

Friday June 14th 2019 - 10h 00

Amphitheater of the C2N

Architecture and Decoration at the Nanoscale: programmable plasmonic and photonic thin film nanosystems through soft chemistry

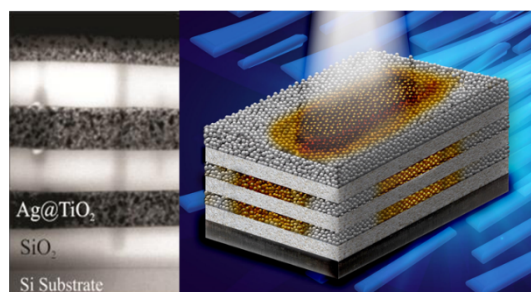
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In the last years, soft chemical synthetic methods opened the path to create highly tunable thin film architectures, with complex yet controlled structure at different length scales. Optical nanosystems “decorated” with molecular, biological or nanoscale functions precisely located in space can be pre-designed and produced through the production and controlled assembly of nanobuilding blocks. In particular, Mesoporous Thin Films (MTF) are interesting for their tailorable optical, electronic or catalytic properties, and their compatibility with the requirements of electronics and optics industry. Each MTF is in turn a building block for more complex architectures with synergic properties derived from the control of the spatial location of well-controlled components.



*Photonic-plasmonic multilayer
architecture for improved SERS signals*

We will present MTF architectures with programmable optical properties, in particular Mesoporous Photonic Crystals (MPC) and Nanoparticle-Mesoporous Nanocomposites (NMNC). These materials permit to harness and couple chemical and surface properties with photonic and plasmonic features of the ensemble. We can design and build stimuli-responsive autonomous systems that transduce chemical signals to optical response through information encoded in their structure at the molecular,

mesoscopic or microscopic levels. The combination of the photonic and plasmonic properties of MPC and NMNC permits to exploit light confinement or amplification. These responsive nanosystems present applications in SERS, Tamm-based sensors, optical waveguides or photocatalysts.



Galo Soler-Illia studied Chemistry in the University of Buenos Aires, and performed a postdoc at UPMC, Paris. He is the Dean of Instituto de NanoSistemas at Universidad Nacional de San Martín, CONICET Principal Researcher, Associate Professor at the University of Buenos Aires, and Full Member of the National Academy of Exact and Natural Sciences of Argentina. He designs and produces intelligent nanosystems using chemical methods inspired by nature. He has published more than 160 papers in reviewed journals, with 13.000+ citations (h=45), and filed four patents.

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