"The Art and Science of Growing and Assembling Metal Nanocrystals"

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Resumen

Nanoplasmonics can be defined as the science studying the manipulation of light using materials of size much smaller than the radiation wavelength. This technology finds applications in various fields including sensing and diagnostics. An essential component of nanoplasmonics are the nanostructured materials, typically noble metals, which can very efficiently absorb and scatter light because of their ability to support coherent oscillations of free (conduction) electrons. Although the remarkable optical response of "finely divided" metals is well known since more than 150 years ago, the recent development of sophisticated characterization techniques and modeling methods has dramatically reactivated the field. An extremely important pillar on which the development of nanoplasmonics has been based comprises the impressive advancement in fabrication methods, which provide us with an exquisite control over the composition and morphology of nanostructured metals. Colloid chemistry methods in particular have the advantage of simplicity and large scale production, while offering a number of parameters that can be used as a handle to direct not only nanoparticle morphology but also surface properties and subsequent processing.

This talk will be based on a selection of fabrication methods that allow fine tuning of the morphology of nanoplasmonic building blocks, as well as their (directed) self-assembly, with the ultimate goal of improving their performance in sensing applications.

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