Donostia International Physics Center

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 31st 2017. 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 does not join his/her duties within 6 months after the publication of the list of selected candidates.

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.

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JOB OPENINGS

- ***Coarse-grained molecular dynamics simulations of soft nanoparticles as stabilizers for Pickering emulsions***

  Contact person: Angel Moreno (angeljose.moreno@ehu.eus).
  Reference: 2017/17.

  The aim of this postdoc project is to investigate, by using molecular dynamics simulations at different levels of coarse-graining (from bead-spring models to ultrasoft single-particles), the structural and thermodynamic properties of polymer-based soft nanoparticles at liquid-liquid interfaces, as well as the potential use of these soft nano-objects for stabilizers of Pickering emulsions. The simulated soft nanoparticles will be, among others, single-chain nanoparticles, star polymers and dendrimers.

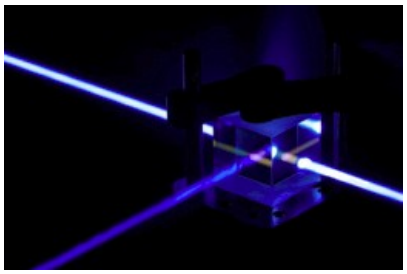
  We are looking for a motivated candidate with a high expertise in computer simulations of soft matter systems. The candidate must hold a PhD degree or be expected to get it before the end of year.

- ***Ultra-dense/low energy state glasses by aging nanostructured polymers***
  Contact person: Daniele Cangialosi (daniele.cangialosi@ehu.eus).
  Reference: 2017/18.

  This project takes inspiration from recent findings showing that glasses exhibiting large amount of free interface are able to access low energy states in remarkable short time scales. Hence, the thermodynamic state in these kinds of glasses – including polymer nanospheres, nanocomposites, thin films and foams – subjected to different thermal histories will be characterized. To do so, the post-doctoral fellow will employ conventional and fast scanning calorimetry, that is, techniques providing access to the enthalpy state of a given glass. Complementary techniques, such as broadband dielectric spectroscopy, will also be used. Exploring low energy states will allow producing ultra-dense glasses. This may result in a tremendous impact on the glass properties. Apart from this, the present project aims to clarify long-standing fascinating issues of glass science, such as the existence of the so-called “ideal” glass, that is, a disordered system with entropy equal to that of the corresponding ordered crystal.

  We look for candidates with a PhD in experimental materials science. Candidates are expected to have a strong background in glass dynamics by calorimetry and show a high degree of motivation and autonomy.

- ***Quantum control of nanostructures***
  Contact person: G. Molina-Terriza (gabriel.molina.terriza@gmail.com).
  Reference: 2017/20.



The group of Prof. Gabriel Molina-Terriza has recently relocated to the Material Physics Center (San Sebastian, Spain). We are looking for highly motivated, talented researchers looking for a post-doctoral position in the area of Quantum Nanophotonics. The successful candidate will work in a state-of-the-art laboratory environment to study the interaction of quantum states of light with subwavelength structures, such as plasmonic nanoantennae, quantum dots and nanodiamonds. The Quantum Nanophotonics group at MPC is collaborating with renowned international research groups to control the quantum properties of small material particles. We are also collaborating with industrial partners to make them suitable to become the next generation of biosensors or to perform very precise measurements of electric and magnetic fields.

The candidates should have a PhD in Physics or Engineering and extensive experimental experience in either of the following techniques: 1) Entangle photon sources based on Spontaneous Parametric Down-conversion or 2) Characterization of nanophotonics structures with coherent sources of light. Experience with the use of spatial light modulators, programmable logic devices such as FPGAs, and numerical methods to solve electromagnetic scattering will be favourably considered.

Selected publications from the group:

[1] Quantum control of photonic entanglement with a single sub-wavelength structure, arXiv:1611.00104
[2] Measurement and shaping of biphoton spectral wavefunctions, Phys. Rev. Lett. arXiv:1503.08629
[3] Observation of cooperatively enhanced atomic dipole forces from NV centers in optically trapped nanodiamonds, Nature Physics, arXiv:1511.04665
[4] Angular momentum-induced circular dichroism in non-chiral nanostructures Nature Communications
[5] Twisted Photons Nature Physics

- ***Spectral and transport properties of pseudo-spin one systems***

  Contact person: Dario Bercioux (dario.bercioux@dipc.org).
  Reference: 2017/22.

  We are looking for a postdoc to theoretically investigate the spectral and transport properties of pseudo-spin one systems. We aim to investigate this type of systems in several contexts: both at the level of the low-energy approximation as well as at the lattice level, e.g., looking at the properties of the Lieb and dice lattices. We will focus both on electronic systems and also on photonic ones showing a similar physics. Also, we will consider effects of spin-orbit interaction and orbital magnetic fields.

  Researchers with a strong background in Dirac physics, excellent communication skills and good command of English are ideal candidates. We are looking for a highly motivated candidate, ready to travel for meeting with our collaborators in London and Utrecht.

- ***All-polymer nano-composites: Effect of soft nano-objects on polymer structure and dynamics***

  Contact person: Arantxa Arbe (a.arbe@ehu.eus).
  Reference: 2017/23.

  This project aims at characterizing the structural and dynamical properties of all-polymer nano-composites consisting of linear polymers and soft nanoparticles obtained by intra-molecular cross-linking of monodisperse polymeric chains. The effects on chain conformation, composition and density fluctuations, intermediate and short range order shall be investigated by means of scattering techniques including small and wide angle diffraction using both, X-rays and neutrons. The dynamical properties shall be accessed by combining different techniques, including broadband dielectric spectroscopy and quasielastic neutron scattering.

  Highly motivated candidates with a good background in soft matter, in particular in polymer physics, molecular dynamics and experimental techniques are encouraged to apply for this position. The applicant should hold a Ph.D. in Physics, Chemistry or Materials Science. Experience with neutron and X-ray scattering techniques is a preferential prerequisite.