

As a flagship research center in nanoscience and nanotechnology, our mission is to open and explore new frontiers of knowledge at the nanoscale, and bring value to society in the form of new understanding, capabilities and innovation, while inspiring and providing broad training to the next generations of researchers.

Our research lines focus on the newly-discovered physical and chemical properties that arise from the behaviour of matter at the nanoscale. ICN2 has been awarded with the Severo Ochoa Center of Excellence distinction for three consecutive periods (2014-2018 and 2018-2022 and 2023-2026). ICN2 comprises 19 Research Groups, 7 Technical Development and Support Units and Facilities, and 2 Research Platforms, covering different areas of nanoscience and nanotechnology.

Job Title: PhD Student

Research area or group: Oxide Nanoelectronics Group

Description of Group/Project:

The research will focus on studying structure-properties relationship in novel quasi-bidimensional complex oxides. Our group has wide experience in the synthesis of single-crystal "freestanding" oxide membranes, with ferroelectric, magnetic or electronic properties. These membranes can be integrated in technologically relevant platforms (silicon/flexible polymers) making them highly appealing for novel applications in electronics, sensors, actuators, energy harvesters, etc. On top of that, they offer exciting possibilities to explore new physics in these multifunctional materials. This project aims to explore the tuning of oxide functionalities at the nanoscale via mechanical manipulation of the membranes, exploiting their demonstrated flexibility which allows us to induce microscopic wrinkle textures, as well as macroscopic bending and stretching. The student will make use of state-of-the-art scanning probe microscopy, as well as macroscopic electrical characterization techniques, to unveil the coupling of order parameters with strain and strain gradients in the functional membranes at different scales.

Main Tasks and responsibilities:

- Fabrication of epitaxial films and freestanding membranes of complex oxides.
- Development of in-situ strain manipulation devices.
- Characterization via different variable-temperature atomic force microscopy techniques.
- Electrical measurements (dielectric, transport)
- Process and analysis the characterization data.
- Elaboration of periodic reports to keep track of the project progress.
- Preparation of scientific manuscripts and presentations in conferences or workshops to showcase the results to the scientific community.

Requirements:

- **Education:**
Degree in Physics, Materials Science or Nanotechnology
Enrolled in, or finishing, a Master's Degree in Materials Science or similar
- **Knowledge and Professional Experience:**
High level of experimental skills. Experience in thin films deposition methods and/or scanning probe microscopy would be appreciated.
Programming skills.

- **Personal Competences:**

Proficient English level (both written and spoken), capacity to work both independently and in collaboration with other members of the group, innovation, perseverance, and resilience.

Summary of conditions:

- Full time work (37,5h/week)
- Contract Length: Temporary
- Location: Bellaterra (Barcelona)
- Salary will depend on qualifications and demonstrated experience.
- Support to the relocation issues.
- Life Insurance.

Estimated Incorporation date: May 2024

How to apply:

All applications must be made via the ICN2 website <https://jobs.icn2.cat/job-openings/612/phd-student-oxide-nanoelectronics-group> and include the following:

1. A cover letter.
2. A full CV including contact details.
3. 2 Reference letters or referee contacts.

Applications will be continuously reviewed.

Equal opportunities:

ICN2 is an equal opportunity employer committed to diversity and inclusion of people with disabilities. ICN2 is following the procedure for contract of people with disabilities according with article 59 of the Royal Decree 1/2015, of 30 of October.