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Reference: 27/005

Category: R-2.1.3

Project: TOPOIONICS - ERC Starting Grant

Research group: Nanoionics and Fuel Cells, IREC, Barcelona

Group leader: Prof. Albert Tarancón

Principal investigator: Dr. Francesco Chiabrera

Publication date: 1 October 2026

Application deadline: 31 December 2026

Estimated starting date: February 2027, with flexibility depending on the candidate's availability.

“R2 – Postdoctoral Position in Oxide Membranes and Devices for Brain-Inspired Computing”

Position description

The Nanoionics and Fuel Cells group at IREC is seeking a motivated postdoctoral researcher to join TOPOIONICS - Topological Ionics for Adaptive Neuromorphic Networks, an ERC Starting Grant project led by Dr. Francesco Chiabrera, exploring new materials for brain-inspired computing. The project aims to use ionic motion to reshape the structure and electrical properties of oxides, enabling devices that adapt their internal connectivity in response to external signals.

The successful candidate will play a central role in developing oxide thin films, freestanding membranes and iontronic devices. The research will combine materials synthesis, membrane fabrication and integration, and advanced characterization to explore how ionic processes can enable new neuromorphic functionalities. This five-year position offers the opportunity to develop original research directions within TOPOIONICS, contribute to the growth of the team and collaborate with an international network of researchers.

Research activities:

- Develop and optimize oxide thin films and freestanding membranes for iontronic applications.
- Design and fabricate experimental devices, integrating oxide membranes with functional components.
- Investigate how ionic processes and structural changes influence material properties and device performance.
- Develop experimental approaches and advanced characterization methods, and guide the analysis and interpretation of results.
- Contribute to mentoring PhD students, coordinate research activities with collaborators, and disseminate findings through publications and international conferences.

Qualifications and experience



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Essential:

- A PhD in Materials Science, Physics, Chemistry, Nanoscience or a closely related field by the appointment date.
- Demonstrated experimental research experience in oxide materials, thin-film fabrication, microfabrication or electrochemical devices, supported by relevant scientific publications.
- Ability to plan and conduct independent research, work collaboratively, and communicate effectively in written and spoken English.

Desirable:

- Experience in epitaxial thin-film growth, freestanding oxide membranes or device integration.
- Knowledge of solid-state ionics, electrochemistry, defect chemistry or neuromorphic devices, and experience with relevant characterization techniques.
- Experience in mentoring students, collaborating across disciplines, or developing measurement and data-analysis tools.

Employment and application

We offer a five-year postdoctoral position in an international research environment at IREC in Barcelona. Salary and employment conditions will follow IREC policy and the applicable call.

Applicants must submit the following documents by email to irecjobs@irec.cat and fchiabrera@irec.cat :

- Curriculum vitae, including a publication list and relevant research experience.
- Motivation letter outlining research interests and suitability for the position.

Please quote reference 27/005 when applying.