

Company Description

NanoGUNE is a research center devoted to conducting world-class nanoscience research for a competitive growth of the Basque Country. NanoGUNE is a member of the Basque Research and Technology Alliance (BRTA) and is recognized by the Spanish Research Agency as a Maria de Maeztu Unit of Excellence. The Nanodevices group, co-led by Prof. Luis E. Hueso and Prof. Félix Casanova, is currently composed of 20 members including senior and junior researchers. The group counts with extensive research facilities for fabrication and characterization of devices and several active research lines spanning from nanofabrication to 2D electronics and spin transport. More information can be found at <http://nanodevices.nanogune.eu>

Information

 **Deadline:** 2020-07-12
 **Category:** Business
 **Province:** Gipuzkoa

 **Country:** Basque Country
 **City:** Donostia-San Sebastián

Company

CIC nanoGUNE



Main functions, requisites & benefits

Main functions

This research is funded by Intel Corp., the world leading microprocessor company, through a collaborative project entitled "Tailoring large spin-to-charge conversion in van der Waals heterostructures". The research topic encompasses the spin transport and the interconversion between spin currents and charge currents in 2D materials and van der Waals heterostructures. Phenomena that exploit the spin-orbit coupling will be studied, such as the spin Hall effect and the Rashba-Edelstein effect. The project also foresees the integration of working systems into functional nanodevices. The final goal is to help implementing the recent Intel proposal of a magnetoelectric spin-orbit (MESO) logic [S. Manipatruni et al., Nature 565, 35 (2019)]. The research will require the exfoliation and stacking of 2D materials into van der Waals heterostructures, the nanofabrication of devices (thin film deposition, electron beam lithography, etching), and magnetotransport measurements (high magnetic fields and low temperatures). As an example related to this specific position here advertised, a selection of recent work on spintronics in 2D materials which our team has led can be found in the following articles: Nature Comms. 7, 13372 (2016); Nano Lett. 19, 1074 (2019); Nano Lett. 19, 8758 (2019); Nano Lett. 20, 4573 (2020).

Requisites

The candidate must have a Ph.D. in physics, materials science or chemistry. Proficiency in spoken and written English is also required. Although not compulsory, the following points will be considered: Experience in any of these experimental techniques: e-beam lithography, materials growth and characterization, etching, exfoliation of 2D materials, electrical transport measurements. Previous knowledge in spintronics. Strong track record in publications at the highest level. Self-motivated and a team player willing to coordinate the research in a particular topic.

Benefits

We offer an international and competitive environment, state-of-the-art equipment, and the possibility to perform research at the highest level. We promote teamwork in a diverse and inclusive environment and welcome all kinds of applicants regardless of age, disability, gender, nationality, race, religion, or sexual orientation. The position is expected to start immediately and for a total length of up to 3 years in the Nanodevices group.