



Fundación Biofísica Bizkaia  
Biofísica Bizkaia Fundazioa

## FUNDACIÓN BIOFÍSICA BIZKAIA / BIOFISIKA BIZKAIA FUNDAZIOA

### OFFER – PhD Position in “Neutron Scattering & Protein Corona – Nanoparticles interaction”

Publication date: December 24, 2021

The IBF is a joint research centre of the University of the Basque Country (UPV/EHU) and the Spanish National Research Council (CSIC). In close partnership with the Fundación Biofísica Bizkaia (FBB), the centre focuses on fundamental and translational biophysics research and offers a highly collaborative culture. Accredited as a Basque Excellence Research Centre (BERC), the institute provides outstanding shared facilities for advanced biophysical and structural biology approaches in a new research building in the main Leioa campus of the University of the Basque Country.

#### Description of the project and position offered

A predoctoral position to do the PhD thesis is available at Instituto Biofísica Basque Centre for Biophysics under the supervision of Prof. Marité Cárdenas and Dr. Mónica Carril (<https://biofísica.org>). The position is fully funded and has a duration of 3 years.

Applicants must have a **degree in Physical Chemistry or Physics, and a Master that gives access to PhD programs**. Background in colloidal chemistry, nanotechnology, biochemistry, biophysics, and organic synthesis will be valued. Applicants should have a good academic record, good communication skills, a strong passion and commitment to science, and work well within a group. Knowledge of written and spoken English is required.

Neutron scattering is a technique that seeks to understand the properties of matter at a structural and dynamic level. Neutron scattering techniques are only available in large facilities, as they can only be produced in nuclear reactors or spallation sources. The European Spallation Source (ESS) is currently being built in Lund, Sweden, and the Basque country has contributed significantly by building key components. At the end of the construction phase, it is very important that there are trained users capable of using the full potential of the ESS to advance in science and technology in the Basque country. Are you the next ambassador for the use of neutron scattering in the Basque Country?

The open PhD position will focus on optimizing the structure of nanoparticles and their in vivo behavior for applications in nanomedicine. In this project we will apply low angle neutron scattering accompanied by selective deuteration to determine the dependence of the nanoparticle structure with the composition. Nanoparticles are known to be coated by a "protein corona" when they encounter proteins present in the bloodstream. It was recently shown that the adsorption of a specific plasma proteins on lipid-based nanoparticles (of the same type as those used in the Pfizer and Moderna vaccines against COVID19) alters the structure of said nanoparticles, and that this restructuring is correlated with the ability to express proteins within the cell. Here we will investigate whether this effect is specific to ApoE or generic to other lipid based nanoparticles. We will also investigate whether this effect is generic to fluorinated polymeric nanoparticles. This project includes a collaboration with AstraZeneca in Sweden, and short research visits to Gothenburg are envisioned.



Fundación Biofísica Bizkaia  
Biofisika Bizkaia Fundazioa

Applications should send all the documentation as soon as possible. The position will be filled as soon as a suitable candidate is found. Applications must include:

1. a cover letter highlighting their interest in the position and the main research achievements.
2. curriculum vitae clearly stating the degree and master final qualifications.
3. copies of master and bachelor diplomas
4. the name and contact address (e-mail) of at least one academic referee.

Incomplete applications will not be considered.

**Contact:** We are an equal opportunity employer committed to diversity. Please submit all the documentation through the Biofisika website contact page (<http://biofisika.org/contact/>), adding the following subject: [*Job Application: 94\_MC\_Corona*].

**Deadline: 15 March, 2022**