

## Predocctoral Research Position

***What? Graphene-based hybrid nanoarchitectures.***

***Where? Atomic Manipulation and Spectroscopy group at ICN2***

Applications are invited for a predoctoral research position in experimental physics to study *emerging physical and chemical phenomena in graphene-based hybrid nanoarchitectures*.

The last decade has witnessed impressive advances in the bottom-up synthesis of graphene-based nanostructures. The case of 1D graphene nanoribbons is an illustrative one, where all structural parameters (width, edge structure, doping, functionalization) can be controlled with atomic precision. Our group has recently brought this atomic control to 2D with the demonstration of the synthesis of a nanoporous graphene ([Moreno et al. Science 360, 199, 2018](#)). The nanomaterial, selected as “[molecule of the year](#)” by the American Chemical Society, and the demonstration of field-effect transistor made by this semiconducting graphene, was highlighted in the main scientific journals ([Science Perspectives](#), [Nature Electronics](#), [Chemical Engineering & News](#), [IEEE Spectrum](#), [Nano Today](#)). In this PhD project we intend to bring this approach to the next level, by fusing GNRs with other active components (quantum, chemical...) in lateral heterostructures that can also be conceived as hybrid nanoporous graphene. The PhD project will tackle the on-surface synthesis of the hybrid nanoarchitectures, the characterization of the atomic and electronic structure by low-temperature scanning tunnelling microscopy and spectroscopy (STM/STS), and the realization and characterization of gate-modulated devices.

The duration of the contract will be of four years. The researcher will carry out a PhD thesis in the Physics or Materials Science programs of the Autonomous University of Barcelona (UAB) (further information about the UAB campus can be found at <http://www.uab.es>). ICN2 is located within the UAB campus, 25 minutes by metro north from the city of Barcelona. Candidates must possess a strong background on quantum electronic phenomena, and preferably some experience in surface science, low dimensional materials, and ultra-high vacuum. Candidates must also possess good command of English. Interested applicants may request further information or send their CV and a brief statement of interests to the contact addresses given below.

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