

DIPC POST-DOCTORAL POSITIONS

The Donostia International Physics Center DIPC is currently accepting applications for post-doctoral appointments. This is a unique opportunity for highly motivated junior researchers with a recent PhD degree in physics or related fields to join some of the DIPC high-profile research teams.

Interested candidates please send an updated CV, a brief statement of interest, and contact information to postdoc@dipc.org. Reference letters are welcome but not indispensable. The particular position(s) to which the candidate is applying should be stated as well. Although candidates are encouraged 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 mentioned above (postdoc@dipc.org).

Next review of applications is scheduled for October 5th 2018. Applications must be received before this date and will be evaluated by a Committee designed by the DIPC board on the basis of the following criteria (with point weights indicated in parentheses):

- CV of the candidate (40%)
- Adequacy of the candidate's scientific background to the project (40%)
- Reference letters (10%)
- Others: 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 could revoke its decision in case the candidate breaches the condition of joining before the deadline indicated in this call, proceeding in that case to grant the position to the next candidate based on the classification order, and provided that he has obtained a score higher than 50 (out of 100) in the evaluation of his candidature.

However, the selected candidate may keep the position if, in the opinion of the Evaluation Committee, he duly justifies the reasons why he can't join before the specified deadline, and as long as the project allows it.

The duration of the appointment will be 1 year. The appointment could be renewed for a second year, subject to performance and to the availability of funding.

The salary will be 32000 euros per year before taxes.

JOB OPENINGS

- Atomistic simulations of clays and cement-based materials: Transport properties

Supervisor: Jorge Sánchez-Dolado (jorge_dolado002@ehu.eus).

Reference: 2018/33.

Clays and cement-based materials are commonly used to immobilize and isolate wastes. These materials act as a diffusion barrier, avoiding the leaching mechanisms and preventing the release of the contaminants into the biosphere. Understanding the different transport processes that take place within those materials is essential to enhance their durability and reliability. The atomistic modeling is a very useful tool to complement the experiments, providing access to detailed information about different properties of the modeled systems beyond the experimental limits under controlled conditions. We propose employing molecular dynamics simulations to study the basics of ionic transport at atomic scale within clays and cement-based materials. We will analyze the influence of different variables such as the ionic concentration, the type of counterions, the composition of the host matrix or the effect of doping those matrices with aliovalent ions. The output from the simulations will be used to shed light on the retention and diffusion mechanisms of different ions confined in nanostructured matrices. The results of this project will contribute to a better understanding of the ionic transport processes within clay and cement-based materials, guiding the development of new materials with improved retention properties.

- Electronic coupling in semiconductor-metal hybrid systems

Supervisor: Yury Rakovich (yury.rakovich@ehu.eus)

Reference: 2018/35.

Candidate will investigate the light-matter interaction of hybrid structures built from transition metal dichalcogenides and metal nanoparticles. The work will include wet chemical syntheses and surface modification of nanoparticles and self-assembly of the building blocks into 2- and 3-dimensional heterostructures. A strong background in optical spectroscopy and electron microscopy is required for the extensive characterization of new hybrid materials. The multidisciplinary project will include the cooperation with Dr. R. Calvo (CICNanogune) and Dr. M. Grzelczak (DIPC). Also the experience in FLIM imaging and single dot spectroscopy would be considered as an advantage.

Ideal candidates should fulfill the following requirements:

- PhD in Chemistry or related fields
- Strong background in colloidal chemistry and optical spectroscopy
- Excellent English skills and capacity for teamwork

- Theoretical description of photoemission processes in the attosecond scale

Supervisor: Ricardo Díez Muiño (rdm@ehu.eus)

Reference: 2018/37.

Attophysics is a term that commonly refers to the study of electronic processes at times below the femtosecond scale. Different systems can be probed using very short laser pulses. One of the most interesting features of attophysics is the analysis of electron dynamics in atomic, molecular, and solid-state systems in the time-domain. In the current project, we plan to generate theoretical and computational tools inspired in quantum chemistry methods, able to accurately describe attosecond photoemission processes from surfaces and low-dimensional materials. A second step will be to apply the generated methods to systems of interest in which experimental information is available. The project will be developed in close collaboration with the group of Prof. Fernando Martín (Universidad Autónoma de Madrid, Spain). Candidates with a demonstrated background in the theory of such processes and/or electronic structure methods will be preferred.