

Call reference number	(2023-03)
Call name	Postdoctoral Research – MOFs as drug-carriers for Gastrointestinal (GI) Cancer Treatment and Prevention
Application Deadline	2023/02/05

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 MOFs. The contract will be until the end of the project, which has an estimated duration of 1 year.

Colorectal cancer is the second tumor most frequent in women and the second in men. As more active drugs are not stable under physiological conditions different strategies have been developed to solve this problem: (a) use derivatives of the active principle that, when degraded in the body give rise to its release, (b) incorporate the active principle in a porous material that prevent its degradation and allow a controlled release. Our proposal focuses on this second approach, using a porous matrix with fixed pore sizes that allow controlled drug release. These materials, called "metal-organic frameworks, MOFs", are formed by the combination of a metallic center and bridging organic molecules that join them. The combinations are practically infinite, which allows tailoring their pore sizes and reactivity. They capture high amounts of drugs, with relatively slow-release kinetics and time-spaced dosing. In addition, the MOFs can be designed with pores that fit the molecular dimensions of the drugs, protecting them from their degradation by biological agents and/or by aggressive chemical.

Skills and Requirements

- PhD in Chemistry.
- Robust knowledge and experience in the preparation of porous metal-organic materials (MOFs).
- Chemical characterization techniques such as XRD, BET, SEM/TEM, FTIR, TGA.
- Robust knowledge and experience in performing adsorption/desorption experiments.
- Robust knowledge and experience in the characterization of the adsorption in solution through the magnetic sustentation technique.
- Strong scientific writing skill.
- Fluent in english.

Work Program / Duties / Responsibilities

Synthesis, preparation and characterization of MOFs, performing drug capture/release experiments. Verify the stability of MOFs in different simulated biological media. Quantification of adsorbed/released drug in those same media. Interpretation of the results.

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

Write as much as needed, relating evaluation process, dates of interest.