

Call reference number	(2025-23)
Call name	Pre-doctoral researcher to develop a novel technology: perovskite solar cells that can compute.
Application Deadline	2025/06/30

Introduction and main description

BCMaterials, Basque Center for Materials, Applications and Nanostructures, is an autonomous research center launched in June 2012 by Ikerbasque, the Basque Foundation for Science and the University of the Basque Country (UPV/EHU) as a research center for Materials, Applications and Nanostructures. The center is included in the BERC's (Basque Excellence Research Centers) network and its mission is to generate knowledge on the new generation of materials, turning this knowledge into (multi)functional solutions and devices for the benefit of society.

BCMaterials is looking for a pre-doctoral researcher to help develop the proof of principle to incorporate compute functionality to perovskite solar cells. The candidate will develop a fundamentally new technology based on controlling ion migration within the perovskite family of semiconductors and exploiting their influence on charge recombination processes at the devices' interfaces. The new device will mimic transistor functionality but will receive its power from sunlight, generating a self-powered, sustainable approach to computing electronics.

The selected researcher will carry out all the necessary steps to fabricate the devices, from substrate-patterning to thin film crystal growth and contact deposition. In addition to performing standard electronic characterization, it is anticipated that the researcher will also develop novel characterisation protocols to be able to both make progress and understand the fundamental charge transfer processes at the interface. The success of this technology promises to deliver a sustainable and recyclable computing platform that can be printed, potentially revolutionising the way we approach electronics design.

We offer a one-year contract. After an evaluation of the candidate's performance, if the results are positive, the researcher will be hired for two more years. It is estimated that three years are enough to develop a PhD thesis.

The desired starting date for the position is 01/09/2025.

Skills and Requirements

We are seeking highly motivated candidates with:

- MSc degree in Physics, Electrical Engineering, Chemistry or similar.
- Background in materials science, semiconductors or related fields.
- Strong interest in understanding fundamental charge transport processes, instrument automation, and preferably with some programming aptitude.
- English, and able to work in an international and interdisciplinary environment.

Work Program / Duties / Responsibilities

The PhD candidate can participate in the following tasks:

- Establishment of a new perovskite solar cell device architecture.
- Extensive structural and optoelectronic characterization.
- Determination of ion-mediated charge transfer processes.
- Analysis of the mechanisms underlying the operation of the novel device.

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.