



Venerdì **27 Marzo 2026** alle ore **15:00** presso l'aula F

il **Dr. Jorge Lobo-Checa**

Instituto de Nanociencia y Materiales de Aragón (CSIC-Univ. Zaragoza), Spain (jorge.lobo@csic.es)

terrà il seminario dal titolo:

Two-dimensional organic nanoporous networks as playground for quantum phenomena at surfaces.

The United Nations declared 2025 as the International Year of Quantum Science and Technology. Despite being over a one-hundred-year-old field, surprising new quantum phenomena keep emerging when generating different combinations of the smallest building blocks (atoms and molecules). A playground to experimentally study such exotic effects at the nanoscale is two-dimensional (2D) organic nanoporous networks of an atom thickness directly grown in an extended way on metallic surfaces. The resulting nanoporous networks exhibit basic quantum phenomena that range from electron confinement and band engineering of the surface electrons within the pores [1-3], to 2D-ferromagnetism with just 5% of a monolayer of periodic coordinating atoms [4]. Such properties relate to the formation of extended conjugated states characteristic from these extended and regular organic networks [5-6]. Moreover, metallic surfaces are also key, as they provide versatile supports to generate functional nanostructures by catalyzing small precursors to generate new covalent 2D structures [7] and also lead to unprecedented ways of coordination (like direct hexafluor-Au coordination) [8]. All in all, the quantum properties of these ultra-thin carbon-based nanoarchitectures could find their place as building blocks for next-generation electronic and optoelectronic applications.

[1] J. Lobo-Checa *et al.*, *Science* 325, 300 (2009). [2] I. Piquero-Zulaica *et al.*, *Physical Review Letters* 123, 266805 (2019). [3] I. Piquero-Zulaica *et al.*, *Reviews of Modern Physics*, 94, 045008 (2022). [4] J. Lobo-Checa *et al.*, *Nature Communications* 15, 1858 (2024). [5] L. Hernández-López *et al.*, *Nanoscale* 13, 5216 (2021). [6] P. D'Agosta *et al.*, *Small* 21, 2406533 (2025). [7] J. Labella *et al.*, *JACS* 144, 16579 (2022). [8] J. Labella *et al.*, *CHEM* (2025), just accepted.

La presenza della S. V. sarà molto gradita

Prof. Francesco Sedona
Dipartimento di Scienze Chimiche

Il Direttore del Dipartimento
Prof. Stefano Mammi