

**INDIAN INSTITUTE OF TECHNOLOGY, ROORKEE
(Department of Metallurgical and Materials Engineering)**

Dated: 10 November 2022

ADVERTISEMENT TO FILL UP PROJECT POSITIONS*

Applications are invited from Indian nationals only for project position(s) as per the details given below for the research project under the Principal investigator (Name: Prof. Anjan Sil), Department of Metallurgical and Materials Engineering, Indian Institute of Technology Roorkee.

1. Title of project: Development of solid electrolytes for high voltage and high energy density Li and Na-ion batteries.
2. Sponsor of the project: Indian Space Research Organisation (ISRO) Bengaluru
3. Project position(s) and number: Project Associate - 1
4. Qualifications: B.Tech., M.Tech. degree in Materials Science and Engineering / Ceramics Engineering / Metallurgy or equivalent.

Or

M.Sc. (degree in Materials Science / Physics / Chemistry and allied streams with Mathematics at the undergraduate level), M.Tech. degree in Materials Science and Engineering / Ceramics Engineering or equivalent.

5. Emoluments: Rs. 31,000 /- per month + HRA @ 9%
6. Duration: 2 years
7. Job description: Synthesis of solid electrolyte materials based on oxide ceramics for use in Li / Na ion batteries. Inorganic oxide $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$ garnet based materials for Li ion and suitable material namely NASICON ($\text{Na}_3\text{Zr}_2\text{Si}_2\text{PO}_{12}$) for Na ion batteries will be synthesized. Ionic conductivity, phase constituents, morphological features of the synthesized electrolyte powders will be investigated. Interfacial contact between the solid electrolyte and electrode will be investigated. The electrolytes to be developed will be tested at the cell level. Mechanical characteristics of the solid electrolytes will also be investigated. The characteristics such as (i) Chemical and mechanical stability, (ii) Transference number, (iii) Dendrite inhibition capability etc. of the solid electrolytes will be tested.

Candidates are expected to have a strong interest in ceramic powder synthesis using solid state as well as liquid phase routes, and in the powder characterization following XRD, SEM, TEM), DTA / TG, XPS, etc. analyses, fracture toughness measurements. The project work also involves cell assembly, electrochemical study, preparation of project reports and any other works related to the project.

1. Candidates before appearing for the interview shall ensure that they are eligible for the position they intend to apply.
2. Candidates desiring to appear for the Interview should submit their applications with the following documents to the office of Principal Investigator through email : anjan.sil@mt.iitr.ac.in or by post (Address : Prof. Anjan Sil, Department of Metallurgical and Materials Engineering, IIT Roorkee, Roorkee – 247667, Uttarakhand).

Anjan Sil

- Application in a plain paper with detailed CV including chronological discipline of degree/certificates obtained.
 - Experience including research, industrial field and others.
 - Attested copies of degree/certificate and experience certificate.
3. Candidate shall bring along with them the original degree(s)/certificate(s) and experience certificate(s) at the time of interview for verification.
 4. Please note that no TA/DA is admissible for attending the interview.

The last date for application to be submitted to office of Principal Investigator (by e-mail) is 25 November 2022 by 5 PM.

The interview will preferably be held online. Shortlisted candidates will be informed through email of the interview date and time.

Anjan Sil

(Professor Anjan Sil)
Name and signature
of Principal Investigator

Tel: (01332) 285073 (Office)
7455000894 (Mob)
Email: anjan.sil@mt.iitr.ac.in

Fax:

*To be uploaded on IIT Roorkee website and copy may be sent to appropriate addresses by PI for wider circulation.

APPROVED

[Signature]
डीन (सि.कॉ) (Dean SRIC)
भा. प्रौ. सं. रुड़की/IIT Roorkee

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