



## SELECTION OF JUNIOR RESEARCH FELLOWS

NO. OF FELLOWSHIPS: 30 (Indicative)



LAST DATE FOR RECEIPT OF APPLICATION: 03/04/2020

Indira Gandhi Centre for Atomic Research (IGCAR), is a premier research and development Centre under the Department of Atomic Energy. It is dedicated to the development of fast reactor technology and associated fuel cycle facilities based on intense multi-disciplinary research. IGCAR is empowering young, talented and motivated students to contribute towards advanced research in frontier areas of engineering/science/technology by offering **Junior Research Fellowships** in the areas of physical, chemical and engineering sciences. IGCAR, Kalpakkam is a constituent Institution of Homi Bhabha National Institute (HBNI), a deemed to be University of the Department of Atomic Energy.

Applications are invited from interested students of Indian Nationals for the award of **Junior Research Fellowships** at this Centre.

Selected candidates shall register for Ph.D. under HBNI. Those who join with M.Sc./M.Tech. will be eligible to register for direct Ph.D. Those who join with B.E./B.Tech./B.Sc. Engg./B.Sc. [Tech.] will be considered for integrated Ph.D. with an option to have single degree (Integrated Ph.D. only) or a dual degree (M.Sc.(Engg.)+Ph.D.).

**1. AREAS OF RESEARCH PROJECTS:**

<b>Physical Sciences</b>	Condensed Matter Physics: Basic research on the behaviour of materials at low and high temperatures, high pressures and magnetic fields and exploration of novel properties of materials, emergent physics using heterostructures. Defect solid state physics: Research on generation of various defects by heavy ion irradiation and their characterization by various techniques like positron annihilation spectroscopy. Computational physics: Computer simulations of material properties using techniques like DFT and MD. Surface and interface physics: Studies on surfaces, coating and nanomaterials. Radiation resistant polymers, graphene based functionalized materials. Exploration of materials for sensors and detectors. Magnetic nanomaterials and nanofluids, Thermal-optical-rheological properties of nanofluids. Soft condensed matter. Multi scale computing and experimental Reactor Physics. Radiation physics: Radiation Shielding, Environmental Radiation study, Studies on natural radioactivity, radon and analysis, interaction of radiation with matter, development of radiation dosimetry - materials and techniques, retrospective dosimetry. Atmospheric Physics: Multiscale Numerical modeling, Data assimilation and forecast, Atmospheric modeling related to dispersion modeling, mesoscale weather phenomena, boundary layer turbulence, cyclone/ storm surge and wave forecasting.
<b>Chemical Sciences</b>	Chemical thermodynamics, Solid state and high temperature chemistry, Electrochemistry, Spectroscopy and laser, Radiochemistry, Advanced separation techniques, Actinide Chemistry, Trace / ultra-trace analytical techniques. Synthesis and characterization of nano-ceramics and Chemical sensors. Super hydrophobic coating, Corrosion resistant coating and evaluation
<b>Engineering Sciences</b>	Robotics and Development of Intelligent machines, Thermal Hydraulics and Structural Mechanics, Design of critical components, Modeling studies, Safety Analysis, Wireless networking, Parallel computing, Computational Intelligence, Devices and Sensors, Embedded and Simulator systems, Non-destructive Evaluation, Reliability Engineering, Chemical Process Engineering, Development of new engineering materials, Experimental and computational studies in (i) material processing and fabrication technologies, (ii) high performance extractors (iii) fluidic devices (iv) fracture mechanics & structural integrity (v) mechanical behaviour (vi) structure property correlations. (vii) Corrosion science and technology, (viii) Advanced material characterization and (ix) behaviour of materials under irradiation. Advanced microscopy, Development of nano-engineered concrete and its evaluation.

*The Centre also encourages high quality inter-disciplinary research in areas relevant to its programmes.*

**2. AGE LIMIT:**

The maximum age limit is 28 years of age as on last date for receipt of application. A relaxation in age, up to 3 years in case of Other Backward Class applicants, 5 years in case of Scheduled Caste and Scheduled Tribe applicants and 10 years in case of Persons with bench mark disabilities (40% and more) is allowed

**NOTE:** ONLY SSC/MATRICULATION/HSC CERTIFICATE OR BIRTH CERTIFICATE WILL BE ACCEPTED AS PROOF OF DATE OF BIRTH, NO SUBSEQUENT REQUEST FOR CHANGE SHALL BE ENTERTAINED.

*Handwritten signature and date: 13/03/2020*



### 3. QUALIFICATIONS:

#### For all the categories listed below:

- i. Candidates should have consistently good academic record and should have secured minimum of 55% aggregate at graduation and post graduation levels from a recognized University. A relaxation of 5% of marks, from 55% to 50% or an equivalent relaxation of grade, will be allowed for those belonging to SC/ST/OBC (non-creamy layer)/Persons with benchmark disabilities.
- ii. Candidates who have completed or pursuing (in final year/semester) the qualifying degrees are eligible to apply
- iii. Candidates in the final year/semester should have scored marks 55% and above aggregate until the previous semester/year and minimum aggregate of 55% in B.Sc./B.E./B.Tech. level [in the case of M.Sc./M.Tech. candidates]. In case such candidates eventually join the Centre, they shall have acquired aggregate marks of 55% in the qualifying degrees. Relevant certificates to this effect should be submitted at the time of joining the Centre. Wherever the results are declared as CGPA/GPA, it may be converted to percentage and entered. (The formula prescribed by the institute for conversion to be indicated at the time of verification).
- iv. UGC/AICTE approved Degrees from UGC/AICTE recognized Universities only will be accepted.

#### Category – A:

**Masters in Science/ Integrated M. Sc. is the eligible qualification for the following subjects**

S. No	Main Subject	Additional Requirements
1	Physics (General, Applied, Condensed matter, Nuclear, Theoretical)	Mathematics/Numerical Methods must be one of the subject at M.Sc. level <i>and</i> Chemistry as ancillary at B.Sc. Level
2	Materials Science/ Materials Science and Engineering	Physics, Mathematics and Chemistry at B. Sc. Level <i>or</i> B.Sc. in Materials Science
3	Chemistry (General, Applied, Organic, Inorganic, Physical, Analytical)	Physics and Mathematics as ancillary subjects at B.Sc. Level
4	Radiation Physics	Physics/ Chemistry and Mathematics as ancillary subjects at B.Sc. level
5	Atmospheric Science/Meteorology	Physics, Mathematics as ancillary subjects at B.Sc Level

#### Category – B:

- a) M.Tech./M.E in Nuclear Engineering / Nuclear Science & Technology
- b) M.Tech. in Atmospheric Science

#### Category – C:

*B.E./B.Tech./B.Sc. Engg./B.Sc. [Tech.].* in any one of the following disciplines with a valid GATE score and cut-off as given in section 4.

- Chemical Engineering
- Computer Science Engineering
- Electronics and Communication Engineering
- Metallurgical Engineering
- Mechanical Engineering
- Materials Science & Engineering
- Materials Technology
- Engineering Physics



#### **Category – D:**

Candidates with M.E./M.Tech.

- i. Admission to M.E./M.Tech. should be on the basis of valid GATE score (A certificate from institution to the effect that admission to M.E./M.Tech. was based on GATE score should be submitted at the time of interview).
- ii. The GATE Score should be in the appropriate GATE Paper for any one of the disciplines mentioned in Category C.
- iii. Should have B.E./B.Tech./B.Sc. Engg./ B.Sc. [Tech.] degree in any one of the disciplines listed in Category C.
- iv. In case of candidates who joined M.E./M.Tech. without GATE, they should appear for the written test.

Candidates with the following qualifications are **NOT** eligible to apply

- i. Bachelors degree in Aerospace, Automobile, Production, Industrial Production, Reliability, Ceramics, Architecture, Geology, Mining, Bio-Medical Engineering, Bio-Medical Electronics / Instruments, Communication, Information Technology, Dyes & Dye Intermediates, Electrochemical, Energy Systems, Oils & Fats, Paints & Varnishes, Petrochemicals, Plastics, Paper, Sugar Technology, Textiles & Mechatronics.
- ii. B.Tech degree in Chemical Engineering under the category of petroleum, polymer, sugar, oil, soap technology, etc.
- iii. Master of Computer Applications & M.Sc. in Computer Science.
- iv. Candidates with M.Sc./Integrated M. Sc. in Particle physics, Electronics, Astrophysics, Geophysics, biophysics & medical physics.
- v. M.Sc. in Polymer, Medicinal, Pharmaceutical, Bio chemistry, Environmental and Industrial Chemistry.

#### **4. SELECTION PROCEDURE:**

Applications will be scrutinized and suitability of candidates will be decided on the basis of their degree and academic record. Short listed suitable candidates under different categories will be further selected based on **WRITTEN TEST and INTERVIEW or DIRECT INTERVIEW**. Written Test will be held on 03/05/2020(Sunday) at **Chennai**. Based on the number of applications received from various regions, number of Centres for written test may be increased and the same will be intimated to eligible candidates through call letter. A summary scrutiny of the application would be made for short-listing of candidates for the written test and detailed scrutiny of the eligibility of the candidate would be done at the time of interview.

**Category A:** Candidates with prescribed marks in the qualifying examination and satisfying any of the following conditions are exempted from written test:

- i. With valid UGC-CSIR-NET Fellowship (SLET/Lecturership is not eligible)
- ii. With valid JEST score of 90 percentile and above
- iii. With valid INSPIRE-DST Fellowship
- iv. With a valid GATE score after Master's degree above the cut off as given below:

<b>Discipline</b>	<b>GATE cutoff - To appear directly for Interview</b>
Physics	600 and above
Chemistry	600 and above

Other candidates will have to appear for the written test. Candidates shortlisted based on above criteria or written test will be called for interview.

**Category B:** Candidates with prescribed marks in the qualifying exam will have to appear for the written test and those short listed based on written test will be called for interview.

*Dr. S. S. S. S.*  
13/03/2020



**Category C:** Candidates with prescribed marks in the qualifying exam and with a valid GATE score with cut-off as given below are eligible to appear for Written test/Interview (eligible GATE paper for each of these disciplines is listed in the online application).

<b>Discipline</b>	<b>GATE score cutoff eligibility – to appear for written Test</b>	<b>GATE score cutoff eligibility – to appear directly for interview</b>
Chemical Engineering	400 to 599	600 and above
Computer Science Engineering	400 to 599	600 and above
Electronics and Communication Engineering	400 to 599	600 and above
Metallurgical Engineering	400 to 599	600 and above
Mechanical Engineering	400 to 699	700 and above
Materials Science & Engineering	400 to 599	600 and above
Materials Technology	400 to 599	600 and above
Engineering Physics	400 to 599	600 and above

Candidates shortlisted based on written test or based on above criteria will be called for interview.

**Category D:** Candidates who have joined M.E./M.Tech. via GATE (eligible GATE papers listed in the online application) with a cut-off score of 600 or above are exempted from written test. Other candidates will have to appear for a written test in the discipline in which graduation degree was obtained.

For category C&D, candidates with valid JEST score of 90 percentile and above and with eligible engineering disciplines listed as above are also eligible to appear directly for interview.

*At the time of application candidates should clearly indicate the details of qualifying examinations (GATE/UGC-CSIR-NET/JEST/INSPIRE fellowship) listed as above for consideration of application and submit the proofs at the time of interviews. Candidates will be shortlisted for written test and Direct Interview based on the inputs given and scores provided in the qualifying exam in the online application form. Under no circumstances this will be changed later.*

## 5. SELECTION INTERVIEWS:

The Selection Interview for all short listed candidates will be conducted at **Kalpakkam**. The candidates will have to appear for interview in the discipline in which they have undertaken written test. The recommendation / decision of the Selection Committee will be final and binding.

## 6. GENERAL INSTRUCTIONS

- i. Before applying, the candidate should ensure that he/she fulfills all the eligibility conditions mentioned in the advertisement. Candidates should ensure that they fill in the correct information. Furnishing of incomplete, false or misleading information shall render the application liable to be rejected. The candidate would be admitted to various stages of the recruitment process based on the information furnished by the candidate in his/her application. Only a summary scrutiny of the application would be made before the final stage of the recruitment process and detailed scrutiny of the eligibility of the candidate would be done only at the final stage of the recruitment process. As such, the candidature of the applicant shall remain provisional till detailed scrutiny is undertaken and the candidate is found eligible in all respect. IGCAR would be at liberty to reject any application at any stage of the recruitment process if the candidate is found ineligible for the post or if it comes to notice that the candidate has furnished false information. The decision of IGCAR shall be final in deciding the eligibility of the candidate. The mere fact that a call letter has been issued to the candidate and allowed to appear in the written exam/interview will not imply that his/her candidature has been finally cleared or that entries made by the candidate in his/her application have been accepted as true and correct.
- ii. Age, qualification, validity of GATE/JEST/CSIR-UGC-NET/INSPIRE-DST, experience, community status, creamy layer status will be reckoned as on the closing date for submission of application online.



- iii. Those who are in employment under any Central/State Govt./Public Sector Undertakings/Corporations/ Local Govt. etc. should submit a No Objection Certificate from the employer at the time of verification of the documents before interview.
- iv. Candidates need not submit printout of their online applications or any other document either by post or by hand. They will be required to bring the printouts of their online application form generated by the system and submit at the time of interview.
- v. SC/ST/OBC (clearly indicating Creamy Layer status) certificate should be as per the format prescribed for employment in Government of India which are available in IGCAR website.
- vi. The original certificates / documents of the candidates will be verified at the final stage of the selection process. The shortlisted candidates must bring all original certificates of educational qualifications, experience, date of birth, caste certificate in the prescribed format, disability certificate in respect of PWD candidates, No Objection Certificate if in regular employment under any Central/State Govt./Public Sector Undertakings/Corporations/ Local Govt. etc.
- vii. 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 mail. 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./M.E./M.Tech. degree and Marks sheets) on the dates intimated to the candidates by the Department.
- viii. 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. IGCAR reserves the right to screen and call only such candidate as are found prima – facie suitable for being considered by the Selection Committee. Thus, just fulfilling the prescribed conditions should not entitle one to be called for interview. The fellowship shall not confer any claim or right for regular employment in the Centre or any Unit of Department of Atomic Energy.
- ix. Candidates who are NOT meeting the mentioned qualification NEED NOT apply
- x. The period of service rendered as research fellow will not be counted in any post of DAE / Other Government Department.
- xi. Admission shall not be claimed by any candidate as a matter of right. The admission shall be entirely at the discretion of the Selection Committee, which may refuse to admit any candidate without assigning any reason thereof.
- xii. No correspondence whatsoever form will be entertained from candidates regarding reason for not being called for interview/outcome of interview.
- xiii. Candidates are advised to read the advertisement carefully. Frequent enquiries/representations made in any correspondence without reading the full content of the advertisement will not be entertained.

#### **7. MEDICAL**

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

#### **8. ACCOMMODATION**

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

#### **9. TRAVELLING ALLOWANCE**

Candidates called for the interview will be reimbursed to and fro second class railway fare by the shortest route (subject to production of original tickets) as per rules. (beyond 30 km from Kalpakkam)

*Dr. Sankar*  
13/03/2020



## 10. FELLOWSHIP AND TENURE

Course	Fellowship*	Duration of Course
<b>Direct Ph.D.</b>	Rs.31,000/- per month for the first two years. Rs.35,000/- per month from third year onwards. Eligible for a Contingency grant including book allowance of Rs.40,000/- per year.	<b>Five years</b>
<b>Integrated Ph.D. (single degree)</b>	First year: Rs.21,000/- per month plus one time book allowance of Rs.25,000. Second and third years: Rs.31,000/- per month. Fourth, fifth and sixth years Rs.35,000/- per month. Eligible for a Contingency Grant of Rs.40,000/- per annum from second year onwards.	<b>Six years</b>
<b>Integrated Ph.D. (double degree)</b>	First year Rs.21,000/- per month plus one time book allowance of Rs.25,000. Second and third years: Rs.31,000/- per month. Fourth, fifth, sixth and seventh years Rs.35,000 per month. Eligible for contingency Grant of Rs.40,000 per annum from second year onwards.	<b>Seven years</b>

\*Continuation/enhancement of fellowship is subject to satisfactory performance/review examination at the end of each year as appropriate.

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

## 11. CANCELLATION OF THE CANDIDATURE

Candidate is cautioned not to furnish any incomplete, false or misleading information or submit any document which is defective, forged or fabricated or otherwise not admissible or claim fraudulently SC/ST/OBC/Person with Disability, etc. or resort to any sort of malpractice during the selection process. Notwithstanding verification of original documents during various stages of the selection process, if any such case is detected at any stage of the selection process or later on, this Centre reserves the right to withdraw/cancel candidature or selection apart from taking other appropriate legal action.

## 12. HOW TO APPLY ONLINE:

- Facility for submission of online application will be available from 16/03/2020 at 1000 hours to 03/04/2020 1700 hours on website of IGCAR i.e. [www.igcar.gov.in](http://www.igcar.gov.in) under the tab "Recruitment".
- Applications will be accepted only through online mode. Only one application should be submitted for one Discipline. Candidates should submit separate application for each discipline, if they intend to apply for more than one discipline.
- Candidate should read the instructions in the advertisement and online application form carefully before making any entry or selecting any option.
- Before filling application form, candidates should keep ready the necessary documents / certificates required. Candidate is required to fill up personal details and details of discipline applied for etc. and upload recently taken front facing passport size photograph with name and date in JPEG format with size not exceeding 50 KB and signature in JPEG format with size not exceeding 20 KB. Photograph not in conformity with the specification shall render the application liable to be rejected. While filling up the online application form candidates should ensure that all the required details are entered.
- A valid e-mail ID and Mobile Number is mandatory for submitting application online and email ID should be kept active till the declaration of results. IGCAR will send call letter for Written Examination / Interview to the



registered / given e-mail ID or candidates may be required to download from the website of IGCAR. No correspondence will be sent through post/courier.

- vi. The candidate must ensure that their photo and signature is clearly visible in preview at the time of filling application in online mode. If photo / signature displayed is small or not visible in preview on website, that means photo / signature is not as per the required format and in that case the application will be rejected. Therefore candidates must ensure that photo and signature are clearly visible.
- vii. Before clicking the submit button, the candidate is advised to check and ensure that all the details filled in are correct. Candidate may also ensure that name, date of birth, etc. are entered correctly in the application form as per Secondary School Certificate (SSC). Any incorrect information may disqualify candidature. After final submission of application no request for change / correction in any of the information in the application form shall be entertained under any circumstances.

***Candidates will not be allowed to appear for the Written Examination/Interview if they fail to bring the hall ticket and a valid photo identity card (such as Voter ID, Driving License, AADHAAR Card, Passport, College ID) in original.***

**CALENDAR WITH IMPORTANT DEADLINES**

<b>Particulars</b>	<b>Date</b>
Receipt of applications	16/03/2020 from 1000 hours onwards
Last date for receipt of applications	03/04/2020 upto 1700 hours
Publication of scrutinized list for written test in website	17/04/2020
Written Test (tentative date)	03/05/2020
Publication of list of candidates called for interview in Website	18/05/2020
Interview (tentative dates)	03/06/2020 to 12/06/2020
Publication of final list of selected candidates in website	03/07/2020
Medical Examination	Third week of July 2020
Commencement of the course	First week of August 2020

**CANVASSING IN ANY FORM WILL BE A DISQUALIFICATION.**

***ANY LEGAL DISPUTE ARISING OUT OF THIS ADVERTISEMENT ARE SUBJECT TO CHENNAI JURISDICTION. IN CASE OF ANY DISPUTES, ENGLISH VERSION OF ADVERTISEMENT PLACED ON WEBSITE OF [WWW.IGCAR.GOV.IN](http://WWW.IGCAR.GOV.IN) WILL BE TAKEN AS REFERENCE.***

***RECORD OF THE NON-SELECTED CANDIDATES SHALL NOT BE PRESERVED BEYOND 6 MONTHS FROM THE DATE OF PUBLICATION OF SELECT LIST and NO QUERIES WOULD BE ENTERTAINED AFTER THIS PERIOD***

*P. K. Samikkannan*  
13/03/2020

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