The Nanoscience Cooperative Research Center, CIC nanoGUNE, located in Donostia / San Sebastian, Basque Country (Spain), is currently looking for a

MASTER STUDENT
to work on

Tips for quantum nanoscience on surfaces

CIC nanoGUNE
MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE

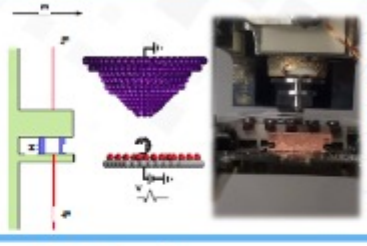
Tips for Quantum nanoScience

CIC09 nanoImaging group – CIC nanoGUNE

The electronic **spin** is the elementary **quantum property** that leads to macroscopic **magnetism.** At the **atomic scale,** the spin behave as a coherent quantum state.

➡ The CIC09 nanoImaging group detects and manipulates elementary spins using a *low temperature scanning tunneling microscope (STM).*

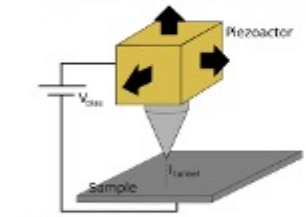
We fabricate with atomic precision novel materials and explore their unique properties, searching for unconventional behaviors that could be used in future technology.



Our "working horse": a scanning tunnelling microscope (STM) working in ultra-high vacuum, at the temp. of 1 - 5 Kelvin. The STM features Imaging, atomic manipulation and spectroscopy: SEES, MOVES and MEASURES

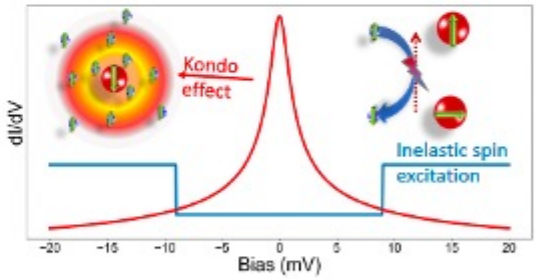
Detecting Magnetism at the Atomic Scale

❑ STM works by bringing the atomic apex of a tip close to a metal surface



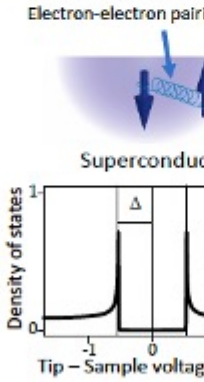
dI/dV ∝ Density of states

❑ Through Current (I) – Voltage curves we find fingerprints about atomic and molecular spins



Magnetic states are detected in spectroscopic measurements

❑ Superconductors make the more complex, ... and mor

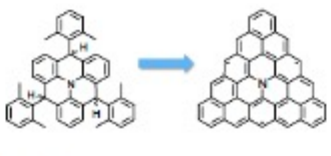


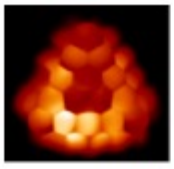
Magnetism in Graphene Nanostructures

S=1
Geometry makes triangulene magnetic

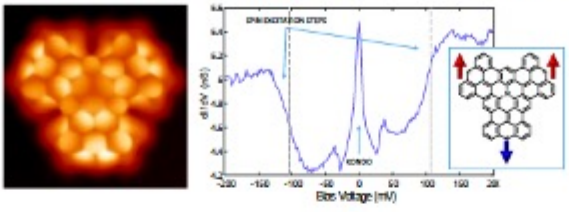
❑ Graphene flakes can be made paramagnetic by cutting them with specific shapes

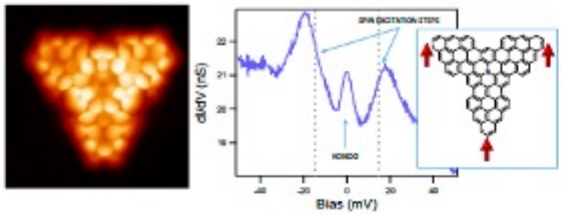
❑ We use On-Surface Synthesis to fabricate graphene flakes with atomic precision and study their magnetism



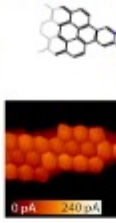


❑ Spin configuration in nanographenes is revealed by spectroscopy



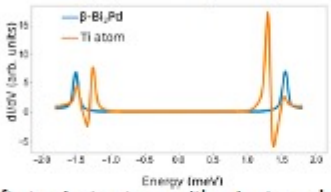


❑ Lifting a singl



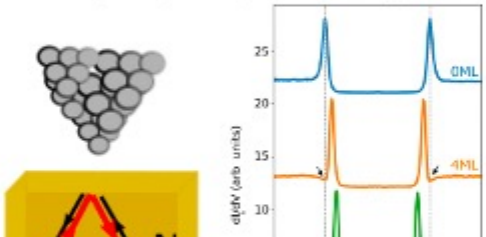
Magnetism and Superconductivity

❑ Experimental evidence of a magnetic atom on a superconductor



❑ We craft atomic structures with spins to explore how superconductivity is modified

❑ We fabricate superconducting surfaces of noble metals by taking advantage of the proximity effect



❑ To be superc

Candidates should **apply** by completing the form below and attaching the following documents:

a. A complete CV and academic record
b. A motivation letter is also recommended

The **deadline** for applications is **29/02/2024**.

NOTES:
(i) All applicants will receive an answer after the end of the selection process; but please note that due to the large number of submissions that are expected, we cannot provide individual feedback.
(ii) Additional information about nanoGUNE's commitment towards HR excellence in Research and Gender Equality are available on our website.
(iii) We encourage you to subscribe to our HR mailing list to receive information related to nanoGUNE's open positions and open calls for different training and talent attraction programs.