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 behavior of matter at the nanoscale. ICN2 has been awarded with the Severo Ochoa Center of Excellence distinction for two consecutive periods (2014-2018 and 2018-2022). ICN2 comprises 18 Research Groups, 7 Technical Development and Support Units and Facilities, and 2 Research Platforms, covering different areas of nanoscience and nanotechnology.

Job Title: PostDoc in Implantable Hydrogels

Research area or group: Nanomedicine Group

Description of Group/Project:
The main lines of research include:
- Clinical translation of bioelectronic and microfluidic devices
- Nanomaterials as vector systems for therapeutic and diagnostic applications
- Development of graphene and 2D materials in medicine
- Discovery of novel biomarkers and therapeutic targets in oncology and neurology

The group brings to the Institute a strong expertise in research and development of novel types and applications of established nanoparticle systems, particularly liposomes. Moreover, rich experience in the medical translation of carbon nanomaterials, at varying shapes and dimensions, such as fullerenes, carbon nanotubes, nanohorns and graphene. 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, Alzheimers, glioblastoma).
Nanomedicine@ICN2 has strong links with the Nanomedicine Lab at the Faculty of Biology, Medicine and Health at the University of Manchester, with Prof. Kostas Kostarelos leading both teams in a joint effort to develop medicines at the nanoscale. Graphene and 2D materials will have a central role in a number of research lines carried out in the context of the Graphene Flagship Biomedical Technologies Work Package.

Main Tasks and responsibilities:

The Research Associate in Implantable Hydrogels will contribute to the scientific programme and management of the Graphene Flagship project.
Expert use of hydrogel technology and chemical synthesis techniques, along with a wide range of physicochemical and materials characterisation techniques (Raman, AFM, SEM, TGA, laser light scattering, spectrophotometry, electron microscopy, ICP-MS, XPS) will be essential. The work will involve hydrogel preparation and incorporation on different types of graphene and related 2D materials within the hydrogel matrices. The Research Associate should be able to perform such experimental work alone or in collaboration with partner laboratories.

Principal responsibilities:
- Synthesis, functionalization, and characterisation of various implantable hydrogel matrices
- Use of chemical synthesis tools and protocols to fabricate hydrogels
  o Hydrogels designed for in vivo central nervous system implantation
- Use a range of physicochemical and materials characterisation techniques (Raman, AFM, SEM, TGA, laser light scattering, spectrophotometry, electron microscopy, ICP-MS, XPS)

- Execution of experiments using different core facilities at the Campus UAB and collaborating institutions
- Training and supervision of students and researchers in physicochemical and materials characterisation tools and protocols established and core facilities used
- Contribution to the scientific management of the collaborative project (authoring periodic reports, presentations in biannual meetings) that will require overseas travel
- Participate in shared responsibilities that contribute to the management and running of the laboratory
  o Regular interaction with the PI and other members of the Nanomedicine Group to contribute proactively to the development, progression and execution of the project

Education, Experience, Knowledge and Competences required:

Education

- PhD in chemistry, chemical engineering, materials science or equivalent, specialized in hydrogel technology

Experience:

- Demonstrable previous experience in the synthesis, assembly and characterisation of implantable hydrogel matrices, preferably for biomedical purposes
- Extensive expert use of an array of physicochemical and materials characterisation tools (Raman, AFM, SEM, TGA, laser light scattering, spectrophotometry, electron microscopy, ICP-MS, XPS))

Competences requires:

- 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 the chemical synthesis and modification of carbon nanomaterials and graphene
  o 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: 1 year, renewable up to 2 years
- Salary will depend on qualifications and demonstrated experience.
- Support to the relocation issues.
- Life Insurance.

Estimated Incorporation date: as soon as possible

How to apply:
All applications must be made via the ICN2 website https://jobs.icn2.cat/job-openings/260/postdoc-in-implantable-hydrogels-nanomedicine-group and include the following:

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

Equal opportunities:
ICN2 is an equal opportunity employer committed to diversity and inclusion of people with disabilities.