



Departamento de  
Física de la  
Materia Condensada  
Universidad Zaragoza

SEMINARIOS 2020

**César Moreno**

*Catalan Institute of Nanoscience and Nanotechnology*

## **“From nanoarchitectonics to nanoelectronics and membrane applications”**

On-surface reactions, via programmed interactions of molecular building blocks, have recently emerged as a promising route to synthesise atomically precise materials from the ‘bottom-up’. This approach ensures exquisite atomic-scale control of the structural and chemical functionalization, allowing to design a vast number of carbon-based nanoarchitectures not available by traditional solution chemistry nor with the ‘top-down’ methodologies. In particular, graphene nanoribbons (GNRs) with different structures can be synthesized with atomic precision and fine-tuned electronic band gap.

In this talk, I will describe the recent advances in the on-surface synthesis field. Then, I will discuss our recent results to synthesize atomically precise nanoporous graphene, graphene nanoribbons and their chemical functionalization and how to organize them into superlattices.

At the end of the day, this talk will demonstrate the full path to synthesize a semiconducting graphene material with a bandgap similar to that of silicon, its atomic-scale characterization, and its implementation in an electronic device. Further potential applications include in highly selective molecular filtration and sensing systems.

*Dr. César Moreno received his Ph.D in Material Science at the Institute of Materials Science of Barcelona (ICMAB) in 2010 and he moved as postdoctoral researcher at the Nano-engineering research center at the Polytechnic University of Catalonia. In 2012, he moved to the National Institute of Materials Science (NIMS) in Tsukuba-Japan, where he was ultimately promoted as permanent researcher. In 2016 returned to Barcelona, where he presently works as a senior researcher at ICN2. His work focuses in the atomically precise manufacturing of low-dimensional organic materials with multiple applications. He was awarded the Molecule of the Year 2018 prize by the American Chemical Society, and also holds the distinguished Research Award by the Spanish National Research Council (CSIC).*

**13 de marzo (viernes)**

Con la colaboración de:



Facultad de Ciencias  
Universidad Zaragoza

LUGAR: SALA DE GRADOS DE LA  
FACULTAD DE CIENCIAS

HORA: 12:30