Bizkaia talent

PRE-DOCTORAL POSITION: ADVANCED POLYMERS COMPOSITES BASED ON METAL-ORGANIC

Company Description

BCMaterials, Basque Center on 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.

Information

Deadline: 2022-09-23
Category: Business
Province: Bizkaia
Country: Basque Country
City: Leioa

Company

BCMaterials

Main functions, requisites & benefits

Main functions

Demand on highly efficient energy storage and environmental remediation systems are two of the cornerstone challenges that society will face during the following decade. Polymer-based composites are actively being studied nowadays to tackle these problems. A suitable strategy for improving those systems rely on the inclusion of microporous materials as active fillers, such as metal–organic frameworks (MOFs), leading to composites functional tunning and an overall improvement of the performance of the composites both in terms of batteries robustness or the efficiency of the membranes for water remediation. Nevertheless, there is still a lack of understanding of what is the actual mechanism that make this possible. Thus, further research is needed to clarify which of the nanofiller´s characteristics (e.g. micro-porosity, composition of the initial building blocks) are key to modulate the porous or dense structure of the polymer host matrix, as well as its functional performance. Structural characterization of such composites at nanoscale is key to understand the organization of their components and improve the performance. The pre-doctoral position is framed within the research areas of Smart materials and Neutrons science of the BCMaterials. The research topic for this project targets the development of polymer-based composites based on MOFs nanoparticles with application in fields of battery and environmental science.

Work Program / Duties / Responsibilities

The main task of the project is devoted to the development and characterization of polymer-based nanocomposites with the introduction of MOFs as fillers for battery and environmental applications. PhD student will face synthesis, structural characterization and then application of the composites. Neutron scattering will be used to structure and dynamic investigations of the samples at large-scale facilities in Europe and worldwide.

Requisites

The candidate must have Master's degree or equivalent in Materials Science, Chemistry, Physics or related areas. Proficiency in speaking and writing in English. Capacity for teamwork in an interdisciplinary and international environment. Self-motivation and willingness to perform independent research. Creativity in problem solving. Ability and eagerness to learn new skills outside own discipline. Presentation skills and ability to meet the deadline are also required.