

## 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 María de Maeztu Unit of Excellence.

## Information

 Deadline: 2025-07-31  
 Category: Academia  
 Province: Gipuzkoa

 Country: Spain  
 City: Donostia-San Sebastián

## Company

CIC nanoGUNE



## Main functions, requisites & benefits

### Main functions

We offer a PhD position in Molecular Quantum Physics, focused on the nanoscale investigation and coherent control of spin states in magnetic molecules using a combination of low-temperature scanning tunneling microscopy (STM) and microwave spectroscopy. The research project aims to explore the quantum properties of individual spins embedded in graphene-based molecular architectures assembled on engineered superconducting platforms. A central goal is to integrate Electron Spin Resonance with STM (ESR-STM) to probe spin coherence times, spin interactions, and perform basic quantum operations. This approach holds great promise for developing atomically-precise platforms for the development of quantum technologies. The PhD student will: develop and operate an ESR-STM setup under cryogenic and ultrahigh vacuum conditions; grow and characterize spin-active molecular systems on superconducting materials; investigate spin dynamics and electronic quantum transport at the atomic scale; contribute to the design of quantum experiments and analysis of many-body quantum phenomena.

### Requisites

Applicants are expected to have a Master's degree (or equivalent) in Physics, Materials Science, Nanotechnology, or a related field. A strong background in experimental condensed matter physics or nanoscience is essential. Programming skills (e.g., Python, MATLAB) and experience with scientific data analysis are required. Previous exposure to STM, low-temperature techniques, or spin-resolved spectroscopy will be highly valued. Excellent written and oral communication skills in English are expected.

### Benefits

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. We offer access to state-of-the-art laboratory facilities, join an international team, and a full-time contract (40 hours per week) with flexible working hours.