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: PhD Student

Research area or group: Physics and Engineering of Nanodevices

Description of Group/Project:

The student will be hosted by the group of Prof. Sergio O. Valenzuela (https://nanodevices.icn2.cat/), whose main focus is on electronic properties of nanomaterials and nanodevices. The group counts with extensive state-of-the-art facilities for material growth, nanodevice design and fabrication, as well as dc and radiofrequency magnetotransport measurements (from 20mK to room temperature). The group activities on 2DMs are funded in part by the H2020 EU Graphene Flagship, the Spanish Research Agency and the Generalitat of Catalonia

Main Tasks and responsibilities:

Project “Spin transport phenomena and thermoelectric effects in two-dimensional van der Waals heterostructures”

Driven by recent technical advances in the field of 2DMs, heterostructures based on graphene and other layered materials are leading to new paradigms for data storage and computing. Because 2DMs consist of atomically thin planes, their electrical, optical and spin properties can be enriched and tailored by proximity effects. Furthermore, thermoelectric generation within the same circuitry is envisioned to play a key role in future electronics. The focus of the project is on engineering the spin and thermoelectric response of 2DMs by fabricating and investigating the electronic properties of hybrid 2DM heterostructures, comprising metals, semimetals, semiconductors and ferromagnets.

Recent work published in Valenzuela’s group related to this thesis can be found in:


Requeriments:

- **Education**
  
  A Master (or Licenciatura) degree in Physics, Material Science, Nanotechnology or related discipline is required at the time of joining ICN2

- **Knowledge, professional experience and competences**
  
  Applicants must show motivation, excellent disposition towards challenging research problems and a good level of the English language.
  
  A strong background on solid-state physics and experience in experimental methods (e.g. electric transport) will be valued

**Summary of conditions:**

- Full time work (37.5h/week)
- Contract Length: Temporary (4 years)
- Support to the relocation issues.
- Life Insurance.

Estimated Incorporation date: 2021

The contract will be funded by the Spanish Research Agency through a “Formación de Personal Investigador” (FPI) fellowship and is expected to start during early 2021, with a flexible starting date.

**How to apply:**
All applications must be made via the ICN2 website [https://jobs.icn2.cat/job-openings/241/phd-student-physics-and-engineering-of-nanodevices](https://jobs.icn2.cat/job-openings/241/phd-student-physics-and-engineering-of-nanodevices) and include the following:

1. A cover letter.
2. A full CV including contact details.
3. 2 Reference letters or referee contacts.
4. Academic records (if the transcripts are not in English, Catalan or Spanish, applicants should also attach a translation in one of the mentioned languages).

Deadline: 15th September 2020. Applications will be evaluated as they are received

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

**Questions?**
Candidates interested in the position can send an e-mail to Prof. Sergio O. Valenzuela (SOV@icrea.cat) and Dr. Juan F. Sierra (juan.sierra@icn2.cat)