

Call reference number	(2026-18)
Call name	Predocctoral Researcher - Biohybrid molecular-microbial architectures for electron transfer engineering
Application Deadline	2026/10/10

Introduction and main description

Efficient electron transfer between synthetic systems and microorganisms is a key challenge in the development of biohybrid platforms for renewable energy-driven chemical production. Electroactive bacteria offer a unique opportunity to interface molecular photochemistry with biological electron-transfer pathways and investigate how these processes can be chemically reprogrammed. The BIOMMA project develops molecular-microbial architectures to understand and control these interfaces.

We are looking for a predoctoral researcher to work on the design and characterisation of photoactive molecular-protein systems, combining synthetic chemistry, photochemistry, spectroscopy, electrochemistry and biohybrid approaches to investigate light-driven electron-transfer processes.

The purpose of the predoctoral position is to perform research within the BIOMMA project PID2025-171016OA-I00. The position has a planned duration of one year, extendable until the project completion date of 31/08/2029.

Skills and Requirements

We are looking for a highly motivated researcher with a background in chemistry, molecular materials, biochemistry, biophysics or related disciplines, and a strong interest in molecular photochemistry, electron-transfer processes and biohybrid systems.

Required:

- BSc in Chemistry, Materials Science or a related discipline.
- MSc in Chemistry, Materials Science or a related discipline.
- Experience in synthetic chemistry and/or preparation and characterisation of organic, organometallic, photoactive or redox-active molecules.
- Experience with standard molecular characterisation techniques such as UV-Vis, fluorescence, NMR, electrochemistry and mass spectrometry.
- Fluent English.

Desired:

- Knowledge of photochemistry, photophysics and electron-transfer mechanisms, with experience in electrochemical and/or optical spectroscopic characterisation.
- Experience with mechanistic photophysical methods, including time-resolved spectroscopy, transient absorption or kinetic analysis, would be highly valued.
- Experience with biological or biomimetic systems, such as protein purification/bioconjugation, redox proteins, microbial culture or bioelectrochemistry, would be advantageous.
- Ability to work effectively in an international and interdisciplinary research environment.
- Ability to work collaboratively across synthetic chemistry, spectroscopy and biological research.

Skills and Requirements

- Strong motivation to develop expertise across disciplinary boundaries.
- Spanish language knowledge would be an advantage but is not required.

Work Program / Duties / Responsibilities

- Design, synthesis and characterisation of photoactive and redox-active molecular systems.
- Expression, purification and conjugation of engineered redox proteins with synthetic photosensitisers.
- Photophysical and electrochemical investigation of electron-transfer processes.
- Preparation and study of biomimetic and biohybrid systems.
- Integration of selected systems with electroactive microorganisms and assessment of light-driven electron transfer.
- Analysis and interpretation of experimental data, preparation of publications and presentation of results.

Application Procedure

Apply by submitting a motivation letter and a CV (in English), besides a recommendation letter and/or a list of referees (if possible), 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 infrastructure and opportunities for professional development. BCMaterials promotes a diverse and inclusive environment and welcomes applicants regardless of age, disability, gender, nationality, ethnicity, religion, sexual orientation or gender identity.