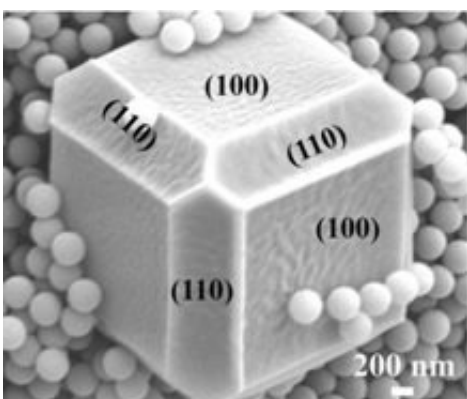


# Porous materials make it possible to have nanotechnology under control

May 18 2018

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The porous material studied in this paper. Credit: University of Cordoba

A University of Cordoba research team has stabilized metallic nanostructures by encapsulating them in porous monocrystalline materials.

Like Robocop, [metal organic frameworks](#) (MOFs) are half metal, half organic structure. MOFs were developed by scientists for a myriad of applications including sorbents, batteries and electronic devices. MOFs are a new organic and inorganic hybrid material made up of metallic nodes and organic links characterized by their porosity, that is to say, by the intermolecular spaces that it is comprised of. MOFs are made up of metallic nodes and organic links characterized by their porosity, the intermolecular spaces of which it is composed.

Professor Rafael Luque of the University of Cordoba Organic Chemistry Department studied their properties and applicability in collaboration with a Southern China Technology University research group. The results are published in *Dalton Transactions*. The research has proven that in addition to MOF utility in catalysis processes, these [materials](#) are built as stabilizers of [metallic nanostructures](#). The study paves the way for working with these nanoentities, thanks to the control over their stability.

The range of possibilities detailed in Luque's work depend on the encapsulated metal/metallic structure, which could be used for CO<sub>2</sub> absorption or steam absorption when working with fuel cells and other kinds of batteries.

The methodology designed by Rafael Luque and his team is considered innovative because it enables control over material design to degrees that were unthinkable before. Previously, porous materials that can accommodate nanoparticles have been studied, but never before has anyone exerted thorough control over all their parameters.

Diversifying the use of these metal-organic materials as much as possible to take advantage of the stability and pliability that they give to nanostructures will be the main focus for this research group henceforth. This line of research will be described in developing studies that are currently being performed by University of Cordoba research group FQM-383.

**More information:** Liyu Chen et al, Encapsulation of metal nanostructures into metal–organic frameworks, *Dalton Transactions* (2018). [DOI: 10.1039/c8dt00092a](https://doi.org/10.1039/c8dt00092a)

Provided by University of Córdoba

Citation: Porous materials make it possible to have nanotechnology under control (2018, May 18)  
retrieved 9 April 2024 from

<https://phys.org/news/2018-05-porous-materials-nanotechnology.html>

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