

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: Novel Energy-Oriented Materials Group

Description of Group/Project:

The candidate will work in a new research line of triboelectricity, producing electricity from friction. The project aim goes further and pursues the energy integration with supercap and hybrid energy storage technologies, the core expertise of the research group. Unifying these two technologies will be a great advance. The PhD candidate will learn about two different disciplines and how to integrate them to build up a product prototype that ideally can be put into the market. Going further to the final application, triboelectricity can be integrated in many devices to contribute in the connectivity of the internet of things (IoT) to improve the human being security, health... The triboelectricity technology is hardly known in the European research community; therefore the group wants to contribute in the field. This project phase both fundamental research to synthesize new materials and applied research to make a functional integrated device.

Our research group is composed by chemist, industrial and electrical engineers that are focus on new materials for energy solutions. We have different projects ongoing; from the fundamental point of view we develop new hybrid nanocarbon based materials for supercapacitor applications, we produce activated carbon from waste and load it with electroactive molecules (organic, polixometalates, metal nanoparticules...) to produce new hybrids. We are trying to understand the relationship between composition and performance of our electrodes. From the industrial/applied part we put our efforts in upscaling our own graphene production. We produce batteries/supercapacitors with this material and integrate it on IoT devices. We have our own spin off that focus on put into the market some of our findings.

Main Tasks and responsibilities:

The person included in this project will develop new materials for triboelectric nanogeneration (TENG) devices from the very beginning. She/he will need to prepare the measuring system and electrochemical characterization protocol. Materials characterization for supercapacitor and TENG devices. Finally the researcher should be able to integrate both technologies to develop a "harvestore" device.

Requeriments:

- **Education**

Degree in physicist, industrial, energy or electronic engineering.

- **Knowledge and professional experience**

Deep knowledge in materials science and able to construct devices and prototypes while understanding the principles that rules the triboelectricity and electrochemistry.

- **Competences:**

Proactive and independent and to be capable to work in a multidisciplinary young group.

The ideal candidate should be able to integrate in the group and we will enforce her/his independent and critical thinking by discussing with all our colleges, all ideas will be welcome.

Summary of conditions:

- Full time work (37,5h/week)
- Contract Length: Temporary (1 year)
- Salary will depend on qualifications and demonstrated experience.
- Support to the relocation issues.
- Life Insurance.

Estimated Incorporation date: January 2021

How to apply:

All applications must be made via the ICN2 website <https://jobs.icn2.cat/job-openings/274/research-assistant-novel-energy-oriented-materials-group> 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.