

The mission of the Catalan Institute of Nanoscience and Nanotechnology (ICN2) is to achieve the highest level of scientific and technological excellence in Nanoscience and Nanotechnology. Its 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, 2018-2022 and 2022-2026). ICN2 comprises 17 Research Groups, 7 Technical Development and Support Units and Facilities, and 2 Research Platforms, covering different areas of nanoscience and nanotechnology.

**Job Title:** Postdoctoral Researcher in Si NOEMS and optical fibres-(MUSICIAN-PD1)

**Research area or group:** Phononic and Photonic Nanostructures Group

**Description of Group/Project:**

The Phononic and Photonic Nanostructure Group (<https://www.icn2-p2n.eu/>) carries out research in the general area of nanophononics, which includes nano-scale thermal transport, phononic crystals, thermoelectricity, acousto-metamaterials, topological bosonics and NEOMs. The group is 14-strong and additionally involves several undergraduate project and visiting students.

The group participates in several European projects and has acquired national and regional research funding for phononics. The position is part of the European CHIST-ERA project " Multifunctional silicon integrated NOEMS for broadband access Networks" (MUSICIAN).

The contract is part of the European Union CHIST-ERA project " Multifunctional silicon integrated NOEMS for broadband access Networks" (MUSICIAN). This position is part of the project PCI2022-135001-2 funded by MCIN/AEI/10.13039/501100011033 and by European Union "NextGenerationEU"/PRTR"



**Main Tasks and responsibilities:**

The candidate will be involved in the European CHIST-ERA project MUSICIAN which aims at novel NEOM chips for application on broadband access networks in 5G. The job-holder will characterise the starting material and the nanoelectromechanical device-like structures prior to integration in systems for large-scale RF-optical networks. The appointee will employ state-of-the-art experimental resources of our group, which include Brillouin Light Scattering, Asynchronous Optical Sampling pump/probe setup, laser Doppler vibrometry and near-field fibre probing optomechanics setup. The main challenge is to identify channels of power loss in the optomechanical device. The job-holder will carry out preliminary COMSOL simulations of the spectral properties of NEOMS with the aim to understand power dissipation in nano-electro-optomechanical elements, specially thermal fluctuations. Report writing, participation in project meetings, documentation and dissemination of results also belong to the tasks of this appointment. The P2N group has a dynamic research life and

the job holder is expected to join in the group activities. as members of the group they will share responsibility for equipment maintenance and upgrades as well as playing a full role in upholding IT Services and safety regulations.

### **Requirements:**

We look for a highly motivated researcher who will have a PhD in solid state physics or in physical electronics and postgraduate level research experience in:

- experimental semiconductor nanophononics and or nanophotonics,
- Optical measurements and optical fibre coupling
- RF/microwave domain characterization techniques
- Knowledge of statistical physics, especially thermal fluctuations
- Experience with COMSOL

The essential skills for the position include:

- very good verbal and written communication skills
- proficiency in English (spoken, written and reading comprehension)
- ability to marshal arguments and to develop research concepts and or methods
- excellent organisational skills
- ability to work in an international team and on one's own.

### **Summary of conditions:**

- Full time work (37,5h/week)
- Contract Length: Temporary (2years with a possible 1 year extension)
- Location: Bellaterra (Barcelona)
- Salary will depend on qualifications and demonstrated experience.
- Relocation expenses support.
- Life Insurance.

**Estimated Incorporation date:** January/February 2023

### **How to apply:**

All applications must be made via the ICN2 website <https://jobs.icn2.cat/job-openings/469/postdoctoral-researcher-in-si-noems-and-optical-fibres-musician-phononic-and-photonic-nanostructures-group> and include the following:

1. A cover letter.
2. A full CV including contact details.
3. Three letters of reference or referee contact details.
4. Title and abstract of the applicant PhD thesis

### **Closing date:**

29.12.2022

### **Interviews:**

Planned to take place online between 2 and 10<sup>th</sup> January 2023.

**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.