

**Government of India
Bhabha Atomic Research Centre
Trombay, Mumbai-400 085**

Advertisement No: 4/2015 (R-V)

Applications are invited from the candidates for 17 positions of **Research Associate (RA)** Fellowship to work on the following R&D projects in Bhabha Atomic Research Centre, Mumbai:

<u>Research Project –1</u>	: Reaction Mechanism involving weakly bound Heavy Ions and Study of Weak Interactions using Polarized Neutrons
Requirement of RA	: 1 No.
Qualification	: Ph.D. In experimental Nuclear Physics from recognized university
Nature of work	: Experiments using Pelletron.
Duration of project	: 3 years
<u>Research Project –2</u>	: Reaction dynamics around coulomb barrier with weakly bound projectiles.
Requirement of RA	: 1 No.
Qualification	: Ph.D. in Nuclear Physics from recognized university.
Field	: Nuclear Reactions-Experiment and Theory
Nature of work	: Participating in experiments at pelletron, data analysis, theoretical model calculations
Duration of project	: 1 to 2 years
<u>Research Project –3</u>	: Covariances in nuclear data science
Requirement of R A	: 1 No.
Qualification	: Ph.D. in Science or Engineering with research interest in Nuclear data Science and Technology.
Field	: Nuclear and reactor physics applications.
Nature of work	: R&D Works
Duration of project	: 18 Months
<u>Research Project –4</u>	: Generation of THz Radiation by filamentation, development of terahertz time-domain spectrometer and its application in understanding spectroscopy of unfriendly materials (pollutants, drugs, biohazards and explosives)
Requirement of RA	: 1 No.
Qualification	: Ph.D. In Physics/Chemistry (Laser Spectroscopy) from recognized university
Field	: Chemical Science
Nature of work	: The candidates will work with a group of scientists, who are engaged with the development of time-domain terahertz spectrometer and investigation of hydration and salvation dynamics of proteins and simple model molecules and organic nano-particles using this THz spectrometer.
Duration of project	: 2 years

<u>Research Project –5</u>	: APEX PROJECT: XII-N-R&D-31 (Physics with Neutrons and Neutron & X-Ray Based Techniques)-subproject XII-N-R&D-31.1 (Development of Neutron sources, X-ray imaging facilities and their applications) : Research Project # 1 Development and demonstration of Coded Aperture Imaging and related Techniques for Nuclear Applications : Research Project # 2 Development of advanced X-ray Imaging Techniques to be implemented on Imaging Beamline, INDUS-II Synchrotron source
Requirement of R A	: 2 Nos.
Qualification	: Ph.D. in Physics from recognized university
Field	: Physics / Radiation Imaging / Instrumentation
Nature of work	: Theoretical simulation and experiments
Duration of project	: 2 years
<u>Research Project –6</u>	: Development of Zr Based Alloys for cladding and Structural Nuclear Applications: Microstructure –property correlation and irradiation response.
Requirement of R A	: 1 No.
Qualification	: Ph.D in Metallurgical Engineering/ Physics/ Materials Science from recognized university. Those who have submitted thesis can also apply
Field	: Materials Science. Required qualification: Ph.D in Metallurgical Engineering/ Physics/ Materials Science from recognized university.
Nature of work	: Development of alloys
Duration of project	: 3 Years
<u>Research Project –7</u>	: An integrated approach to research and development on novel nuclear materials through experimental and simulation studies.
Requirement of R A	: 1 No.
Qualification	: Ph. D in Metallurgical Engineering/ Materials Science/Physics /Chemistry from recognized university.
Field	: Materials Science /Physics /Chemistry/Geoscience
Nature of work	i) Experimental studies to understand materials behaviour under extreme conditions (high pressure/ high-temperature/ leaching/ radiation damage etc) ii) Computational/simulation studies within selected crystalline / amorphous materials to understand phase transformation mechanism.
Duration of project	: 3 Years
<u>Research Project –8</u>	: Materials and Technology for Advanced Reactor Systems
Requirement of R A	: 2 Nos.
Qualification	: Ph.D in Metallurgy/Materials Science/Physical Chemistry/Inorganic Chemistry from recognized university
Field	: Metallurgy/Material Science/Chemistry (In case Metallurgy/Material Science not available)
Nature of work	1. Development and characterization of prospective coatings on T91 / Reduced Activation Ferritic Martensitic Steel (RAFMS) for Test Blanket Module (TBM / ITER) required for corrosion protection of structural material, to prevent tritium permeation and to carry out compatibility studies with Pb-Li melt at 500C. 2. Fabrication of lead-lithium loop and compatibility studies of Fusion Reactor Structural Materials T91 / Reduced Activation Ferritic Martensitic Steel (RAFMS) in lead lithium loop and corrosion studies at 350-550C.
Duration of project	: 3 Years

<u>Research Project –9</u>	: (i) High temperature high pressure corrosion of nuclear structural materials (ii) Corrosion of stainless steels, Ni base alloys and carbon steels
Requirement of R A	: 2 Nos.
Qualification	: Ph.D in Metallurgical Engineering/ Mechanical Engineering/ Materials Science/ Physics/ Chemistry from recognized university. Those who have worked in corrosion or related fields will be preferred. Those who have submitted thesis can also apply.
Field	: Corrosion of materials
Nature of work	: Corrosion and its control
Duration of project	: 3 Years
<u>Research Project –10</u>	: New Sea Energy System
Requirement of RA	: 1 No.
Qualification	: Ph.D. in Mechanical / Marine Engineering from recognized university. Years experience
Field	: Energy System / Thermal Engineering
Nature of work	: Experimental validation, Design and erection of experimental facilities, Heat transfer characterization
Duration of project	: 3 years
<u>Research Project –11</u>	: Astrophysics & Accelerator based research in Physical Sciences
Requirement of R A	: 1 No.
Qualification	: Ph.D. in Nuclear Physics from recognized university.
Field	: Physics of Heavy Ion collisions and QGP
Nature of work	: Basic Research (Data Analysis/Theory)
Duration of project	: 3 Years
<u>Research Project –12</u>	: Astrophysics & Accelerator based research in Physical Sciences
Requirement of R A	: 1 No.
Qualification	: Ph.D. in Nuclear Physics from recognized university.
Field	: Study of fission dynamics and nuclear level densities using heavy ions.
Nature of work	: Experiments using accelerator and charged particle/gamma ray detector setups, data analysis at PLF, TIFR
Duration of project	: 3 Years
<u>Research Project –13</u>	: Ultrafast Interfacial charge Transfer Dynamics in Dye, Semiconductor nanoparticle and Quantum Dot Composite Materials: Understanding the mechanism of Higher Efficient Solar Cell
Requirement of R A	: 1 No.
Qualification	: Ph.D. in Physical Chemistry from recognized university.
Field	: Ultrafast Spectroscopy of Solar Material.
Nature of work	: Working on mechanism and development of quantum dot solar cell (QDSC) and spectroscopic studies on QDSC
Duration of project	: 2 Years
<u>Research Project –14</u>	: Modeling and experimental study on the Cu-Cl cycle for hydrogen generation.
Requirement of R A	: 1 No.
Qualification	: Ph.D. in Chemical Engineering from recognized university.
Field	: Organic/Physical Chemistry.
Nature of work	: Synthesis and characterization of various species involved in the Cu-Cl cycle. Thermochemical data generation using molecular modeling.
Duration of project	: 3 Years

Interested candidates may apply as per the proforma with complete bio-data, one set of photocopies of mark-sheets, degree certificates (from SSC to M.Sc./M.Tech./Ph.D.), other academic credentials and work experience. RAs will be postdoctoral fellows of BARC under HBNI. The Fellows recruited will have opportunity to carry out research under plan projects/other research projects of BARC under the guidance of senior scientists.

Complete filled application may be sent to Deputy Establishment Officer, Recruitment-V, Central Central Complex, BARC, Trombay, Mumbai – 400 085 superscribing the Research Project No. on the envelope.

The last date of receiving application is 15th January, 2016.

Note:

- 1. Educational Qualification:** As indicated against each Research Project.
- 2. Amount of Fellowship:**
 - (i) **RA-1** : ` 36,000/- p.m. plus Contingency Grant of ` 32,000/- per annum plus 30% HRA [wherever hostel accommodation is not available].
 - (ii) **RA-2** : ` 38,000/- p.m. plus Contingency Grant of ` 32,000/- per annum plus 30% HRA [wherever hostel accommodation is not available].
 - (iii) **RA-3** : ` 40,000/- p.m. plus Contingency Grant of ` 32,000/- per annum plus 30% HRA [wherever hostel accommodation is not available].

Notes: Scholars who have submitted Ph.D. thesis and are yet to receive their Ph.D. degree (provisional or otherwise) are also eligible for consideration as RA and will get paid Bridging fellowship of ` 32,000/- per month plus ` 32,000/- per annum plus HRA @ 30% [wherever hostel accommodation is not available] till they get final degree. The post Doctoral/Fellows/RAs may be fixed at one of the 3 pay levels as indicated above depending on qualifications and experience. The level at which a fellow will be placed will be decided by the interview committee at the level of the Unit, based on the following;

- i) Quality of Ph.D. thesis;
- ii) Post-Ph.D. research experience as evidenced from the quality of the publications and/or products/processes designed and developed and
- iii) Performance in the Selection interview.