

Call reference number	(2026-24)
Call name	Pre-doctoral position: Graded Magnetocaloric Materials for Enhanced Solid-state Refrigeration and Energy Harvesting
Application Deadline	2026/11/22

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 motivated pre-doctoral researcher to work in the area of magnetocaloric materials (MCM), advanced manufacturing, and energy harvesting and solid-state refrigeration applications. The aim of this project is to design and manufacture novel MCM via computational screening and experimental validation of intermetallic functionally graded magnetic materials with phase transformation around room temperature. This approach involves: i) Design 4 MCMs with large adiabatic temperature change, predicting properties via computational calculations. ii) Synthesize 2-3 MCMs with functional gradients, including NiMn(Ga,Sn,In, Ti) and La(FeSi)₁₃. iii) Characterize crystal structures, physical properties, and adiabatic temperature change and magnetic entropy change. The present position is offered within the MAGCOOLEST project "PID2025-174502NB-C33. MAGCOOLEST" with a finishing date on 31/08/2029. The position will be dedicated to the development of graded magnetocaloric materials for enhanced solid-state refrigeration and energy harvesting.

Skills and Requirements
-Master's degree in materials science, physics, electrical engineering, mechanical engineering or related areas with an average mark above 7.0/10. -Fluent oral and written English is mandatory. -Experience in computational materials science, structural, calorimetric and magnetic characterization techniques is an asset. -Hands-on experience in experimental setup development, assembly, instrumentation, thermal equipment, and troubleshooting. -Experience with numerical modelling and simulation tools such as MATLAB; COMSOL, or equivalent software is an asset.

Skills and Requirements

-Knowledge in data acquisition, sensors, control systems is desirable. As well as experience in magnetic, thermal, or structural characterization.

Work Program / Duties / Responsibilities

The research activity that the pre-doctoral researcher will perform consists in the investigation, from the materials design to synthesis for their performance evaluation, of graded magnetocaloric materials, with a variety of techniques ranging from X-ray diffraction, neutron imaging, magnetic entropy change.

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.