



## 2 PhD POSITIONS 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 2 PhD positions to work on the research team led by Ion Errea at the CFM. This is a unique opportunity for highly motivated junior researchers to join a motivated group and a research institute with a scientifically rich atmosphere.

The positions will be funded by the SuperH ERC Starting Grant project led by Ion Errea. The selected candidates will be hired by the Research Association MPC - Materials Physics Center. The duration of the appointment will be 3 years. The preferred starting date will be February 2019. The salary will be of 25,000 euros per year before taxes.

Applicants must have a Master degree or equivalent in Physics, Chemistry, Materials Science or similar that enables the access to a PhD program. Interested candidates must follow this link <http://cfm.ehu.es/cfm/index.php/job-application>, choose **26\_10\_2018\_PhD** job offer and upload their updated CV, including an academic transcript of both Bachelor and Master degrees, a brief statement of interests.

If any problem happens while applying, contact [jobs.cfm@ehu.eus](mailto: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 (60%)
- Adequacy of the candidate's scientific background to the position to which he/she is applying (20%)
- Interview and 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 provided that qualified candidates are 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 tasks of the PhD students will be mainly to apply novel first-principles methods to understand

and predict the superconductivity of hydrogen based-compounds both at high and ambient pressure. Experience with density functional theory (DFT) calculations as well as with the Fortran programming language will be highly valued.