



CALL FOR APPLICATIONS - July 2022

Post-doctoral Position

Donostia International Physics Center (DIPC) is currently accepting applications for Post-doctoral positions. This is a unique opportunity for junior researchers with a recent PhD degree in Physics or related fields to join one of DIPC's high-profile research teams. A description of each of the available openings, contact information and deadlines can be found on the following pages.

Openings with a duration of more than one year are for a 1-year contract, renewable based on performance and availability of funding.

Although candidates are welcome to contact the project supervisors to know further details about the proposed research activity, please be aware that the application will be evaluated only if it is submitted directly to the email address listed as "application email".

Applications received by the deadline will be evaluated by a Committee designed by the DIPC board on the basis of the following criteria:

- CV of the candidate (40%)
- Adequacy of the candidate's scientific background to the project (40%)
- Reference letters (10%)
- Other: Diversity in gender, race, nationality, etc. (10%)

Evaluation results will be communicated to the candidates soon after. Positions will only be filled if qualified candidates are found.

The DIPC may revoke its decision if the candidate fails to join by the appointed time, in which case the position will be awarded to the candidate with the next highest score, provided it is above 50 (out of 100).

However, the selected candidate may keep the position if, in the opinion of the Selection Committee, the candidate duly justifies the reasons why he or she cannot join before the specified deadline, and as long as the project allows it.

Ref. 2022/49

Hybrid graphene nanoarchitectures for electrochemical sensing

Supervisor(s):

Aran Garcia-Lekue (wmbgalea@ehu.eus)

Duration*: 2 years

Application Deadline: 21/07/2022

Application Email: jobs.research@dipc.org

Graphene nanoarchitectures (GN) with custom designed structural, chemical and electronic properties can now be realised using on-surface synthesis (OSS). The atomic precision and versatility offered by this bottom-up approach opens the door to creating GNs with optimal characteristics for a wide range of applications.

In particular, this project aims to tailor GNs capable of meeting the current demand of new sensing technologies. For this purpose, we plan to carry out extensive computational design/screening and data analysis all the way from monomer building blocks (isolated molecules) to 1D/2D carbon-based materials and device-level systems. The class of materials of choice are graphene nanoribbons (GNRs, one-dimensional stripes of graphene) and related one-dimensional (1D) hybrid carbon based nanomaterials (as functionalized triangulene chains or polymeric structures), as well as their 2D counterparts, namely nanoporous graphene (NPG).

More specifically, our theoretical study will focus on the interaction between analytes and graphene nanoarchitectures, as well as on the analytes effect on the electronic and transport properties of the sensing material. This will be done primarily using Density Functional Theory (DFT). The most promising sensing materials will be further explored using a multiscale method that combines DFT with tight-binding methods. This simulation workflow will allow bridging the gap between the atomic level to the real devices.

The research work at DIPC will focus on the design, planning and prediction of properties, analysis of outcomes, and feedforward to refinement of the experimental work carried out by our collaborators at ICN2 (Barcelona), CIQUS (Santiago de Compostela), and CFM (San Sebastián).

Interested candidates should submit an updated CV and a brief statement of interest to the application email listed above. Reference letters are welcome but not indispensable. The reference of the specific opening to which the candidate is applying should also be stated in the subject line.