

**SELECTION OF JUNIOR RESEARCH FELLOWS**

***If You Have A Desire To Innovate !  
We Have An Opportunity To Stimulate!!  
Come .....Join Hands !!!***

**We provide the means to realize your dreams towards seeking an excellent scientific pursuit.**

Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam is a premier research institute dedicated to the development of robust fast reactor technology based on intense multi-disciplinary research. IGCAR is empowering young, talented and motivated students to contribute to path-breaking discoveries in frontier areas of engineering/scientific research and cutting-edge technologies by offering **Junior Research Fellowships**.

Applications are invited from interested students for the award of **Junior Research Fellowships** of the Department of Atomic Energy tenable at the Centre. The selected candidates will be eligible to register for Ph.D. in **Homi Bhabha National Institute** (HBNI, a deemed to be university of Department of Atomic Energy). IGCAR offers a unique opportunity to carry out research for their Ph.D under the guidance of internationally renowned scientists. IGCAR possesses ambience of an academic institute coupled with an advanced R&D infrastructure in a mission mode. It provides the best infrastructure, motivation and personality development prospects for talented students, dreaming of unparalleled success in their professional endeavors. Endowed with scenic beauty and serene surroundings, Kalpakkam offers the right ambience for the pursuit of academic research.

The vibrant research and developmental activities of IGCAR encompass a wide spectrum of fields including condensed matter physics, high temperature chemistry, environmental science, applied mechanics, non destructive evaluation, structural mechanics, fluid dynamics etc. **State-of-the-art** infrastructure is available at IGCAR for carrying out excellent research.

**NO. OF FELLOWSHIPS: 30 (Indicative)**

**CALENDAR FOR IMPORTANT TASKS**

Last date for receipt of applications	: 31 <sup>st</sup> March 2009
Written Test	: 1 <sup>st</sup> week of June 2009
Interview	: 1 <sup>st</sup> week of July 2009
Likely Date of Joining	: 3 <sup>rd</sup> week of July 2009

***At IGCAR, we believe in 'EXCELLENCE WITH RELEVANCE'.  
Our strengths are the highly stimulating and scholarly environment, knowledgeable and motivating faculty and state-of-the-art facilities.***

**State-of-the-art infrastructure:**

- Ion accelerators, Rutherford Backscattering, Channeling, Positron lifetime measurements and Mossbauer Spectroscopy, Laser Raman Spectroscopy, Advanced sensor technology like SQUIDS, Pulsed Laser ablation, Magnetron Sputtering and Plasma methods
- High Resolution Electron Microscopy, Secondary Ion Mass Spectroscopy and Atomic Force Microscopy, Electron Probe Microanalysis and Computational facilities for theoretical modeling studies
- Laser induced vaporization mass spectrometry, High temperature mass spectrometry, MALDI-TOFMS, Different types of Calorimetry and Differential Scanning Calorimetry,

Supercritical Fluid Extraction Chromatography, IR spectroscopy, Neutron Activation Analysis, X-ray diffractometry, Thermal Expansion and Phase transition studies

- High temperature component testing facilities, In-sodium testing facility, Steam Generator Test Facility, Large components testing facility and Boron enrichment plant
- Shake Table for seismic simulations, Core Disruptive accident analysis, Design of major equipments and components for PFBR, Gas entrainment studies, Thermal Hydraulics and Structural Integrity assessment(experimental and theoretical)
- Development of Full Scope, Replica type PFBR Operator Training Simulator, providing & management of Computing & Data Communication Facilities, Design & Development of Electronic Instrumentation & Control systems for Nuclear Reactors
- Nuclear counting facility, Thermo Luminescent Dosimetry (TLD) facility, Radon laboratory, Aerosol Transport Facility, ECR X-ray source and ESR spectrometer, Gamma scanning facility, Bubble detectors, Automated Metaphase finder, fluorescent light microscope, inverted phase contrast microscope, PCR machine and electrophoresis apparatus for bio-dosimetry, Core Catcher and Sodium fire experimental facility.

Emphasis is on research areas at the interface of science, engineering and technology. Selected JRFs will have to undergo one year of course work starting from September, 2009 as stipulated by HBNI.

## **1. AREAS OF RESEARCH PROJECTS**

**CHEMISTRY:** Chemical thermodynamics, Solid state and high temperature chemistry, Electrochemistry, Spectroscopy and laser, Radiochemistry, Advanced separation techniques, Actinide Chemistry, Trace and ultra trace analytical techniques and Chemical sensors

**PHYSICS:** Solid State Phase transformations, Superconductivity, Structure and dynamics of soft condensed matter, Band structure studies, Accelerators based Irradiation induced phenomena, Low-dimensional systems, Physics of interfaces, Nano-materials, Thin films technology and Theoretical physics

**METALLURGY OR MATERIALS SCIENCE:** Solid State Phase transformations, Materials development and characterization, Phase equilibria, Creep, Fatigue, Texture and Fracture studies, Microstructural, surface modification and characterization studies, Corrosion and Interface phenomenon.

**ENGINEERING SCIENCES:** Robotics and Development of Intelligent machines, Thermal Hydraulics and Structural Mechanics, Design of critical components, Nanotechnology, Modeling studies, Post-accident Safety Analysis, Wireless networking, Parallel computing, Embedded and Simulator systems, Non-destructive Evaluation and Reliability, Chemical Process Design and Modeling

## **2. DISCIPLINES**

The qualifying degrees for the above projects should be in one of the following disciplines:

- a) Physics
- b) Chemistry
- c) Chemical Engineering
- d) Computer Science
- e) Electrical & Electronics Engineering
- f) Electronics Engineering or Electronics and Communication Engineering
- g) Instrumentation Engineering (Electronics & Instrumentation / Instrumentation & Control)
- h) Mechanical Engineering
- i) Metallurgy / Materials Science /Materials technology/Material Science and Engineering or related degrees.

## **3. ELIGIBILITY REQUIREMENT**

The candidate must be an Indian national. The candidate should be less than 28 years of age as on 01.07. 2009 (date of birth 1<sup>st</sup> July 1981 or later). A relaxation of up to 5 years in age can be given in the case of Scheduled Caste and Scheduled Tribe, 10 years in case of Physically Challenged applicants. A relaxation of up to 3 years in age can be given in the case of Other Backward Class applicants.

## **4. QUALIFICATIONS**

### **Category-A**

(Those who have already completed M.Sc.)

The candidate must have obtained a minimum of 60% marks in Master of Science (M.Sc.) Degree from a recognized University in one of the following disciplines.

- a) **Physics or Materials Science**: Mathematics/Numerical Methods must be one of the subjects studied at the M.Sc. level and Chemistry as an ancillary subject up to B.Sc. level.
- b) **Chemistry**: Physics and Mathematics must be studied as ancillary subjects up to B.Sc. level.

### **Category-B**

(Those who have already completed B.E./B.Tech./ B.S. or B.Sc. Engineering/ B.Sc. [Tech.] from a recognized University)

The candidate must have obtained a minimum of 60% marks in one of the engineering disciplines given below:

**(i) Chemical Engineering (ii) Computer Science & Engineering (iii) Electronics Engineering (ECE) (iv) Electrical & Electronics Engineering (v) Instrumentation Engineering (E&I / I&C) (vi) Mechanical Engineering (vii) Metallurgical Engineering.**

### **Category-C**

Candidates in the final year/semester of M.Sc./B.E./B.Tech./B.S. or B.Sc. Engineering/B.Sc.[Tech])

The candidate should be in the final year/semester of M.Sc./B.E./B. Tech./B.S. or B.Sc. Engineering/B.Sc.[Tech] Degree course in recognized Universities in one of the disciplines as mentioned above in **Category-A** and **Category-B**. However, such candidates shall have acquired marks above 60% in the qualifying degrees before joining the Centre and a minimum aggregate of 60% in B.Sc. level (in the case of M.Sc). Relevant certificates to this effect should be submitted at the time of joining the Centre.

**Note:** Candidates with M.E and M.Tech degrees can also apply, however they should have secured 60% and above in the qualifying degree (B.E/ BTech/ M.Sc)

**Candidates in all the categories should have had consistently good academic record.**

## **5. SELECTION PROCEDURE :**

### **For Science Stream Candidates under Category – A or C:**

Suitable candidates under these categories will be selected based on **WRITTEN TEST and INTERVIEW.**

However, candidates with UGC **CSIR NET Fellowship** are exempted from Written Test and will be called for Interview directly.

### **For Engineering Candidates under Category – B or C:**

Suitable Engineering candidates under these categories will be selected based on **WRITTEN TEST and INTERVIEW.**

It is proposed to conduct the Written Test at **Chennai**. Additional Centres at **Bhubaneswar, Delhi and Indore** will be considered depending on adequate number of applicants opting for these centres. Please indicate your choice centre in addition to Chennai.

### **Selection Interviews:**

The Interview for all short listed candidates will be conducted at **CHENNAI/ KALPAKKAM.**

**For candidates of Category- C of 4 above, final induction as JRFs is subject to submission of proof of obtaining 60% marks in the qualifying degree examinations, at the time of joining the centre.**

## **6. APPLICATION PROCEDURE:**

- i) The Application Form and Hall Ticket Form can also be downloaded from the IGCAR website [www.igcar.gov.in](http://www.igcar.gov.in) or obtained from Employment News.
- ii) Send the completed Application Form typed on a A4 size sheet and Hall Ticket Form along with the required enclosures by Post (Registered or speed post of Indian Postal service) ,so as to reach IGCAR **on or before 31st March, 2009** to :

**The Administrative Officer–II (Recruitment),  
Indira Gandhi Centre for Atomic Research,  
Kalpakkam–603102,  
District. Kancheepuram,  
Tamil Nadu.**

Superscribe the envelope: “**JRF, Advt. No. 01/2009**” & also the **discipline** clearly (as given in **2 - QUALIFYING DEGREES**)

The applicant in due course would receive Hall Ticket, appropriately endorsed by IGCAR which will permit the candidate to appear for the written test and/or the interview.

## **7. GENERAL INFORMATION**

The list of candidates selected for the award of Junior Research Fellowship will be displayed on the IGCAR website. The selected candidates will also be informed by post. The final induction of the selected candidates as JRFs will be subject to production of all necessary documents in original (Proof of Date of Birth/ Caste certificate/ physically challenged certificate if applicable, B.Sc, M.Sc./B.E./B.Tech. degree and Marks sheets) on the dates intimated to them by the department.

The number of fellowships indicated in this advertisement is approximate and may vary as per the requirement at the time of final selection. The Centre reserves the right not to fill up the fellowships if it so desires. The fellowship shall not confer any claim or right for regular employment in the Centre or any Unit of Department of Atomic Energy. Opportunity for meritorious candidates exists for the position of Visiting Scientist under KSKRA scheme.

## Medical

The selected candidates are eligible to join the Contributory Health Service Scheme of this Centre as applicable.

## Accommodation

The Selected candidates will be provided with subsidized bachelor Hostel Accommodation during the tenure.

## TRAVEL ALLOWANCE

Candidates called for the interview will be reimbursed to and fro second class railway fare from their normal place of residence as per rules.

## FELLOWSHIP AND TENURE

The selected candidates will be initially taken as **Junior Research Fellows (JRF)** and will be paid a stipend of **Rs.12,000/- per month (consolidated)**. The fellowship will be provided initially for a period of **two years**. Continuation of the fellowship is subject to satisfactory performance and review at the end of each year. On satisfactory performance, the tenure of Fellowship will be further extended and upgraded to **Senior Research Fellowship (SRF)** from the **third year** onwards with a stipend of **Rs.14,000/- per month (consolidated)**. The total period of the fellowship shall in no case exceed **five years**. They are entitled for contingency grant including book allowance of **Rs.15,000/- per year**.

**Candidates are advised to visit the website <http://www.igcar.gov.in/> periodically for further information and updates in this regard.**

Clarifications, if any, can be obtained through the email ID: **shure@igcar.gov.in** .

## **8. IMPORTANT CHECK LIST**

Attested copies of the following certificates **must** accompany the application form without which the application is liable to be rejected.

- ✓ Proof of date of birth
- ✓ Caste certificate, if applicable
- ✓ DEGREE certificates and
- ✓ Mark lists of B.Sc, M.Sc or B.E./B.Tech., M.E./M.Tech, B.S. Engg./B.Sc[Tech].
- ✓ Consolidated mark sheets and calculation for aggregate marks of the qualifying exams to be attached.
- ✓ Candidates under Category –C to provide the mark sheets of all previous years/ semesters
- ✓ Sheet giving details of conversion from CGPA to percentage marks, where applicable
- ✓ UGC-CSIR NET Fellowship certificate where applicable.

# PROFORMA FOR APPLICATION

Advertisement No.IGCAR-01/2009

Application for the position: **JUNIOR RESEARCH FELLOW**

Discipline: Physics / Chemistry / Chemical engineering/ Computer Science /Electrical & Electronics Engineering / Electronics Engineering / Electronics and Communication Engineering / Instrumentation Engineering (E&I or I&C)/ Mechanical Engineering / Metallurgy or Materials Science

**[Strike out whichever is not applicable]**

Paste your Passport size photograph here and get it duly attested

1.	Name in full (in block letters)	:	
2.	Date of Birth (DD-MM-YYYY)	:	/ /
3.	Nationality – Indian	:	Yes / No
4.	Sex	:	Male / Female
5.	Marital Status	:	Married / Unmarried
6.	Father's / Husband's Name	:	

7. Address:

Permanent	Correspondence
Ph.No: E-Mail id:	Ph.No: E-Mail id:

8. Educational Qualifications:

Exam. Passed	University/ Institution	Year of Passing	Subjects		Total Marks Obtained	Class/ Division and % marks
			Main	Ancillary		
B.Sc./B.E./B.Tech./B.S. or B.Sc. Engg or Tech						
M.Sc./M.E./M.Tech.						
UGC-CSIR NET Fellowship (if applicable)						

9. Venue for Written Test : **1. Chennai** [ First Choice]

**2. Bhubaneswar/ Delhi/ Indore**

(tick one Centre from above three as second choice)

10. Do you belong to : Scheduled Caste (SC)/ Scheduled Tribe (ST)  
Other Backward Caste (OBC) / Physically Challenged (PH)/  
General [Strike out whichever is not applicable]

11. Wish to be considered based on : UGC-CSIR-NET fellowship (If applicable)

## Declaration

I hereby certify that the above stated information is factually correct to the best of my knowledge and belief. I have not suppressed any information and in case I give any false information or suppressed any fact, then, my fellowship would be liable for termination without any notice or reasons thereof.

Place:

Date:

Signature of the candidate

**PROFORMA FOR HALL TICKET**  
**Advertisement No. IGCAR-01/2009**

**JUNIOR RESEARCH FELLOW**

**Discipline :** Physics/Chemistry/ Chemical engineering/ Computer Science /Electrical & Electronics Engineering/ Electronics Engineering / Electronics and Communication Engineering / Instrumentation Engineering (E&I or I&C)/ Mechanical Engineering/ Metallurgy or Materials Science  
 [ Strike out whichever is not applicable]

Paste your Passport size photograph here and get it duly attested

Name in full (Block Letters)	:	
Address for Correspondence	:	
Phone No.	:	
Email address	:	
Sex	:	Male / Female
Date of Birth (DD-MM-YYYY)	:	
Father's / Husband's name	:	
Venue for Written Test :		Specify one choice other than Chennai, if Required: ----- <b>Bhubaneswar/ Delhi/Indore</b> (choose one of the three from above)

Place:

Date:

Signature of the Candidate

**FOR OFFICE USE**

<b>Application No.</b>				
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CENTRE ALLOTTED : .....

Admn. Officer-II [R] ,  
IGCAR.