

Government of India
Ministry of Science & Technology
Department of Science & Technology

BOYSCAST FELLOWSHIP FOR THE YEAR 2004-05

The “Better Opportunities for Young Scientists in Chosen Areas of Science & Technology (BOYSCAST)” programme of the Department of Science & Technology (DST) provides opportunities to the young Indian scientists/technologists for visiting international institutions to enable them to interact with scientists/technologists abroad, get exposure to latest research techniques, participate and contribute to the latest developments in specially chosen areas of science & technology. Applications are invited from Indian Nationals for the award of fellowships under the BOYSCAST programme for conducting advanced research/undergoing specialized training in overseas research laboratories/institutes, in chosen frontline areas of science & technology for the period of **three to twelve months**. The areas are given below:

Atmospheric and Earth Sciences: Geotectonic models and experiments, Thermodynamics of multiphase 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, Bioinorganic 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, Combinatorial chemistry.

Engineering Sciences: Computational fluid dynamics, Interface science and engineering, Development of speciality chemicals, Advanced materials, Surface technology, Laser materials processing, Smart sensors and materials, Transducer and sensor technology, Very large scale integrated (VLSI) system design, Embedded systems, Signal processing technologies, Microinstrumentation, Microfabrication/Micromachining and Nanotechnology, Optical information processing and optical computation, Wireless communication/computing, Virtual reality, Internet techniques, E-commerce, Machine intelligence, Robotics and automation, Intelligent manufacturing, Recycling in manufacturing, Computer integrated manufacturing, Manufacturing process simulation, Advanced mechanical design, Mechatronics, 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 drug 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 modeling, Algebraic and geometrical methods in control theory, Mathematical theories of systems and Cybernetics, Exploratory data analysis, Dynamical systems, 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, Semiconductor physics, Ultrafast phenomena, Plasma physics and plasma diagnostic techniques, Development of Synchrotron radiation sources.

ELIGIBILITY CRITERIA: Young Indian scientists/technologists who fulfill the following conditions can submit application/proposal for award of BOYSCAST fellowship:

(i) 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. **(ii) Age:** Upto 35 years (as on 1st April, 2004). The applicants belonging to SC/ST/OBC and women candidates may be allowed relaxation in the age limit upto 5 years. **(iii) Employment:** A regular position in a recognized S&T institution/university/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. **(iv) Areas of work:** Area proposed by the candidate should be in line with the above mentioned chosen areas. **(v) 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. There should be willingness of the foreign institution to accept and extend necessary support to the candidate for the work proposed. The candidate should himself/herself correspond with their proposed host institution abroad for placement. Candidate is required to produce evidence, in the form of a letter of acceptance from the overseas institution to be visited along with merits/uniqueness of that host institute in the proposed area. **(vi)** Young scientists and technologists having established creditability in the proposed area of work will be preferred. **(vii)** The institute to which 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. **(viii) Candidates who have earlier availed of this fellowship or/and candidates who have availed any other overseas fellowship for a period of more than three months through any Government/public funding agency during last two years will not be considered for this fellowship.**

GUIDELINES GOVERNING THE PROGRAMME: (i). The individual availing this fellowship would be called a BOYSCAST FELLOW. (ii). The fellow will be entitled to the fellowship amount of **US \$ 2400 (or equivalent in other foreign currency) per month up to six months and US \$ 2000 (or equivalent in other foreign currency) per month from the 7th month onwards with maximum duration of fellowship being 12 months.** The institution to which the candidate belongs would be responsible for necessary foreign exchange arrangements. (iii). Fellow will also be entitled to a personal contingent grant of Rs.15,000/- if the fellowship duration is upto six months and Rs.20,000/- if the fellowship duration is more than six months. (iv). Fellow will also be permitted to travel within host country to attend conferences or visit other institutes of interest with the approval of the Guide at the host institute and as per DST rules. The Fellow will be entitled to a grant of US \$ 600 (or equivalent in other foreign currency) for duration upto six months and US \$ 1200 (or equivalent in other foreign currency) for duration beyond six months for this purpose. (v). Fellow will be entitled to air passage in economy class by Air India/Indian Airlines from the place of working in India to the place of the overseas host institute and back by shortest route. Other airlines should not be made use for this purpose except in sectors where Air India/Indian Airlines does not operate. In such cases, air passage should be

got booked through Air India/Indian Airlines. To and fro air ticket should be purchased before departure to avoid escalation in return airfare. (vi). Rules governing payment of salary, leave, medical, gratuity, GPF and pension etc. of the Department/Institution/University to which the fellow belongs would continue to be applicable. No liability on any of these accounts will be borne by DST. (vii). Bank commission charges, Medical insurance expenses, Visa fee, Airport tax and taxi charges etc. will be met by the fellow from out of the personal contingent grant. (viii). The candidate selected for the award of the BOYSCAST fellowship should preferably 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. (ix). Visa arrangements are to be made by the candidate.

PROCEDURE FOR APPLICATION: Application for the award of BOYSCAST fellowship should be sent in the formats given below. The matter should be neatly typed as per the formats (and not as annexures) and should not exceed 15 to 20 typed pages. The application (fifteen copies) is required to be forwarded through the head of agency/organization/university where the candidate is employed.

The following documents should accompany the application in one envelope tied together: (i) Recent letter of acceptance from foreign institution to be visited by the candidate specifically mentioning the BOYSCAST fellowship. (ii) Endorsement from head of the institution/organization on letter head as per the prescribed format. (iii) List of publications of the candidate/reprints of three or more best publications, in last five years. (iv) Record sheet (five copies). (v) In case of SC/ST/OBC candidates, a certificate indicating the category to which the candidate belongs. (vi) A self-addressed stamped postcard.

Application complete in all respects should be addressed to: **Dr. P.K. Malhotra, Scientist 'F', SERC Division (BOYSCAST Programme), Department of Science & Technology, Technology Bhavan, New Mehrauli Road, New Delhi-110016.** Incomplete applications and applications not duly forwarded by the parent institution/organizations or received after the last date will not be considered.

Last date for submission of application: This advertisement is being released in the Employment News and a few daily newspapers also and is likely to appear in these publications around 1st week of May, 2004. Applications should reach DST positively within 45 days from the date of advertisement in the Employment News/newspapers.

FORMATS

(1) RECORD SHEET (FIVE COPIES)

1. DST Ref. No.*:
- 2.1 Name:
- 2.2 Designation:
- 2.3 Address:
3. Academic qualification:
4. Date of birth & age (as on 1.4.2004):
5. Sex (Male/Female):
6. Category (General/SC/ST/OBC):
(Please attach a certificate in case you belong to SC/ST/OBC category)
7. Employment [do you hold a regular position in your institute (Yes/No)]:
- 8.1. Broad area of research (out of 6 areas):
- 8.2. Chosen area:
- 9.1. Parent Institute:
- 9.2. Endorsement from head of the parent institute/organization enclosed (Yes/No):
- 10.1. Overseas host institute:
- 10.2. Overseas host institute acceptance letter enclosed (Yes/No):
11. Proposed duration of the fellowship (Months):
- 12.1. No. of publications during the last 5 years:
- 12.2. No. of publications in refereed journals:
- 12.3. No. of papers presented in conferences:
13. List of reprints enclosed (best three reprints):
 - (i)
 - (ii)
 - (iii)

14. Visits abroad (during last three years):

Sl. No.	Address of overseas institute visited	Duration		Agency which sponsored the visit	Brief objective of the work done	Achievement/ Outcome
		From	To			

15. Projects with applicant (DST/other Agencies):

Sl. No.	Title	Date of start & Date of completion	Cost (Rs. in lakhs)	Agency & Ref. No.

*To be filled in by DST

(2) APPLICATION (FIFTEEN COPIES)

1. Name, designation & address of applicant:
2. Date of birth & age (as on 1.4.2004):
3. Full details of Academic qualifications (Bachelor's degree onwards with specialization and academic distinction, if any):
4. Details and nature of present and previous employment (Positions held, employer/place of work, duration, area/nature of work):
5. *Brief summary of your current areas of research (about 500 words):
6. *(a) List 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:
(c) Details of training courses conducted; Research projects granted to the applicant during last ten years:
7. Honours and awards received:
8. *Overseas visits (including details like country and institute/laboratory of visit, duration, purpose, degree(s) obtained, papers published etc.):
9. *Details of proposed training/research programme:
 - (i) Broad area (e.g. Life sciences, Chemical sciences, etc.):
 - (ii) Chosen area in which training/research programme is 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:
 - (vi) Future plans of utilizing the expertise in India which would be gained from training/research pursued at the overseas host institute (about 500 words):
10. Proposed place of training/research:
 - (a) Overseas host institute:
 - (b) Justify its selection and enclose consent of overseas host institute along with facilities to be provided (one copy in original and photocopies with each copy of the application):
 - (c) 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? (if yes, please give details):
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 ongoing S&T project? If yes, please mention its title, duration, (date of start and of completion), total cost , funding agency and reference number:
16. Name and address of upto five Indian referees in the selected area:

Place:

Date:

(Signature of Applicant)

*Please provide information here and **NOT** as Annexures.

(3) STATEMENT FROM THE PRESENT EMPLOYER (ONE COPY)

(This should be given on the official letter-head of the institution/organization in the following format. Application with forwarding notes which do not clearly mention the conditions about the continuity of employment, deputation terms like leave, payment of salary etc. during the fellowship will not be considered):

This is to certify that this institution has no objection to the consideration of application for BOYSCAST Fellowship (2004-2005) under Department of Science & Technology, New Delhi, from Mr./Ms./Dr.....permanent employee in the institute/organization 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 institute/organization duties and will be on deputation for said period from the date of his/her joining for research fellowship under BOYSCAST scheme. During this period, the continuity of employment on the post presently held by him/her would continue to be applicable and rules governing payment of salary (basic pay and all allowances), leave, medical benefits, gratuity, GPF, GIS, and pension etc. would continue to be applicable during the entire period of fellowship and he/she will join his/her present post on completion of tenure of his/her fellowship.

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

Place:

Date:

(Head of Institution/Organisation)