

Call reference number	(2025-32)
Call name	Predoctoral Researcher: Installation of multielement clusters into Metal-Organic Framework Catalysts
Application Deadline	2025/10/10

Introduction and main description
<p>BCMaterials – the Basque Center for Materials, Applications and Nanostructures (Leioa, Spain, www.bcmaterials.net) – is an autonomous research center belonging to Ikerbasque, the Basque Foundation for Science, and the University of the Basque Country (UPV/EHU).</p> <p>We are seeking a pre-doctoral researcher in Chemical Physics/Materials Chemistry to work on the design of new Metal–Organic Framework (MOF) catalysts based on the integration of multielement cluster sites into their pore space, followed by their characterization and catalytic testing. The position is a full-time, one-year contract within the MODULES project, supported by the Spanish Ministry of Science, Innovation and Universities. The research will focus on the development of advanced catalysts for the transformation of C₂–C₄ reagents into jet fuel-range alcohols and chemicals (C₈–C₁₆).</p> <p>Key tasks will include:</p> <ul style="list-style-type: none"> Synthesis and characterization of MOF host materials. Preparation of multielement clusters and development of synthetic protocols for their integration into MOF structures. Characterization of the resulting materials using techniques such as X-ray diffraction, infrared spectroscopy, thermogravimetry, temperature-programmed desorption (TPD), and related analyses. Catalytic testing of the materials under variable temperature and pressure conditions.

Skills and Requirements
<p>A Master's Degree in Chemistry, Physics, or a related field.</p> <p>A strong research background in synthesis and catalysis.</p> <p>Experience working with gas chromatography and high temperature/high pressure catalytic reactors.</p> <p>Experience in X-ray diffraction data analysis</p> <p>Experience on catalysts characterization</p> <p>Proficiency in speaking and writing in English.</p> <p>Self-motivation and ability to work in a team.</p> <p>Willingness to coordinate research.</p> <p>A high level of motivation and independent thinking skills.</p> <p>Ability and eagerness to learn new skills outside their own discipline.</p> <p>Presentation skills and ability to meet deadlines.</p>

Work Program / Duties / Responsibilities
<p>Main responsibilities include:</p> <ul style="list-style-type: none"> Synthesis of mesoporous MOF materials Crystallization of multielement clusters and their stabilization in solution Integration of the multielement clusters into the MOF structure

Work Program / Duties / Responsibilities

Powder and single-crystal X-ray diffraction analysis of the materials
 Testing their catalytic activity under capillary condensation conditions
 Characterization of the materials under operation

Additional responsibilities:

Writing of manuscripts

Presenting research at national/international conferences

Working closely with collaborators

Maintaining a positive and collaborative group atmosphere

Further details: The pre-doctoral researcher will be incorporated at BCMaterials under the supervision of Dr. Roberto Fernández de Luis

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

Include contact details for 2 referees.

Interviews will be conducted soon after the deadline.

The preferred starting date to join is November 1, 2025.

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.