

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 June 14th 2013. 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 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

- ***Multiple spin state reactivity in Fe-containing complexes and enzymes***

*Post-doctoral position, contact person: A. Arrieta (a.arrieta@ehu.es)
Reference: 2013/6.*

Iron containing systems are of paramount importance in materials science and in biochemistry. In particular, enzymes possessing Fe=O moieties play an essential role in many different metabolic routes and epigenetic processes. One fascinating aspect of these species relies on spin-orbit coupling phenomena that in turn generate different reactive manifolds involving multiple spin states. Moreover, reactive intermediates can evolve through Minimum Energy Crossing Points (MECPs) thus requiring a careful characterization of the respective potential energy hypersurfaces. The project associated with this post-doctoral position intends to gain a better understanding of multiple spin phenomena in histone demethylases associated with different types of cancer. Related structures such as iron-porphyrin complexes will also be investigated.

The candidate should have a good background in organometallic chemistry and Fe-containing enzymes, as well as experience in DFT calculations involving open-shell electronic configurations and effective core potentials.

- **Remote structural effects in unnatural amino acids**

Post-doctoral position, contact person: A. de Cózar (abel.decozar@ehu.es)

Reference: 2013/7.

The structure-activity relationship of minimalistic analogs of enzymes constitutes a very active field in molecular sciences. In particular, it is known that L-proline catalyzes the formation of carbon-carbon bonds thus producing adducts not available from other type I aldolases. Recently, we have found that densely functionalized unnatural L-proline derivatives catalyze these processes, but yielding adducts possessing absolute configurations opposite to those found with naturally occurring L-proline. Therefore, it is possible to generate stereodivergent outcomes by means of unnatural biomimetic processes. The reason for this unprecedented behavior is not well understood. Within this context, the aim of this post-doctoral position is to contribute to gain a better understanding of these new phenomena using both computational tools and kinetic measurements.

The candidate should have a good background in catalysis and cycloaddition processes, as well as experience in kinetic experiments involving ^1H and ^{19}F -NMR. Experience in measuring isotope effects using NMR and DFT methods will be also appreciated.

- ***Fabrication of curved single crystals***

Post-doctoral position, contact person: E. Ortega(enrique.ortega@ehu.es)

Reference: 2013/8.

Most of the studies in surface science have been performed on single crystals. These works were made using atomically flat surfaces. Lately, the development of the spectroscopic techniques toward micron and nano scale probe sizes has prompted scanning probe microscopies. This technical advance, in many cases, has left the flat geometry behind considering that a millimetre-size surface is excessively large. Within the group Nanophysics Lab, an alternative geometry has been proposed: curved surfaces to encompass many different crystal directions. If the curvature of the sample is appropriate, a millimetre-sample could contain a big number of different vicinal directions, accessible with the new scanning spectroscopic capabilities. Therefore, surface-orientation-dependent experiments could be performed with a higher cadence and more reliability. This evolution seems a straightforward solution, although the alignment of the crystallographic orientation of such curved crystal is technological challenging.

The aim of this postdoctoral position is to develop an accurate fabrication process of curved crystals. The candidate should have a good background in surface science analysis techniques, high precision fabrication and surface finishing, and industrial prototype development.