

PhD position in SPINTRONICS ON STRONGLY CORRELATED OXIDE MATERIALS

We are offering a four-year predoctoral position as part of the scientific initiative "Quantum Coherence for Devices" under the Severo Ochoa project "Materials Transition for Tomorrow's World." The selected candidate will join the Advanced Characterization and Nanostructured Materials group at the Institute of Materials Science of Barcelona (www.icmab.es) to investigate spin-orbit architectures that integrate functional materials in innovative ways. This position entails the pursuit of a PhD thesis under the guidance of Dr. Alberto Pomar and Prof. Benjamín Martínez within the framework of the UAB doctoral program in Physics.

Main tasks:

This project focuses on the fundamental exploration of spin-charge interconversion and spin transmission processes in transition metal oxides. The primary objective is to contribute to the advancement of novel spin devices and magnetic memories with enhanced density, robustness, and energy efficiency. In this interdisciplinary research, the candidate will be responsible for the following tasks:

- Designing and growing complex heterostructures based on ferromagnetic and antiferromagnetic oxides.
- Implementing a new experimental setup for angle-resolved spin dynamic measurements.
- Conducting comprehensive structural and physical characterization of the prepared thin films and multilayers.
- Evaluating the efficiency of spin-based devices by understanding the physical mechanisms governing spin transmission and spin-charge interconversion.

Requirements:

- Bachelor's degree in Physics, Materials Science, Nanotechnology or similar.
- Official master's degree, essential for enrolment in the PhD programme, with strong background in Materials Science, Physics, Nanotechnology or related disciplines.
- Fluency in written/spoken English.

Personal skills & others:

- High motivation for experimental research.
- Working aptitudes in a collaborative group.

We Offer:

- Full-time contract
- 4 years
- Gross annual salary in accordance with the CSIC salary policy.

ICMAB is an equal opportunity employer committed to diversity and inclusion of people with disabilities.

How to apply:

Interested candidates should send an email to apomar@icmab.es including the following information:

- CV.
- Letter of motivation.

About ACNM group and ICMAB.

The primary objective of the "Advanced Characterization and Nanostructured Materials" group at ICMAB is to develop both fundamental and applied knowledge for the implementation of functional oxide materials in emerging technologies, such as spintronics. We possess extensive expertise in understanding the relationship between microstructure and properties, and its potential application in the design and fabrication of innovative magnetoelectronic devices. In recent years, our research has concentrated on exploring spin-orbit phenomena in complex oxides, particularly spin-orbit coupling (SOC) and spin-transfer torque (STT), to elucidate the physical mechanisms governing spin current generation and transmission in ferromagnet (FM)/non-magnetic (NM) structures.

Your PhD at ICMAB: ICMAB-CSIC is committed to know-how transfer to productive sectors as well as to participate in educational and outreach activities. Since 2016, ICMAB -CSIC has been awarded for three consecutive periods with the Severo Ochoa Centre of Excellence distinction.

ICMAB-CSIC, with over 250 members from 47 nationalities, is a multidisciplinary global reference centre for the cutting-edge research of functional materials for electronics, energy and health which fosters knowledge transfer and it is characterized by its internationalization and its education, inclusion and diversity policies. Located at the Universitat Autònoma de Barcelona (UAB) campus is surrounded by other research and technological centres and with access to many state-of-the art equipment and scientific facilities.

ICMAB-CSIC stands out for its great training activity at the doctoral level. Training on technical, scientific and transversal skills are offered to ICMAB-CSIC personnel. Moreover, ICMAB-CSIC has coordinated 2 Marie Skłodowska-Curie COFUND doctoral training programs on advanced functional materials: DOCFAM (2017-2022) and DOCFAM+ (2023-2028) where a total of 48 doctoral students have been trained (18 at the ICMAB).