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:** Research Assistant

**Research area or group:** Magnetic Nanostructures Group

**Description of Group/Project:**

The ICN2 Magnetic Nanostructures Group aims to understand and improve the functional properties of diverse types of magnetic and magnetophotonic nanostructures (nanoparticles and thin films). The group combines lithography and chemical synthesis with structural, morphological, optical, colloidal and magnetic characterisation to investigate diverse basic aspects of exchange-coupled magnetic and magnetophotonic nanostructures. The final goal is the application of these nanostructures for advanced and externally controlled nanotherapies, contrast agents, environmental remediation and sensors. The group also pushes at the limits of microscopy, synchrotron and neutron techniques to develop novel approaches to studying nanoscale objects.

**DESCRIPTION OF THE PROJECT:**

This project aims to demonstrate the magneto-plasmonic control of photothermal and photodynamic therapies in vitro, down to the cellular level. The proposed control nanosystem will enable simultaneous actuation (enhancing the drug release on demand) and monitoring (through the changes in the rheological properties) in cell cultures or down to the single-cell level.

**Main Tasks and responsibilities:**

The researcher will be involved in all the stages of the project, from the preparation of the drug-loaded polymeric nanocapsules with the magnetic functionality to their final applicability at in vitro level. The functions of the job include:

1) Fabrication of biodegradable polymeric-based magnetoplasmonic nanocapsules (nanodomes) loaded with anticancer drugs.
2) Development of a scanning opto-magnetic microscope that integrates optical cell imaging and magnetoplasmonic actuation of the particles. This implies mounting the setup and designing the software.
3) Study of the drug release under different photo-thermal actuation protocols.
4) Monitorize the evolution of the rheological properties of the nanocapsules to determine the cell death.

**Education, Experience, Knowledge and Competences required:**

- Education: MsC/BsC degree in Nanoscience /Nanotechnology
Experience:
The candidate should have previous experience in the following topics:
- Preparation of biocompatible capsules for drug delivery.
- Use of polydopamine for surface coating.
- Experience working with cell lines
- Nanofabrication techniques (lithography and CVD).

Experience in the following topics will be highly valued:
- Computer programming
- Ultra-high-vacuum systems
- Synchrotron experiments

Excellent level of English (Fluent in writing and speaking) is required.

Competences: We are also looking for a highly motivated person, enthusiastic, responsible and with team-working capacity

Summary of conditions:

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

Estimated Incorporation date: 15th September 2020

How to apply:
All applications must be made via the ICN2 website https://jobs.icn2.cat/job-openings/249/research-assistant-magnetic-nanostructures-group 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: 25th August

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