Position Offered: PREDOCTORAL RESEARCHER

Project: *Digital Innovation in Nanomaterial Characterization: Development of Computational Methods for Characterization and Analysis by Transmission Electron Microscopy.*

Technological and scientific fields: Artificial Intelligence, Massive Data and Information Processing Technologies, Nanotechnology, New Materials, Image Analysis, and Computer Vision.

Location: Zaragoza, Aragón, Instituto de Nanociencia y Materiales (INMA), https://inma.unizar-csic.es/

Research Group/PI: Nanofabrication and Advanced Microscopies (NANOMIDAS) / Álvaro Mayoral García

PROJECT SUMMARY

Transmission Electron Microscopy (TEM) is capable of revealing unique information that is not accessible by other means: local information, direct visualization of the material, or chemical mapping at the atomic scale. TEM is a fundamental tool for the development of the new generation of materials in fields such as energy, environment, and health. This project will focus on the implementation of 4D-STEM, the development of new image reconstruction methods using ptychographic techniques, as well as the implementation of an image analysis protocol that facilitates the detection of structural defects. The materials subject to study will be, on one hand, nanoporous solids widely used as heterogeneous catalysts and, on the other hand, titanium oxide used as a photocatalyst, both with strong industrial applications.

PROFESSIONAL PROFILE

Minimum requirements:

- Bachelor's degree in Chemical Sciences, Physical Sciences, Materials Science.
- Engineering in Computer Science, Engineering in Telecommunications.
- Master's degree.

Merits to be considered:

- Knowledge in Transmission Electron Microscopy.
- Knowledge in programming (Python and other programming languages).

WHAT IS OFFERED

Predoctoral contract to pursue a PhD at INMA, a center with the Severo Ochoa quality seal, which also has the advantage of being a joint center between CSIC and the University of Zaragoza. Within the project, there will be access to the most advanced characterization techniques in electron microscopy, with access to Spain's unique scientific and technical facilities. The project has a strong international component, so stays and/or participation in conferences are expected. Additionally, stays will be carried out at the University of Alcalá de Henares. The training program includes a total of approximately 250 ECTS, which includes the preparation of an annual report, stays at other centers (University of Alcalá and ShanghaiTech University, China), and training courses in computational techniques.

Contract conditions:

Predoctoral Researcher contract of 4 years' duration. Gross annual salary of 23,871.33 €.

Start of contract: before 31 December 2024

PRINCIPAL INVESTIGATOR CONTACT

Email: amayoral@unizar.es

Phone: 876555368

momentum@csic.es | https://momentum.csic.es/