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 19 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: Nanostructured Materials for Photovoltaic Energy Group

Description of Group/Project:

Photovoltaic devices can directly convert sunlight into electricity, being an unlimited source of renewable energy. A way of maximizing the efficiency per unit area is by assembling in a tandem structure two or more semiconductors to absorb a broad range of the solar spectrum. This project aims to develop new materials with slightly wide bandgap with earth-abundant and non-toxic elements and combine them with narrow bandgap organic absorbers in tandem architectures. The new materials to be developed are based on metal halides type Rudorffites and double perovskites, which offer broad combinatorial possibilities to tune its properties. The candidate will work on the material development, the device assembly as well as investigating the nature of the physical bottlenecks limiting the tandem device performances. The project is coordinated by Prof. Monica Lira-Cantú (Group Leader) and Dr. Sonia R. Raga (Senior researcher) of the Nanostructured Materials for Photovoltaic Energy Group.

Main Tasks and responsibilities:

- Synthesis of metal halide materials and its deposition of layered thin films via different methods (spin-coating, spray pyrolysis, vacuum evaporation, PLD) to fabricate solar cells.
- Characterisation of the individual materials used in the device by microscopy and spectroscopy techniques, as well as the complete solar cell devices by means of electrical and optical techniques.
- Process and analysis of the characterisation data, keeping the research data organised.
- Elaboration of periodic reports to keep track of the project progress.
- Preparation of scientific manuscripts and presentations in workshops or conferences to showcase your research results to the scientific community.

This PhD student will be in charge of the experimental part of TANPOPO project (PID2021-122349OA-I00) granted in the Proyectos de Generación de Conocimiento 2021 call.

Requirements:

- **Education:**
  In possession of, or about to finish, a Master degree in physics, chemistry, materials science, nanotechnology, electronics or closely related discipline.

- **Knowledge and Professional Experience:**
  Demonstrated labwork experience and experimental skills, self-discipline to achieve reproducible results.
  Ability to work safely in the lab environment.
  Previous experience on photovoltaic material synthesis, solar cell fabrication via spin-coating methods, organic electronics or vacuum deposition techniques (PLD, e-beam, thermal evaporation) would be an advantage.
  Knowledge of Python or other programming language will be positively evaluated.
  - Language: English (Advanced, written and spoken), knowledge of Spanish or Catalan would be beneficial but not necessary.

- **Skills required:**
  We encourage a high degree of responsibility and independence, but also stimulate interaction and discussion with colleagues.
  High level of motivation and availability to travel abroad to pursue international collaborations.

Summary of conditions:

- Full time work (37,5h/week)
- Contract Length: Temporary (4 years)
- Location: Bellaterra (Barcelona)
- Salary will depend on qualifications and demonstrated experience.
- Support to the relocation issues.
- Life Insurance.

Estimated Incorporation date: November 2022

"The contract is funded by the project TANPOPO (PID2021-122349OA-I00) granted in the Proyectos de Generación de Conocimiento 2021 call of the Spanish Ministry of Science. The duration is 4 years, starting from November 2022, full time. The PhD studies will be taken at the Autonomus University of Barcelona, UAB (www.uab.es), and the experimental research work will be carried out at ICN2 (ICN2 is within the UAB campus), offering a dynamic ecosystem with enthusiastic colleagues. The candidate will be specifically trained on materials synthesis, characterization, and solar cell fabrication and analysis. In addition to acquiring broad scientific multidisciplinary knowledge, the candidate will access the soft skill courses offered at ICN2. He/she will gain communication and technology transfer skills and will be trained from the beginning to get familiar and follow the Good Laboratory Practice and Responsible Research and Innovation principles."

How to apply:

All applications must be made via the ICN2 website https://jobs.icn2.cat/job-openings/421/phd-student-nanostructured-materials-for-photovoltaic-energy-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.
Deadline for applications: 15/09/2022

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.