

Call reference number	(2025-10)
Call name	IKUR Neutronics SmartSPE project Post-doctoral position
Application Deadline	2025/05/28

### Introduction and main description

BCMaterials – the Basque Center on Materials, Applications and Nanostructures – is an independent research center located in Leioa, Spain, and is part of Ikerbasque (the Basque Foundation for Science) and the University of the Basque Country (UPV/EHU). Learn more about us at [www.bcmaterials.net](http://www.bcmaterials.net).

We invite applications for a **post-doctoral researcher position in Materials Science** as part of the IKUR Neutronics SmartSPE project. This is an exciting opportunity for motivated early-stage researchers to contribute to cutting-edge developments in next-generation energy storage technologies by using advanced neutron scattering.

The project focuses on **solid-state electrolytes (SSEs)** for lithium-ion batteries, addressing the safety and performance limitations of traditional organic liquid electrolytes. Our research aims to:

- Develop SSEs with enhanced ionic conductivity and lithium transference.
- Incorporate **self-healing** and **self-sensing functionalities** to improve battery lifespan and reliability.
- Explore **reversible shutdown mechanisms** using phase-change materials and thermoresponsive polymers for safer battery systems.
- Apply advanced techniques such as **solid-state NMR**, **quasielastic neutron scattering (QENS)** and **Small-angle neutron scattering (SANS)**, and **nanoscale simulations** to investigate lithium diffusion and interfacial dynamics.
- Establish fundamental design principles for high-performance **solid-state batteries (SSBs)** tailored for future technological applications.

This position offers not only excellent scientific training but also a robust foundation in **transferable skills**, thanks to strong collaborations with leading academic institutions and innovative start-ups in the nanomaterials and energy storage sectors as well as neutrons large-scale facilities.

The ideal starting date for the position is 01/07/2025. The project's estimated completion date is 31/12/2026.

### Skills and Requirements

The candidate must have a PhD in Materials Science, Physics, Chemistry or related areas. A background in energy storage is desirable but not compulsory. Knowledge in advanced structural characterization techniques, is also desirable.

Proficiency in speaking and writing in English.

Self-motivated and ability to work in a team and willing to coordinate the research in a particular topic.

### Skills and Requirements

A high level of motivation and independent thinking abilities.  
Ability and eagerness to learn new skills outside his/her own discipline.  
Presentation skills and being able to meet the deadline are also required.

### Work Program / Duties / Responsibilities

#### Position Overview:

The selected candidate will work at the forefront of materials science, with a primary focus on the design, synthesis, and integration of novel materials for smart solid-state electrolytes. The goal is to create innovative battery systems with enhanced performance, safety, and durability.

#### Key Responsibilities:

- Knowledge and experience in the field of sustainable chemistry, in particular the sustainable synthesis of monomers and functional polymers that can be used in energy storage.
- Advance fundamental understanding of the physical principles that underpin polymer/smart capabilities composite synthesis and processing.
- Advance fundamental understanding of ion transport at solid electrolyte-electrode interfaces.

#### Research Environment:

The postdoc candidate will be fully embedded in a dynamic and multidisciplinary team at BCMaterials, with access to state-of-the-art facilities and equipments. The project involves active collaboration with leading international research groups in Europe and beyond, providing an excellent platform for scientific growth, networking, and career development.

### Application Procedure

Apply by submitting a motivation letter and a CV (in English) using the "Contact" button at the corresponding offer, at the "Join Us" area on BCMaterials' portal (<https://www.bcmaterials.net/join-us>).  
Your name and email address will be required for further contact too.

### Other Relevant Information

We provide a highly stimulating environment with state-of-the-art infrastructures, and unique professional career development opportunities. We offer and promote a diverse and inclusive environment and welcomes applicants regardless of age, disability, gender, nationality, ethnicity, religion, sexual orientation or gender identity.

The candidates will need to include contact details for 2 referees.