

Session

Nanochemistry, Nanoparticles and Assemblies

Description

Nanochemistry is attracting tremendous interest for numerous applications including those in the framework of the energy and environmental transitions. The properties of nanoparticles can be optimized accordingly to the specific needs by tuning their size, shape, crystallinity, chemical composition and surface states. The versatility of wet chemistry approaches allows preparing nanoparticles that respond to various physical stimuli. In particular, they can be used to perform photo, electro or magneto – induced catalysis addressing the key challenges of power-to-gas conversion, fuel cells or even plastic degradation. Nanoparticles can also serve as building blocks to fabricate new materials limiting the use of scarce resources such as noble metal or rare-earth elements for light emission, sensors or magnetic applications. Understanding the forces at play during the assembly of these nano-objects is thus of key importance to master the resulting meso- and macro-structures and thus the collective properties, whether assembly is spontaneous (self-assembly) or externally triggered (driven assembly).

For all these applications, rational design of the nano-objects is a prerequisite to finely tune their properties on purpose. The session will thus showcase on-going efforts on the comprehension of nucleation and growth mechanisms, and of the forces that drive assembly and integration of nanoparticles (QDs, metals, oxides). The properties, potential applications, and the relationships between the synthesis protocols, the nanoparticle features and their performances will be discussed. Intense discussions between experiments and theoreticians will be encouraged.

Keywords

Wet chemistry, nanoparticles, nucleation and growth mechanisms, assemblies, properties, modelling

Partnership

This session is organized in partnership with the **GDR NINO**.

Scientific committee:

Coordinators: Lise-Marie LACROIX (Université Toulouse III – LPCNO, Toulouse) & David PORTHEHAULT (CNRS –LCMCP, Paris)

Members: Laetitia DUBAU (CNRS – LEPMI, Myrtil KHAN (CNRS – LCC, Toulouse), Grenoble) with the contribution of Sandrine ITHURRIA (ESPCI – LPEM, Paris) for the common theme “Semiconductor nanocrystals”.