

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 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: Senior Researcher**

**Research area or group:** Nanomedicine Group

**Description of Group/Project:**

The main lines of research in the Nanomedicine Lab include:

- Nanomaterials as vector systems for therapeutic and diagnostic applications
- Clinical translation of bioelectronic and microfluidic devices
- Development of graphene-based materials and 2D materials in medicine
- Next generation Liposome and lipid nanoparticle (LNP) based therapeutics and diagnostics

The Nanomedicine Lab has expertise in research and development of novel types and medical applications of nanomaterials, with experience in the medical translation of liposomes and lipid nanoparticles, as well as carbon nanomaterials, such as carbon nanotubes and graphene-based materials. A wide range of nanomaterials developed as platforms for the biological transport of therapeutic and diagnostic components in cell culture and preclinical disease models. The primary therapeutic targets for clinical translation of these technologies have been cancer (solid and metastatic) and brain pathologies (Parkinson's, stroke, Alzheimer's, glioblastoma). The Nanomedicine Lab is affiliated (IVU) to the UAB Medical School and the Institute of Neurosciences, as well as having strong links with the the Faculty of Biology, Medicine and Health, The University of Manchester, in joint efforts to develop medicines at the nanoscale.

**Main Tasks and responsibilities:**

The Senior Researcher will contribute to the synthesis, characterisation and further development of the nanomaterials research programme of the Nanomedicine Lab and its collaborating laboratories and institutions around the world.

The work will focus on the development of surface-modified graphene-based materials and other 2D materials for applications for medical applications on the interface with living cells and tissues. Will be expected to contribute to the synthesis, functionalization, characterisation and use of various graphene-based materials (graphene oxide, exfoliated graphene, other 2D material) and liposome systems in collaboration with other researchers at ICN2, as well as other external laboratories.

The Senior Researcher will have a central role in the Nanomedicine Lab both scientifically and managerially. Previous experience on chemistry, functionalization and characterisation of carbon nanomaterials (preferably graphene) and liposomes is essential. Also, experience with industrial processes and upscaling of nanomaterials towards clinical translation will be critical. The Senior Researcher should be able to interact effectively with researchers from a range of other disciplines, manage the programme in close collaboration with the PI (Kostarelos), represent the Nanomedicine Lab in evaluation and funding committees and apply for funding of the research programme.

## Requirements:

- **Education:** A PhD in chemistry, chemical engineering, materials science, biochemistry, or equivalent
- **Knowledge and personal competences:**

### Essential

- Demonstrable previous experience as a Senior Researcher in nanomaterials used for biomedical purposes.
- Demonstrate experience in the manufacturing and characterisation of pharmaceutical or medical grade nanomaterials.
- Demonstrable previous experience in the chemical synthesis, characterisation and functionalization of carbon nanomaterials and liposomes for nanomedicine applications
- Extensive expert use of an array of physicochemical and nanomaterials characterisation tools (Raman, AFM, TGA, laser light scattering, spectrophotometry and spectrofluorimetry, optical and electron microscopy, ICP-MS, XPS)
- Experience in active participation and representation (scientifically and managerially) in European Commission funded projects
- Demonstrate an active and successful publication record
- Previous hands-on research experience in handling and studying the biological investigation of carbon nanomaterials and liposomes with biological matter (proteins, cells, tissues)
- Published research and methodological skills relevant to the research theme (surface modification or chemical functionalisation of carbon nanomaterials and liposomes)
- Industry experience in drug delivery formulations for clinical studies, including all medical-grade GMP needed by regulatory authorities
- Excellent organisational and time-management skills, including the ability to deliver timely and high-quality outputs.
- Ability to demonstrate scientific writing and communication skills
- Ability to be creative in research ideas to develop/progress the research area
- Ability to plan, organise, and undertake work without detailed supervision
- Ability to develop effective working relationships with all levels of staff, students and external contacts
- Ability to work under pressure and maintain a high degree of accuracy
- Excellent verbal and written communication skills
- Ability to work effectively in a multi-disciplinary team
- Ability to work independently, use own initiative, where appropriate, and be proactive in approach to work
- Ability and enthusiasm to learn new skills outside own discipline

### Desirable

- Experience in experimental research using of electron microscopy techniques (TEM, cryo-EM, tomography)
- Experience and direct involvement in projects funded by the European Commission (under H2020, FP7, or earlier Framework programmes)
- Previous experience of applying for research funding
- Experience of supervising student research projects
- Evidence of a developing track record in publishing and dissemination of high quality publications in peer-reviewed journals

### **Summary of conditions:**

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

Estimated Incorporation date: January 2024

### **How to apply:**

All applications must be made via the ICN2 website and include the following:

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

Deadline for applications: 2 January 2024

### **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.