

Call reference number	(2025-31)
Call name	Postdoctoral position on strain engineering non linear photoresponses in 2D materials
Application Deadline	2025/10/12

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.

We are looking for a post doctorate level researcher in the area of optoelectronics and strain engineering with 2D materials. The hired researcher will optimize existing optoelectronic characterization experimental setups, sample fabrication and implement new strain engineering processes. These advances will allow the exploration of novel non-linear optoelectronic and emergent quantum phases in 2D materials. The work will be carried out at BCMaterials in the framework of the LIT-A-SPIN project, with an end date on 31/03/2026.

Skills and Requirements

The candidate must have a PhD in Materials Science, Condensed Matter Physics or related areas.

Other important requirements are:

- A strong background on 2D materials, optoelectronics and strain engineering
- Demonstrated experience in 2D materials samples preparation and device fabrication.
- Demonstrated experience in instrumentation development for optical and optoelectronic characterization of 2D materials devices.
- Demonstrated experience in cryogenics and low temperature physics.
- Experience with instrumentation automation and data analysis with LabView and Matlab.
- Good writing and presentation skills.
- Experience with multiple characterization techniques such as device fabrication, micro-reflectance, micro-photoluminescence and micro-Raman spectroscopies, electrical characterization of devices, optoelectronic characterization of devices.
- Proficiency in speaking and writing in English.
- Capacity for teamwork in an interdisciplinary and international environment.
- Self-motivation and willingness to perform independent research.
- Supervision skills.
- Creativity in problem solving. Ability and eagerness to learn new skills outside own discipline.

Work Program / Duties / Responsibilities

The research will be carried out in the framework of the Lit-A-Spin project (CNS2023-145151 Light-induced Spin currents in 2D Antiferromagnets), which aims to detect non-linear phenomena arising in symmetry-breaking phases of 2D materials. The expected outcomes are

Work Program / Duties / Responsibilities

relevant both for the development of next-generation photovoltaic technologies and for establishing the foundation of purely optical spin-current generation. Moreover, the project results have the potential to enable a technological platform where spin generation and transport can be realized within a single piece of material.

The researcher will be responsible for the optoelectronic characterization of low-symmetry 2D material samples and for implementing strain engineering strategies to control symmetry breaking on demand. These approaches are expected to drive the emergence of non-linear effects and other quantum phenomena.

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