

Publish date: 25th of September 2026

Deadline for application: 25th of October 2026

Ref. 26/071

Project: ICREA

Area: Advanced Materials for Energy applications

Group: Nanoionics and Fuel Cells

Group leader: Dr. Albert Tarancón

PI: Albert Tarancón

“R1-PhD Position: Developing Next Generation All-Solid-State Battery Devices”

Description:

The Nanoionics and Fuel Cells Group is seeking a motivated MSc graduate to join an ambitious PhD project focused on the development of **next-generation all-solid-state battery devices** based on sustainable and non-critical materials. The research aims to explore alternative battery chemistries beyond lithium, including emerging sodium- and fluoride-based energy storage technologies.

The PhD project will address key scientific and technological challenges in the design of ceramic solid-state batteries by combining advanced materials discovery with device engineering. The candidate will investigate novel ionic conductors, electrode materials and interfaces, with a particular emphasis on compositions relying on earth-abundant elements. The work will involve the synthesis and characterization of functional ceramic materials, the study of ion transport mechanisms, and the fabrication and testing of proof-of-concept solid-state devices.

A significant part of the research will be devoted to exploring new materials spaces using combinatorial approaches and high-throughput structural and electrochemical characterization techniques. The ultimate goal is to establish new pathways toward safer, more sustainable and scalable energy storage technologies capable of supporting the future electrification of society.

This position offers a unique opportunity to contribute to the development of disruptive battery concepts at the intersection of materials science, electrochemistry and solid-state ionics. The successful candidate will join a dynamic and internationally recognized research team with extensive expertise in advanced ceramic devices, electrochemical energy technologies and functional oxide materials.

We are looking for a curious, creative and proactive researcher with a strong interest in experimental science and a desire to contribute to breakthrough advances in sustainable energy storage.

Qualifications and experience required (at the moment of start):

Essential:

The call is open to candidates of any nationality fulfilling the following criteria:

- Hold an MSc in Materials Science, Materials Chemistry, Chemistry, Physics, Chemical Engineering, Energy Engineering, or related disciplines.
- Fluent in English

Preferred:

- Hands-on experience in synthesis and characterization of ceramic materials, solid-state compounds or electrochemical devices.
- Knowledge of electrochemistry, solid-state ionics, batteries, fuel cells or related energy technologies.
- Experience with structural, microstructural or electrochemical characterization techniques.
- Interest in sustainable energy storage technologies and alternative battery chemistries beyond lithium.
- Basic skills in data analysis and scientific programming.
- Ability to work independently while contributing effectively to collaborative and interdisciplinary research environments.
- Strong communication and scientific writing skills.
- Previous research experience through MSc projects, internships or publications is highly valued.

Personal Skills:

- Team worker
- Initiative in research and innovation
- Flexibility
- Results-oriented
- Analytical and synthesis capabilities

Required documents:

Applicants must submit the following documents by email to irecjobs@irec.cat and atarancon@irec.cat indicating in the subject “PhD Batteries Ref 26/071”:

- Curriculum Vitae, specifying the completed degree and any relevant professional experience.
- BSc and MSc transcripts.
- Motivation letter explaining interest in the project and fit with the position.

Offer of job position:

We offer a **36-month PhD scholarship**.

Salaries will follow **IREC’s salary policy**, adjusted to the candidate’s qualifications and experience.

The **expected starting date** is **October-November 2026**.