



Government of India
Department of Atomic Energy
Indira Gandhi Centre for Atomic Research
Kalpakkam

ADVERTISEMENT NO. IGCAR/04/2026

SELECTION OF RESEARCH ASSOCIATE

NUMBER OF RESEARCH ASSOCIATE FELLOWSHIPS: 8 (INDICATIVE)

OPENING DATE: 07-10-2026

CLOSING DATE: 31-10-2026

**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 researchers to contribute to R&D in frontier areas of engineering/scientific research and cutting-edge technologies by offering Research Associate Fellowships.

Applications are invited from interested candidates for the position of 8 (indicative) Research Associates in the Department of Atomic Energy, tenable at IGCAR for a period of two years and further extendable by one year based on satisfactory performance. IGCAR offers a unique opportunity to carry out research under the guidance of renowned scientists and possesses ambience of an academic institute coupled with an advanced R&D infrastructure in a mission mode. It provides the best ambience, motivation and development prospects for young Doctorates in Physical and Chemical Sciences/M.Tech. or Ph.D. in Engineering, in their professional endeavors. Endowed with scenic beauty and serene surroundings, IGCAR 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, Thermal Hydraulics and Structural Mechanics, Design of Critical Components, Modeling Studies, Post-accident Safety Analysis, Wireless Networking, Parallel Computing, Embedded and Simulator Systems, Non-destructive Evaluation and Reliability, Chemical Process Design and Modeling etc. State-of-the-art infrastructure is available at IGCAR for carrying out excellent research.

The candidate may download application from <https://www.igcar.gov.in/recruitment.html> and send scanned copies of duly filled Application Form and enclosures to jrfrect@igcar.gov.in with subject of the mail as "**Research Associate Position**". The Referee's report (one report from the thesis supervisor) should be forwarded by the Referee directly to us by e-mail, quoting the name of the candidate.

Important Dates	
Last date for receiving the application from candidate by email	31/10/2026
Last date for receiving the referee report by email	07/11/2026

AREAS OF RESEARCH PROJECTS

Chemical Sciences

Project Code: PC-01	
Name of the Research Project	Synthesis and characterization various $(X)_3P=O$ [$X=R, OR, NR_2, SR$, etc.] based extractants and their application for complexation of actinides and fission products
No. of vacancy	1
Qualification	PhD in chemistry (organic synthesis)
Field of work	Synthetic organic chemistry
Nature of work	Synthesis of organic molecules containing phosphoryl groups $(X)_3P=O$ [$X=R, OR, NR_2, SR$, etc.] and sulphur containing organic molecules containing functional groups which are selective towards actinides, lanthanides and noble metals. These organic molecules will be synthesized in the laboratory and purified by chromatography and characterized by different techniques (FTIR, NMR etc.). The major focus will be on synthesis of dialkylalkylphosphonates and alkylalkylphosphinates and thio based molecules.

Project Code: PC-02	
Name of the Research Project	Chemical and electrochemical characterization of used LiCl-KCl eutectic melt containing actinides and simulated fission products for its purification and recycling for pyroprocessing technology development
No. of vacancy	1
Qualification	PhD in Chemistry
Field of work	High temperature molten salts, molten salt electrochemistry, induction heating-based consolidation of product
Nature of work	Characterization of LiCl-KCl eutectic salt after electrefining operation of metallic alloy fuel is essential for disposal or recycling for developing back-end of pyroprocessing technology. Techniques such as ICP-MS & ion-chromatography and electrochemical studies using cyclic voltammetry & electrochemical impedance spectroscopy will be carried out for investigating presence of redox impurities accumulated in the salt. Multi-step process flowsheet will be subsequently developed for purification and recycling of salt. Investigations will include preparation of moisture sensitive LiCl-KCl eutectic salt containing actinides, lanthanides, noble metals and non-metallic impurities such as carbon and redox impurities such as oxides, hydroxides and water. Purity of used melt, final product & its recyclability will be examined using acid-base & potentiometric titration and X-ray diffraction. Assembling of high temperature cells and other operations for carrying out experiments will be carried out inside an inert atmosphere glove boxes and electrochemical measurements measurements will be carried out in temperature range 675-1100 K.

Physical Sciences

Project Code: PC-03	
Name of the Research Project	Quantum Direct Telemetry over Optical Fibre Links
No. of vacancy	1
Qualification	PhD in Physics
Field of work	Experimental Quantum Communication, Experimental Quantum Optics

Nature of work	The work is towards quantum secure direct telemetry (QSDT), wherein quantum secure direct communication (QSDC) protocols are employed for the deterministic, secure transmission of telemetry from strategic installations and critical infrastructure. The candidate will join the experimental team focused on realizing QSDC using time-bin encoded photonic states over optical fibre. A key objective of this group is the design, assembly, and stabilization of unbalanced Mach Zehnder interferometers for time-bin qubit preparation, its unitary manipulation, and measurement. Working with this team, the RA will contribute to designing active phase stabilization mechanisms to suppress environmental phase drift across the fibre optic channel. The central experimental challenge for the candidate involves mapping classical sensor data onto specific quantum states, with high fidelity. The RA will then work on implementing efficient error reconciliation and real-time eavesdropping detection routines on to the quantum secure direct telemetry.
-----------------------	--

Project Code: PC-04	
Name of the research:	Hybrid plasmonic and TMDC based semiconductor for sensor development
No. of vacancy	1
Qualification	PhD in Physics with experience in synthesis of nanomaterials, and 2D TMDC, characterization techniques
Field of work	Nanomaterials, 2D TMDC, electrical and optical sensors
Nature of Work	Plasmonic nanostructures are acclaimed for their intense light-matter interactions. When integrated with advanced 2D materials like transition metal dichalcogenides (TMDC) based semiconductors, these heterostructures enable new and enhanced transduction mechanisms (optical, electrical, or both), making them exceptionally promising for sensitive, selective, and robust chemical, biological, and quantum sensing applications. By leveraging both optical and electrical modes, false positives/negative scan be minimized, and rich analytical data can be extracted for more accurate sensing. The work will be composed of the rational design, synthesis and characterization (UV-Vis, Raman Spectroscopy, FTIR spectroscopy, Dynamic Light Scattering) of morphologically varied nanostructures, employing state-of-the-art techniques for boosting the signal, enabling the detection of trace analytes remotely, accurately, and achieving: 1. High sensitivity, selectivity, and reliability 2. Adaptability for diverse target analytes in complex real-world samples

Project Code: PC-05	
Name of the Research Project	Defect analysis in Compound semiconductor-CdZnTe
No. of vacancy	1
Qualification	Ph.D in Physics
Field of work	Semiconductor defect analysis, I-V characterisation, Ohmic and Schottkyelectroding on semiconductor surfaces.
Nature of work	THM grown CdZnTe single crystals with different chemical substitutions will be investigated to identify and characterize native defects and charge-trapping centres using transient current spectroscopy. The study aims to correlate defect properties with detector performance and optimize CZT crystals for improved room-temperature gamma-ray spectroscopy.

	CdZnTe with its large band gap, high charge density is a promising candidate for compact room temperature gamma ray detectors. CZT single crystal growth was perfected and was demonstrated in portable gamma ray spectrometer with 2.8% energy resolution at 662 keV of ¹³⁷Cs. The grown single crystal suffers from native defects like Cd vacancies and interstitial which results in several shallow and deep level traps for the charge carriers. Identifying these defects and mitigating their effects is essential to improve the overall functioning of semiconductor CZT. These defects need to be studied by transient current spectroscopy methods with optical pumping. The work will involve studying these defects in CZT crystal grown by travelling heater method with different chemical substitution.
--	--

Engineering Sciences

Project Code: PC-06	
Name of the Research Project	Phase transformation studies & Characterization of cast ternary alloy slugs towards optimization of injection casting parameters
No. of vacancy	1
Qualification	MTech(Metallurgy)
Field of work	Metallurgical Engineering
Nature of work	In the injection casting process of binary alloy (Uranium-Zirconium) alloys & ternary alloy (U+Pu+Zr), cooling rates have to be closely controlled during solidification to manage their complex phase transformations, prevent cracking, and control microstructural refinement. By counter gravity & forced argon, rapid solidification (~100 K/s) is achieved. Cooling rates affects the grain sizes, phase transformation temperatures, microstructure stability, solute (Zr) distribution/segregation, micro-mechanical properties etc of the as cast slug. Standard softwares like CALPHAD can be used to predict the thermodynamic properties & phases. Property evaluation on as-cast slugs can be carried out involving microstructure by optical metallography, nano-indentation etc. The research work will lead to optimising the cooling rates to produce a more uniform, refined, and stable microstructure of as cast slugs.

Project Code: PC-07	
Name of the Research Project	Design and development of a remote deployment modules for the Main-vessel safety vessel inter space crawler system (MSISC)
No. of vacancy	1
Qualification	M Tech (Mechanical Engineering)
Field of work	The main vessel safety vessel inter space crawler (MSISC) requires inspection system development with the challenge of holding the vehicle in the inter space gap using only friction force and perform traction to move in the vertical and horizontal directions. Deploying the system require the movement of the device through a inclined in-service inspection port at 60 degrees and to align to the Anti-convection barrier (ACB) port to enter into the main vessel & safety vessel inter space gap. Since the deployment route is with constraints and the manual control of the vehicle is possible beyond a 1.7 meter away from the ACB port, it is required to build a deployment module which houses the MSISC with handling mechanism and a cable pusher module to guide and descend the vehicle in the ISI chute.
Nature of work	This project involves the design of the device deployment module along with all the necessary accessories like, Cable pushing &, auto guiding and vehicle release systems

Life Sciences

Project Code: PC-08	
Name of the Research Project	Biological Responses of Non-Human Biota to Chronic Radiation Dose in High Background Radiation Areas of Tamil Nadu
No. of vacancy	1
Qualification	PhD in Life science/ Zoology/ Biotechnology /Molecular Biology or allied discipline Experience in Molecular Biology techniques related to DNA/ protein analysis and Cell handling
Field of work	Radiation Biology
Nature of work	Field sampling and radiation characterization of HBRA/NBRA sites, followed by biochemical, molecular, cytogenetic and proteomic assessment of radiation responses in selected non-human biota. To investigate the biological effects of chronic low-dose natural radiation on non-human biota inhabiting HBRAs of Tamil Nadu through assessment of stress biomarkers, molecular responses, and proteome-level alterations, with comparison to organisms from NBRAs. Natural background radiation has been an integral part of the Earth's environment, with certain regions exhibiting elevated levels due to geological factors. In India, monazite-rich coastal regions of Tamil Nadu, including Manavalakurichi, represent important High Background Radiation Areas (HBRAs). While several studies have investigated radiation exposure and health effects in human populations from these regions, the biological effects of chronic low-dose radiation on non-human biota remain poorly understood. The proposed research involves investigating the biological responses of non-human biota to chronic low-dose natural radiation in High Background Radiation Areas (HBRAs) of Tamil Nadu, with comparative assessment of organisms from Normal Background Radiation Areas (NBRAs). The study will focus on selected terrestrial, aquatic and plant species, including Drosophila/wild insects, earthworms, marine invertebrate, and representative coastal plants. The work will involve field-based radiation and environmental characterization, collection and analysis of biological samples, and laboratory assessment of oxidative stress, DNA damage, cytogenetic alterations, radiation-responsive molecular markers and proteomic changes. The study aims to identify radiation-associated biological responses and potential adaptive mechanisms in non-human biota exposed to naturally elevated radiation.

1. Eligibility Criteria:

The upper age limit for applying for award of Research Associate shall be 35 years.

2. Selection Procedure:

Selection will be on interview basis only. Applications received will be subject to screening. Only screened-in candidates will be interviewed at Kalpakkam. All information related to the selection will be made available on the website <https://www.igcar.gov.in/recruitment.html>. Candidates are advised to visit the website periodically for information and updates in this regard. Information displayed on the website will be deemed as intimation to the candidates.

3. 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. Only a summary scrutiny of the application would be made before the final stage of the selection process and detailed scrutiny of the eligibility of the candidate would be done only at the final stage of the selection 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 selection 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 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, experience, community status, creamy layer status will be reckoned as on the closing date for submission of application.
- iii. Those candidates 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.
- iv. Candidates who are NOT meeting the mentioned qualification NEED NOT apply.
- v. The period of service rendered as research fellow will not be counted in any post of DAE / Other Government Department.
- vi. The Centre reserves the right not to fill up the associateships any time if it so desires.
- vii. The associateship shall not confer any claim or right for regular employment in the Centre or any Unit of Department of Atomic Energy.
- viii. 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.
- ix. No correspondence whatsoever form will be entertained from candidates regarding reason for not being called for interview/outcome of interview.
- x. Corrigendum/Addendum, if any pertaining to this advertisement will be uploaded only on IGCAR website.
- xi. Department does not grant any such fellowship to the scholars who have submitted Ph.D. thesis and are awaiting evaluation of thesis.
- xii. The Final induction of the selected candidates as Research Associate will be subject to production of all necessary document in original (Proof of Date of Birth, B.Sc., M.Sc./B.E./B.Tech./M.Tech./Ph.D. degree and Mark Sheets) on the date intimated to them by the Department.

4. Amount of Fellowship:

Research Scholars will be paid ₹ 58,000/- per month as stipend during the entire tenure and a sum of ₹ 60,000/- per annum will be as Contingency grant to meet the expenditure towards (i) Purchase of books (ii) Stationery (iii) Purchase of software and hardware (iv) Journals (v) Mailing expenses and (vi) Travel for attending seminars and conferences.

5. Tenure of Associateship:

The selected candidates will be initially taken for a period of **two years**. On satisfactory performance, the tenure of associateship will be further extended by **one more year**.

6. Medical:

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

7. Accommodation:

The Selected candidates will be provided with subsidized bachelor Hostel Accommodation or family accommodation in specially deserving cases during the tenure

8. How to Apply:

- i. The researcher may print the application from <https://www.igcar.gov.in/recruitment.html> and send scanned copies of duly filled Application Form and enclosures to jrfrect@igcar.gov.in with subject of the mail as "Research Associate Position". Last date for forwarding of the completed application is 31/10/2026. The Referee's report (one report from the thesis supervisor) should be forwarded by the Referee directly to us by e-mail quoting the name of the applicant latest by 07/11/2026.
- ii. Candidate is required to fill up personal and qualification details. 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.
- iii. A valid e-mail ID should be kept active till the declaration of results. IGCAR will send call letter for Interview to the registered/given e-mail ID. No correspondence will be sent through post/courier.
- iv. For any clarification candidate may please contact by email: jrfrect@igcar.gov.in

9. 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 status 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.

Candidates will not be allowed to appear for the interview if they fail to bring a copy of the Application and a valid photo identity card (such a Voter ID, Driving License, AADHAR Card, Passport, College ID) and all the documents in original at the time of interview.

ANY LEGAL DISPUTES ARISING OUT OF THIS NOTIFICATION ARE SUBJECT TO CHENNAI JURISDICTION ONLY. IN CASE OF ANY DISPUTE, ENGLISH VERSION OF DETAILED ADVERTISEMENT PLACED ON IGCAR WEBSITE ([HTTP://WWW.IGCAR.GOV.IN](http://www.igcar.gov.in)) SHALL BE REFERRED.

RECORD OF THE NON-SELECTED CANDIDATES SHALL NOT BE PRESERVED BEYOND 6 MONTHS FROM THE DATE OF PUBLICATION OF SELECT LIST.

CANVASSING IN ANY FORM WILL BE A DISQUALIFICATION.

PROFORMA FOR APPLICATION FOR THE POSITION OF RESEARCH ASSOCIATE

Last date for forwarding of application is 31/10/2026

1	Name in full (in block letters)	:									Insert Your Digital Passport size Photograph here			
2	Date of Birth (DD-MM-YYYY)	:												
3	Nationality	:												
4	Sex	:	Male	✓	Female	✓								
5	Marital Status	:	Married	✓	Unmarried	✓								
6	Father's / Husband's Name	:												
7	Caste	:	GEN	✓	OBC	✓	SC	✓	ST	✓	EWS	✓		
8	Person with Disabilities	:	YES	✓	NO	✓	Nature of Disability	VH	HH	OH	Cat. D			

9 Educational Qualifications:					
Exam Passed	University / Institution	Year of Passing	Subjects		Percentage / CGPA
			Main	Ancillary	
Class X / SSC					
Class XII / HSC / Diploma					
B.Sc. / B.E. / B.Tech. / B.S. or B.Sc. Engg or Tech					
M.Sc. / M.Tech.					
Doctoral Degree					

10	Current position and address	:		
11	Area of expertise*	:		
12	Brief summary of work and achievements*	:		
13	Name of the Referee & contact details	:		
14	Publication Details: Number of Publications Provide details as annexure	:		
15	Details of relatives working in IGCAR / any other DAE units	:	Name :	
			Designation:	
			Unit :	

*** Information may be provided in a separate sheet as annexure**

16	Address	
Permanent		Correspondence
Mob. No:		Mob. No:
E-Mail id:		E-Mail id:

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 position would be liable for termination without any notice or reasons thereof.

Place:

Date:

Signature of the candidate

IMPORTANT CHECK LIST

Self Attested copies of the following certificates must enclosed with the application form without which the application is liable to be rejected:

- Valid ID Proof (Aadhar Card, Driving License, Voter ID etc.)
- Marksheets from Class X, Class XII, B.Sc., M.Sc. or B.E./B.Tech., B.S. Engg./B.Sc[Tech], M.Tech
- Degree certificates
- Consolidated mark sheets and calculation for percentage/CGPA of the qualifying exams to be attached
- Soft copy of the synopsis
- Degree/provisional certificate of qualifying degree

(PLEASE REFER NEXT PAGE FOR FORMAT FOR REFEREE REPORT)

**GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
INDIRA GANDHI CENTRE FOR ATOMIC RESEARCH
KALPAKKAM 603 102, INDIA**

REFEREE'S REPORT ON PROSPECTIVE CANDIDATE FOR RESEARCH ASSOCIATE POSITION

1.1	Name of the candidate	:	
1.2	How long have you known the candidate?	:	
1.3	Kindly indicate in what capacity/capacities have you known and interacted with the candidate		
	<i>Capacity/Capacities</i>	<i>Years</i>	
	<i>Teacher</i>	<i>To</i>	
	<i>Thesis supervisor</i>	<i>To</i>	
	<i>Colleague in the Faculty/Company</i>	<i>To</i>	
	<i>Other</i>	<i>To</i>	
2.	Kindly give your assessment of the candidate on the following aspect (assess on the scale of 1-10)		
2.1	Theoretical ability	:	
2.2	Experimental/Practical abilities	:	
2.3	General Professional Knowledge	:	
2.4	Technical judgment	:	
2.5	Personality & Cooperativeness	:	
2.6	Self – reliance	:	
2.7	Communication Ability	:	
2.8	Overall Scientific/Technical capability of the candidate	:	
3.	Please give overall assessment of Scientific and Technical Capability of the individual:		
	<i>Please indicate the candidate's field of specialization including a brief outlines of what in your opinion are his/her major contributions. Also make any general comments you may have on the candidate, particularly remarks on any characteristics not brought out so far in your answers to this questionnaire (use separate sheet if necessary)</i>		

Signature :

Name (in Bold Letters):

Date: _____

Address :