        | 13,664.25         |                              |                   |
| " Printing & Stationery..              | 1,21,810.16       |                              |                   |
| " Bank Charges .. ..                   | 1,053.00          |                              |                   |
| " Conveyance Charges ..                | 17,139.45         |                              |                   |
| " Telephone Charges ..                 | 14,999.00         |                              |                   |
| " Repairs and Maintenance              | 14,058.55         |                              |                   |
| <u>Remuneration to Auditors:</u>       |                   |                              |                   |
| Audit Fees .. ..                       | 5,000.00          |                              |                   |
| Other Services .. ..                   | 1,500.00          |                              |                   |
| " Garden Maintenance ..                | 6,500.00          |                              |                   |
| " Miscellaneous Expenses ..            | 23,295.10         |                              |                   |
| " Surplus .. ..                        | 30,166.14         |                              |                   |
|  | 86,17,506.16      |                              |                   |
| Total ..                               | Rs.1,03,80,343.40 | Total ..                     | Rs.1,03,80,343.40 |

As per our report of even date  
**CHARTERED ACCOUNTANTS**  
**OF B.R.V. Goud & Co.**  
 Sd. B.R.V. Goud  
 Partner

Sd. C.N.R. Rao  
 President

Place: Bangalore  
 Date: 03.08.1991



**Statement of Non-recurring Expenditure incurred during  
the year 1990-91 out of grants received**

| Particulars                 | Rs. P.              | Particulars   | Rs. P.              |
|-----------------------------|---------------------|---|---------------------|
| To Building Construction .. | 89,30,357.18        | By unutilised grant as<br>on 1-4-90 .. ..                                     | 11,62,790.61        |
| " Equipment .. ..           | 3,38,985.65         | " Surplus as per Income<br>and Expenditure account..                          | 86,17,506.16        |
| " Furniture .. ..           | 4,34,147.47         | " Excess of Expenditure<br>over Income to be re-<br>imbursed by the D.S.T. .. | 1,15,139.98         |
| " Books and Journals ..     | 1,91,946.45         |   |                     |
| <b>Total .. ..</b>          | <b>98,95,436.75</b> | <b>Total .. ..</b>  | <b>98,95,436.75</b> |

As per our report of even date.  
for B.R.V. GOUD & CO.,  
CHARTERED ACCOUNTANTS

Place: Bangalore  
Date: 03.08.1991

Sd. C.N.R. Rao  
President

Sd. B.R.V. Goud  
Partner

**BALANCE SHEET AS AT 31ST MARCH, 1991**

|                                 | Rs.            | P. | Rs.             | P.                       |
|---------------------------------|----------------|----|-----------------|--------------------------|
| <b>LIABILITIES</b>              |                |    |                 |                          |
| <b>CAPITAL FUND:</b>            |                |    |                 |                          |
| As per Schedule No.1..          | 1,03,22,432.87 |    |                 |                          |
| <b>SUNDRY CREDITORS:</b>        |                |    |                 |                          |
| As per Schedule No.2..          | 17,92,518.54   |    |                 |                          |
| <b>ENDOWMENT FUND:</b>          |                |    |                 |                          |
| As per Contra                   | 8,05,731.15    |    |                 |                          |
| <b>ASSETS</b>                   |                |    |                 |                          |
| <b>FIXED ASSETS:</b>            |                |    |                 |                          |
| As per Schedule No.3 ..         |                |    | 1,04,37,572.85  |                          |
| <b>ADVANCES &amp; DEPOSITS:</b> |                |    |                 |                          |
| As per Schedule No.4 ..         |                |    | 9,94,179.60     |                          |
| <b>ENDOWMENT FUND DEPOSITS:</b> |                |    | 7,64,958.90     |                          |
| Add: Interest Receivable        |                |    | 40,772.25       |                          |
|                                 |                |    | 8,05,731.15     |                          |
| <b>CASH &amp; BANK BALANCES</b> |                |    |                 | 6,83,198.96              |
| <b>Total ..</b>                 |                |    | <b>Total ..</b> | <b>Rs.1,29,20,682.56</b> |

As per our Report of even date.

for B.R.V. GOUD & CO.,

**CHARTERED ACCOUNTANTS**

Place: Bangalore  
Date: 03.08.1991

Sd. C.N.R. Rao  
President

Sd. B.R.V. Goud  
Partner

**JAWAHARLAL NEHRU CENTRE FOR ADVANCED SCIENTIFIC RESEARCH**  
**Indian Institute of Science Campus, Bangalore 560 012**

SCHEDULES FOR THE YEAR ENDED 31.03.1991

**SCHEDULE No.1 - CAPITAL & OTHER FUNDS**

|                                   | Rs. | P. | Rs.                      | P. |
|-----------------------------------|-----|----|--------------------------|----|
| <b>CAPITAL FUND:</b>              |     |    |                          |    |
| As per previous Balance Sheet     | ..  |    | 11,62,790.61             |    |
| <u>Add: Excess of Income over</u> |     |    |                          |    |
| Expenditure .. .. .               | ..  |    | 86,17,506.16             |    |
| <b>OTHER FUNDS:</b>               |     |    |                          |    |
| Building Fund                     | ..  |    | 3,11,271.54              |    |
| Books & Journals                  | ..  |    | 1,14,310.60              |    |
| Equipment                         | ..  |    | 1,12,306.36              |    |
| Furniture                         | ..  |    | 4,247.60                 |    |
|                                   |     |    | -----                    |    |
|                                   |     |    | 5,42,136.10              |    |
| <b>Total ..</b>                   |     |    | <b>Rs.1,03,22,432.87</b> |    |



SCHEDULE No.2

|                                   | Rs.           | P  |
|-----------------------------------|---------------|----|
| A) IIsC (Cement & Water Supply)   | 10,29,972.04  | .. |
| =====                             |               |    |
| B) Retention Money and EMD:       |               |    |
| 1. B.V. Srinivas                  | 50,766.50     | .. |
| 2. R. Muniswamy                   | 1,19,828.00   | .. |
| 3. K. Narasimhalu                 | 2,16,922.00   | .. |
| 4. Shepoorji & Pallonji & Co.,... | 65,000.00     | .. |
| 5. V.M. Ganesh                    | 1,750.00      | .. |
| 6. Decorin                        | 23,370.00     | .. |
| 7. Nagappa Constructions          | 80,382.00     | .. |
| 8. M.M. Agencies                  | 5,000.00      | .. |
| 9. Interiors India                | 15,188.00     | .. |
| 10. H.N.Vijayaraghava Reddy       | 63,223.00     | .. |
| 11. Doddamane Brothers            | 1,00,000.00   | .. |
| 12. S.P.S Borewell                | 3,469.00      | .. |
| 13. R.K.V. Rangan                 | 12,648.00     | .. |
|                                   | -----         | .. |
|                                   | Total         | .. |
|                                   | 7,57,546.50   | .. |
| =====                             |               |    |
| C) Audit Fee payable              | 5,000.00      | .. |
|                                   | -----         | .. |
|                                   | Total (A+B+C) | .. |
|                                   | 17,92,518.54  | .. |
| =====                             |               |    |

SCHEDULE No.3 - FIXED ASSETS

| Sl. No.  | Name of the Asset  | As on 31.03.1990 |    | Additions during the year |    | As on 31.03.1991 |    |
|----------|--|------------------|----|---------------------------|----|------------------|----|
|          |  | Rs.              | P. | Rs.                       | P. | Rs.              | P. |
| 1.       | Land at Jakkur granted by Government of Karnataka free of cost, vide order No.RD.174-LGB-87(P)/21.09.1989] | ..               | .. | --                        | -- | --               | -- |
| 2.       | Buildings-under construction   | 3,11,271.54      |    | 89,30,357.18              |    | 92,41,628.72     |    |
| 3.       | Equipment ..   | ..               | .. | 3,38,985.65               |    | 4,51,292.01      |    |
| 4.       | Furniture ..   | ..               | .. | 4,34,147.47               |    | 4,38,295.07      |    |
| 5.       | Books and Journals ..  | ..               | .. | 1,91,946.45               |    | 3,06,257.05      |    |
| Total .. |  | 5,42,136.10      |    | 98,95,436.75              |    | 1,04,37,572.85   |    |

SCHEDULE No.4 - ADVANCES AND DEPOSITS

|                              | Rs. P.      |
|------------------------------|-------------|
| Mobilisation Advance .. .. . | 7,71,303.70 |
| Material Advances .. .. .    | 1,10,875.90 |
| Grants .. .. .               | 80,000.00   |
| Telephone Deposit .. .. .    | 32,000.00   |
|                              | -----       |
| Total ..                     | 9,94,179.60 |

As per our Report of even date.  
for B.R.V. GOUD & CO.,  
CHARTERED ACCOUNTANTS

Place: Bangalore  
Date : 03.08.1991

Sd. C.N.R.Rao  
President

Sd. B.R.V. Goud  
Partner



**ADMINISTRATIVE SET-UP**

**President**

Prof. C.N.R. Rao, F.A.Sc., F.N.A., F.R.S.

**Administrative Officer**

Mr. L. Raghavendra Rao, B.A.

**Co-ordinator**

Dr. R.B. Iyengar, D.Sc.

**Honorary Advisor (Projects)**

Mr. K.C. Reddy, B.E., M.S. (Purdue)

**Honorary Project Engineer**

Mr. N. Munivenkataswamy, B.E.

**Honorary Finance-cum-Audit Officer**

Mr. C.A. Seshagiri Rao, B.Com.

**Honorary Medical Officer**

Dr. B.S. Subba Rao, M.B.B.S.

**Honorary Librarian**

Mr. N.M. Malwad, M.Lib.Sc., A.D.R.

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