

From Molecular Chemistry to Hybrid Nano-materials.

Ahmad Mehdi

Institut Charles Gerhardt Montpellier, UMR 5253, Chimie Moléculaire et Organisation du Solide, cc 1701,
Université Montpellier, 34095 Montpellier Cedex 5, France

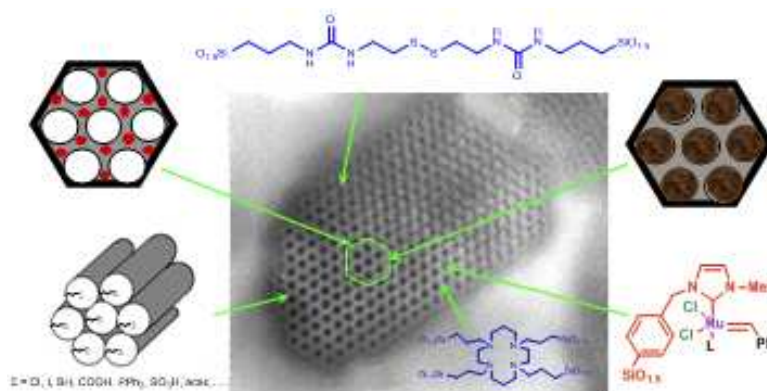
E-mail: ahmad.mehdi@univ-montp2.fr

Abstract:

Nano-materials science represents a very exciting development in chemistry. In this field, one of the major challenges is the discovery of the ways to organize the materials in terms of properties at the nanometric scale. For this purpose, the bottom-up approach, which consists to build up nanomaterials starting from nano-object (nanometric size units), is particularly appropriate for chemists as all the nano-objects (molecules, complexes, particles, clusters, aggregates, etc.) correspond to species well defined in chemistry. Furthermore, a number of routes for assembling molecules, particles have been perfected like for instance, organic and inorganic polymerization or supramolecular self-assembling.

This talk is devoted to hybrid organic-inorganic mesoporous materials prepared from molecular precursors by using the hydrolytic sol-gel process. Sol-gel process, which consists in inorganic polymerization of molecular precursors under mild chemical conditions, is a very convenient way for this approach.

Indeed, this process exhibits two very important characteristics: first, high compatibility with all types of organic (polymer, biochemical and biological), coordination complexes or inorganic units, which open very wide possibilities of applications.



Our realized efforts during the last decade in terms of organization and functionalization of mesoporous silica's will be presented.