

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: Junior PostDoc - Advanced STEM imaging and spectroscopy in Nanoscience and Nanotechnology (RIANA Project)- ICN2 & ALBA Synchrotron

Research area or group: Advanced Electron Nanoscopy

Description of Group/Project:

The Catalan Institute of Nanoscience and Nanotechnology (ICN2) is currently seeking a highly motivated Junior PostDoc to join Prof. Jordi Arbiol's group at the ICN2 and the Joint Electron Microscopy Center at ALBA Synchrotron (JEMCA). The focus of this position will be on atomic scale scanning transmission electron microscopy (STEM) characterization of nanomaterials and nanodevices. The PostDoc will engage in focused ion beam (FIB) sample preparation and utilize related analytical techniques such as energy-dispersive x-ray spectroscopy (EDS) and electron energy loss spectroscopy (EELS). The research will involve advanced STEM-related (e.g.: 4D STEM) atomic scale characterization of state-of-the-art nanomaterials. The position will allow the Junior postdoc to work in a dynamic group. As part of our team, you'll have the opportunity to collaborate with a large network of nanoscience and nanotechnology researchers worldwide and participate in the e-DREAM European microscopy network, which provides access to cutting-edge EM equipment and will allow you to participate in some of the largest EU projects related to STEM methodological development.

The contract is for 2-years with possibilities of extension.

RIANA is a Horizon Europe funded project which supports curiosity-driven research in nanoscience with open research questions for long-term impact, and challenge-driven research in nanotechnology with targeted research questions for short- and mid-term impact.

At the core of the RIANA consortium is the ARIE network (Analytical Research Infrastructures in Europe) that comprises European networks with a focus on large scale research infrastructures. (<https://riana-project.eu/>)

Main Tasks and responsibilities:

The focus of this position will be on atomic scale scanning transmission electron microscopy (STEM) characterization of nanomaterials and nanodevices. The Junior PostDoc will engage in focused ion beam (FIB) sample preparation and utilize STEM related analytical techniques such as energy-dispersive x-ray spectroscopy (EDS) and electron energy loss spectroscopy (EELS). The research will involve state-of-the-art nanomaterials for energy and environmental applications as well as nanomaterials for quantum applications. The candidate will help on MSc and PhD students supervision and training.

AVAILABLE INSTRUMENTS

- Thermo Fisher Spectra 300 (60-300 keV), double corrected and monochromated, Gatan Continuum EELS with K3 direct electron detector, segmented and pixelated detectors, Super-X EDS system.

- Thermo Fisher Iliad ULTRA (30-300 keV), double corrected and monochromated, HR EELS, segmented and pixelated detectors, ULTRA-X EDS system, Multi-EELS Zebra system (to be installed 1st quarter 2025).
- Cooling, heating and biasing DENSsolutions ARCTIC sample holder
- Liquid, biasing DENSsolutions STREAM sample holder
- Gas/Vapour, heating/biasing DENSsolutions CLIMATE sample holder
- FEI F20 200 KeV STEM, EELS + EDX
- Fully Automated FIB Helios 5UX
- FEI SEM Quanta and SEM Magellan

Requirements:

- **Education:**
Ph.D. degree on physics, chemistry, materials science, nanotechnology or related fields..
- **Knowledge and Professional Experience:**
Hands-on experience in the following areas: Operation of transmission electron microscopes, including detailed knowledge of main physical principles, concepts, and applications of electron microscopy. Advanced sample preparation (FIB) and data analysis skills.
- **Personal competences:**
Excellent interpersonal skills in order to interact with co-workers promptly and professionally, management and support the wide user community of students, post-doctoral researchers and faculty, promoting the growth of the EM core.
Excellent oral and written communication skills. Previous experience in delivering oral technical presentations to scientific audiences.
- **Preferred qualifications:**
Experience with operation of advanced transmission/scanning electron microscopes using aberration-corrected optics and direct electron detection systems.
Experience with 4D-STEM analysis.
Experience with data collection and interpretation of electron energy loss spectroscopy (EELS).
Experience with cooling/heating in-situ S/TEM analysis, temperature holders.
e-tomography

Summary of conditions:

- Full time work (37,5h/week)
- Contract Length: Temporary (2 years with possibilities of extension.)
- Location: Bellaterra (Barcelona)
- Salary will depend on qualifications and demonstrated experience.
- Support to the relocation issues.
- Life Insurance.

Estimated Incorporation date: January 2025

RIANA project: This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101130652.



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How to apply:

All applications must be made via the ICN2 website <https://jobs.icn2.cat/job-openings/666/junior-postdoc-advanced-stem-imaging-and-spectroscopy-in-nanoscience-and-nanotechnology-icn2-alba-synchrotron> 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. Shortlisted candidates will be invited for interview.

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.