



POST-DOCTORAL POSITION AT CFM ON SUPERCONDUCTIVITY ON HYDROGEN COMPOUNDS

Centro de Física de Materiales (CFM), a joint center between the University of the Basque Country (UPV/EHU) and the Spanish Research Council (CSIC) located in San Sebastian (Basque Country, Spain), is currently accepting applications for one post-doctoral position to work on the research team led by Ion Errea at the CFM. This is a unique opportunity for highly motivated researchers to join a motivated group and a research institute with a scientifically rich atmosphere.

The position will be funded by the SuperH ERC Starting Grant project led by Ion Errea. The selected candidate will be hired by the Research Association MPC - Materials Physics Center. The duration of the appointment will be of 2 years, which can be extended up to a third year upon mutual agreement. The preferred starting date will be February 2019. The salary will be of 34,400 euros per year before taxes.

Applicants must have a PhD degree in Physics, Chemistry, Materials Science or similar before the starting date. Interested candidates must follow this link <http://cfm.ehu.es/cfm/index.php/job-application>, choose **26_10_2018_PD** job offer and upload an updated CV, a brief statement of interests, and the contact information of two references.

If any problem happens while applying, contact jobs.cfm@ehu.eus, but no applications will be accepted through this email.

Deadline for applications is 9 December 2018. Short-listed candidates may be interviewed shortly after. Applications will be evaluated by a Committee designed by the MPC 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 position to which he/she is applying (40%)
- Interview and reference letters (10%)
- Others: Diversity in gender, race, nationality, etc. (10%)

Evaluation results will be communicated to the candidates soon after. The position will only be filled provided that a qualified candidate is found.

The details of the research work are:

The proposed project is motivated by the recent discovery of superconductivity at 203 K at high pressure in a hydrogen and sulfur compound. This shows that hydrogen-based compounds provide a fantastic pool of materials to discover new high-temperature superconductors. Many new discoveries are expected in the coming years in this fascinating field.

In particular, the goal of the SuperH ERC Starting Grant project is to use first-principles theoretical calculations to, first, correctly characterize the physical and chemical properties of hydrogen-based superconductors, and, second, to predict new high-temperature superconductors among these compounds. New first-principles methods will be developed to accurately calculate the electron-phonon interaction and the phonon frequencies in these cases.

The main task of the post-doctoral researcher will be to develop a novel first-principles method to calculate the electron-phonon coupling, which will go beyond the state-of-the-art and will allow calculating the superconducting critical temperature with an unprecedented precision. The post-doctoral researcher will also help the PI to supervise the PhD students of the group and assist them in their calculations.

Experience with density functional theory (DFT) calculations as well as with the Fortran programming language are requirements for the applicants. Moreover, a strong and proven background on big code development and experience with ab initio calculations of the electron-phonon coupling will be highly valued.