

PhD candidate for Exploration of oxynitrides for energy-related Applications (PID2023-146263NB-I00) in the Solid-State Chemistry Department

The aim of the PhD project is the design of new oxynitrides with targeted properties (e.g. magnetic, electronic and ionic conductivity) of interest for a range of applications (photocatalysis, energy storage etc). Oxynitrides are an emerging group of solids where bond covalency, bond polarization and band gaps are modified by nitride (nitrogen and oxygen show similar electronic and crystal chemistry features and may substitute for each other in the same crystallographic sites). Different main families of compounds will be explored including fully reduced compounds as solid electrolytes for all solid state batteries and transition metal perovskites or spinels with electronic and photocatalytic properties. The targeted compounds will be prepared by solid state synthesis under inert or reactive atmosphere, and characterized by X-ray and electron diffraction, microscopy and complementary techniques (physical property measurements). The most successful ones will be tested under application conditions in the framework of secondments in international laboratories (3 months).

The recruited PhD student will enroll in the Materials Science PhD program at Universitat Autònoma de Barcelona and be co-supervised by Prof. A. Fuertes and Prof. M.R Palacín.

More detailed information is available at <https://tinyurl.com/3x83aw8e>

Requirements:

- Master in Chemistry, Nanoscience or Materials Science are most suited.
- Additional experience in structural or physical characterization techniques is not mandatory but would be appreciated.

What we Offer:

- The PhD contract will have a duration of 4 years
- Salary range follows the guidelines of the PhD fellowships offered by the Ministry (formerly named FPI).

How to apply:

Applications have to be made through <https://www.convocatorias.csic.es/convoca/>

Interested candidates can contact both Prof. Amparo Fuertes and Prof. M. Rosa Palacin for further information: amparo.fuertes@icmab.es, rosa.palacin@icmab.es

What ICMAB is and why working with us:

ICMAB – CSIC 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. 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 more than three decades old research institute located at the Universitat Autònoma de Barcelona (UAB) campus, surrounded by other research and technological centres and with access to many state-of-the art equipment and scientific facilities. Moreover, ICMAB-CSIC has its own scientific services equipped with the newest scientific instrumentation and with highly specialised technical staff available to the scientific community.

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). In total, 48 doctoral students have been trained (18 at the at the ICMAB).