

**MINISTRY OF SCIENCE & TECHNOLOGY  
DEPARTMENT OF SCIENCE & TECHNOLOGY  
(HUMAN RESOURCES UNIT)**

**BOYSCAST FELLOWSHIP 2001–2002**

Applications are invited from Indian nationals for the award of fellowships under the programme "Better Opportunities for Young Scientists in Chosen Areas of Science and Technology" (BOYSCAST) for conducting advanced research or undergoing specialized training in overseas research laboratories/institutes, in chosen frontline areas of science and technology. The selected areas are:

**Atmospheric and Earth Sciences:** Geotectonic models and experiments, Thermodynamics of multi-phase systems, Isotope hydrology and glaciology, Isotope and chemical tracers for oceanography, Limnology, Global change, Palaeoclimatology and Palaeoenvironment, Evolution and dynamics of the Indian lithosphere, Crust–mantle interaction, Seismic tomography, Wide angle MCS and MRP of marine sequences and related data processing, Nuclear waste disposal, Modelling in earth system science, Atmospheric boundary layer, Atmospheric chemistry and air pollution, Global electric circuit, Near-earth space environment, Regional and global climate studies and predictions. Atmospheric effects on radio communications, palaeobiogeochemistry, and organic geochemistry.

**Chemical Sciences:** Organometallic, Heterogeneous catalysis, Novel materials, Bio-sensors, Bio-inorganic and biomimetic chemistry, Molecular electronic structure and dynamics, Polymer and surface chemistry, Marine chemistry, Laser spectroscopy and chemical dynamics, Magnetic resonance and magnetochemistry, supramolecular chemistry, asymmetric synthesis, molecular mechanics and energetics.

**Engineering Sciences:** Optical computation, Mobile communication/computing, Computational fluid dynamics, Interface science and engineering, development of specialty chemicals, Virtual reality, Internet techniques, and E-commerce, Machine intelligence, Laser materials processing, Smart sensors and materials, Transducer and sensor technology, Intelligent manufacturing, Recycling in manufacturing, Very large scale integrated (VLSI) system design, Robotics and automation, Computer integrated manufacturing, Advanced mechanical design, Mechatronics, Micromachining and nano-technology, Manufacturing, process simulation, Advanced materials, surface technology, textile technology.

**Life Sciences:** Gene therapy, Site-directed mutagenesis, Magnetic encephalograph, Brain mapping, Functional NMR/*In vivo* spectroscopy, Biomedical engineering, Transplant biology, Ecological engineering, Reproduction technology, Biodiversity and conservation biology, Industrial microbiology, Plant–microbe interaction, Crop biotechnology including molecular mapping, molecular marker-assisted plant breeding, transgenic plants and animals, Plant genetic resources, Molecular biology of biotic and abiotic stresses in plants, Evolutionary biology, Genetic engineering, Modelling for new development, Molecular epidemiology, Drug delivery systems, Biological sensors, Molecular cytogenetics.

**Mathematical Sciences:** Computational aspects of Geometry and algebra, Design of efficient numerical/ qualitative methods for solving differential equations (both ODE and PDE), Stochastic process modelling, Algebraic and geometrical methods in control theory, Exploratory data analysis, Dynamical system, Game theory, Combinatorial optimization, Spectral and inverse spectral theory, Wavelet analysis, Graph theory, Fuzzy/Hazy/Rough set theory, Mathematical logic, Expert systems and artificial intelligence, Computability and complexity theories, Parallel computing and artificial neural net theory.

**Physical Sciences:** Electronic materials and processing, Nonlinear optics and optical materials, Nanophase materials, Optoelectronics, Gradient-index and micro-optics, Semi-conductor physics, Ultrafast phenomena, Plasma diagnostic techniques, Development of synchrotron radiation sources.

**Eligibility Criteria:** Young Indian scientists and technologists who fulfil the following conditions can submit a proposal for award of BOYSCAST fellowship: *\*Academic qualifications:* Master's degree in engineering, Technology or equivalent or Ph.D. in science or technology or equivalent or M.D. degree in medicine or equivalent. *\*Age:* Less than 35 years (as on 1st April 2001). *\*Employment:* A regular position in a recognized S&T institution or university or college. Candidate must be officially sponsored (their application to be formally forwarded) by the employer/head of the institution or agency with commitment to depute them for research/training under BOYSCAST programme. Forwarding note merely stating that above would be considered only after award of fellowship will not be considered by DST. *\*Area of work:* Area proposed by the candidate should be in line with the chosen area. *\*Place of work:* The fellow should be accepted by a foreign scientific/technological institution, which is internationally recognized as an outstanding institution where major work in the identified area is in progress. *\*Willingness* of the foreign institution to accept and extend necessary support to the candidate for the work proposed. Candidate is required to produce evidence, in the form of a letter of acceptance from the institution to be visited along with outstanding merits of host institute in proposed area. *\*Young scientists and technologists* having established credibility in the proposed area of work will be preferred. *\*Candidate* must not have earlier availed of this fellowship at least during the past three years. *\*The institute*, where the candidate belongs, should have either already initiated major research activities in the chosen area or should have immediate plans to initiate such programmes based on the expertise of the individual and proposed training abroad.

#### **Guidelines governing the programme**

(1) The individual availing this fellowship would be called a BOYSCAST FELLOW. (2) The fellow will be entitled for fellowship of US \$ 1500 per month (if the fellowship duration is for a period above six and up to twelve months) and US \$ 1800 per month (if it is for a period of three to six months) or equivalent amount in foreign exchange of the country of study during the period of fellowship. The institution where the candidate belongs would be responsible for necessary foreign exchange arrangements. (3) Fellow will also be entitled for a personal contingent grant of Rs 10,000 for fellowship duration up to six months and Rs 15,000 for fellowship duration above 6 months. (4) Fellow will be entitled to air passage in economy class both ways by Air India from present place of working to the place of training by direct route. Other airlines should not be made use of for this purpose except in sectors where Air India does not operate. In such cases, air passage should be got booked through Air India. To and fro air ticket should be purchased before departure to avoid escalation in return airfare. (5) Fellow will also be permitted to travel within host country to attend conferences or visit other institutes of interest as per DST rules. (6) Rules governing payment of salary, leave, medical, gratuity, GPF, pension, etc. of the Department/Institution/University to which a fellow belongs should continue to be applicable. No liability on any of these accounts will be borne by DST. (7) Bank commission charges, medical insurance expenses, visa fee, airport tax, taxi charges, etc. will be met by the fellow from out of the personal contingent grant. (8) The candidates selected for the award of the BOYSCAST fellowship should commence their research/training before the end of the financial year in which the award is given. Failure to do so would render the fellow forfeit the award. The decision of DST on all these matters would be final.

**Procedure for application:** Application for the award of BOYSCAST fellowship should be sent in the prescribed format. Fifteen (15) copies are required to be forwarded through the head of agency/organization/university where the candidate is employed. **Application should reach DST positively before 30 April 2001.** The matter should be neatly typed as per format (**and not as annexures**) and should not exceed 10 to 12 typed pages. The following documents should accompany the application in one envelope tied together: *\*Recent letter of acceptance* from foreign institution to be visited by the candidate specifically mentioning the BOYSCAST fellowship. *\*Endorsement* from head of the agency/organization/institution/university on letterhead as per the prescribed format. *\*List of publications* of the candidate. *\*A short (500 words) write-up* on the future plans of the candidate in utilizing the expertise in India by special training obtained abroad. *\*Reprints* of three best publications, in last five years. *\*A self-addressed postcard.* *\*Record sheet (three copies).* Application complete in all respects and with all documents to be addressed to: HEAD, HUMAN RESOURCES UNIT, (BOYSCAST SCHEME), MINISTRY OF SCIENCE AND TECHNOLOGY, TECHNOLOGY BHAVAN, NEW MEHRAULI ROAD, NEW DELHI 110 016. Incomplete applications will not be considered. This advertisement is also available on Internet at site: <http://www.mst.nic.in>

**FORMATS**  
**RECORD SHEET (*Three copies*)**

1. DST ref. no.\*:
- 2.1 Name:
- 2.2 Designation:
- 2.3 Address:
3. Date of birth and age:
- 4.1 Broad area of research (out of 6 areas):
- 4.2 Chosen area:
5. Parent institute (enclose consent letter):
6. Overseas host institute letter:
7. Duration (months):
8. No. of publications (Please enclose list separately):
9. Reprints enclosed:
  - (i)
  - (ii)
  - (iii)

10. Other projects with applicant (DST/Other agencies)

Sl. no.	Title	Date of start and date of completion	Cost (Rs. in lakhs)	Agency and reference no.
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\*To be filled in by DST.

**APPLICATION (*Fifteen copies*)**

1. Name, designation and address of applicant:
2. Date of birth and age:
3. Academic qualifications (Bachelor's degree onwards with subject of specialization and academic distinction if any):
4. Details and nature of present and previous employment:
5. \*Brief summary of current areas of research:
6. \*(a) Number of research publications in refereed journals excluding papers presented in conferences, symposia, etc. during last five years (enclose one copy of reprints of your three best publications):
  - (b) Number of Ph.D. students guided (if any):
  - (c) Details of training courses concluded, Research projects granted to the applicant during last ten years.
7. Honours and awards received:
8. \*Overseas visits (including details like country and laboratory of visit, duration, purpose, degrees obtained, papers published, etc.):
9. \*Details of proposed training:
  - (i) Broad area (e.g. Life sciences, chemical sciences, etc.).
  - (ii) Chosen area in which training/research programme proposed (as per DST's list).
  - (iii) Brief summary of the training/research programme and its objectives.
  - (iv) Justification of its importance and relevance to ongoing/future programmes of the institution of the applicant.
  - (v) Future scope of application in India.
10. Proposed place of research/training:
  - (a) Justify its selection and enclose consent of overseas host institution (along with facilities to be provided with each copy of application).

(b) Do you propose to visit any other institute/attend any conference in the host country during your stay. If yes, please give details.

11. Proposed duration of the fellowship (from 3 to 12 months) – Please specify based on your correspondence with host institute. (It will not be possible to change the duration later):
12. Have you applied for BOYSCAST Fellowship previously:
13. Details of institutes/scientists and engineers engaged in proposed area of study within India (if any):
14. Can the proposed study be undertaken in any Indian Institute? If yes, please specify; If no, why not?:
15. Do you have an on-going S&T project? If yes, please mention its reference number, title, duration (Date of start and of completion), Funding agency and total cost:
16. Name and address of two Indian referees in the selected area:

Place:

Date:

(Signature of Applicant)

\*Please provide information here and NOT as Annexure

#### STATEMENT FROM THE PRESENT EMPLOYER

This should mention about the continuity of the employment, deputation terms like leave, payment of salary, etc. during the fellowship (Application with forwarding notes which do not clearly mention all the above will not be considered).

1. The candidate should himself/herself correspond with their proposed host institution abroad for placement.
2. Application not duly forwarded by the parent institution/organization or received after the last date will not be considered.
3. Visa arrangements to be made by the candidate.

#### *Statement from the Present Employer*

This is to certify that this institution has no objection to the consideration of application for BOYSCAST fellowship (2001–2002) under Department of Science and Technology, New Delhi, from Mr/Ms/Dr \_\_\_\_\_ permanent employee in the department for training course/research programme in the area of \_\_\_\_\_ to be held at \_\_\_\_\_ for the duration of \_\_\_\_\_ ( ) months. If the fellowship is awarded to him/her Mr/Ms/Dr \_\_\_\_\_ will be relieved from college duties and will be on deputation for said period from the date of his joining for research fellowship under BOYSCAST scheme.

During this period, the continuity of employment on the post presently held by him would continue to be applicable and rules governing payment of salary (basic pay and all allowances), leave, medical benefits, gratuity, GPF, GIS, pension, etc. would continue to be applicable during the entire period of fellowship and he will join his present post on completion of tenure of his fellowship.

If Mr/Ms/Dr \_\_\_\_\_ is selected for BOYSCAST fellowship, Institution will take a bond from him/her to serve institute/anywhere in India for a period of at least three years after pursuing research in the area of specialization abroad.

Place:

Date:

(Head of Institution/Organization)