

Call reference number	(2024-14)
Call name	Functional inks and processes for printed electronics.
Application Deadline	2024/11/30

Introduction and main description

The HERMES project (Harnessing Energy thRough new Materials, procEsses, and architectureS in Self-powered Biosensing) aims to develop self-powered sensors using new semiconductor materials, especially metal oxides, which allow for higher energy performance and sustainable, large-scale manufacturing. This project is funded by the Spanish Ministry of Science within the 2023 call for supporting knowledge generation projects (PID2023-148218OB-C21).

This PhD fellowship focuses on researching printable materials for biosensors and self-powered electronic components, aligned with the EU's sustainability and Industry 4.0 strategy. The candidate will work on the design, synthesis, and characterization of innovative semiconductors for biosensors and integrate these materials into printed devices, contributing to advancements in flexible electronics and point-of-care diagnostics.

We offer a 4-year contract under conditions specified by the Spanish Research Agency at: <https://www.aei.gob.es/convocatorias/buscador-convocatorias/proyectos-generacion-conocimiento-2023/publicaciones>.

Skills and Requirements

We are looking for excellent and highly motivated candidates with an MSc degree in Chemistry, Chemical Engineering, Material Science, or a closely related field.

- A Bachelor's degree in Chemistry is a must.
- Good communication skills in English are a valuable asset.
- Previous experience in materials synthesis, printing techniques, semiconductor characterization, or related fields will be positively considered, but is not essential.

Work Program / Duties / Responsibilities

Tasks and responsibilities will include:

- Materials Synthesis: Develop metal oxide semiconductors through synthetic routes in aqueous media, controlling their structure and properties.
- Functional Ink Formulation: Convert oxides into inks tailored for printing techniques, such as screen printing and pad printing, and optimize their composition.
- Materials and Device Characterization: Conduct structural and functional analyses of the semiconductors, including bandgap studies, carrier mobility, and redox potentials.
- Sensor Integration: Design and fabricate self-powered biosensors by printing materials into innovative architectures, evaluating their performance and stability.
- Collaboration and Dissemination: Collaborate with a multidisciplinary team, present findings at scientific conferences, and contribute to high-impact publications.

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

We provide a highly stimulating environment with state-of-the-art infrastructures, and unique professional career development opportunities. We offer and promote a diverse and inclusive environment and welcomes applicants regardless of age, disability, gender, nationality, ethnicity, religion, sexual orientation or gender identity.