Supramolecular and Systems Chemistry

www.chimica.unipd.it/suprachem
+39 049 827 5276 (PS)

Paolo Scrimin (paolo.scrimin@unipd.it); Fabrizio Mancin (fabrizio.mancin@unipd.it); Federico Rastrelli (federico.rastrelli@unipd.it); Leonard J. Prins (leonard.prins@unipd.it)

Research in the group is focused on the development of complex chemical systems capable of bio-insipired functions as signal processing, self-organization, molecular recognition, catalysis, and sensing. Monolayer protected gold and silica nanoparticles, as well as surfactant aggregates, are the key components in these systems. Research by the group has demonstrated that their multivalent and self-organized nature gives rise to unique properties. Examples include chemical fuel driven self-organization, cooperative catalysis, high binding affinities with (bio)analytes, innovative detection protocols based, multivalent and multifunctional interaction with biological entities. We are also working with biologists and medical doctors to prepare nanoparticles for targeting cancer cells and new vaccines. The group is supported by EU (MSCA-ITN), MIUR (PRIN) and University of Padova.

- *Nanoparticle-based receptors mimic protein-ligand recognition*, Chem, **2017**, 3, 92-109.
- *Photoswitchable catalysis by a nanozyme mediated by a light-sensitive cofactor,* J. Am. Chem. Soc., **2017**, 1794-1797.
- *Dissipative self-assembly of vesicular nanoreactors,* Nature Chem., **2016**, 8, 725-731.
- *Chromatographic NMR spectroscopy with hollow silica spheres,* Angew. Chem. Int. Ed., **2016**, *55*, 2733-2737.
- *Transient signal generation in a self-assembled nanosystem fueled by ATP*, Nat. Commun., **2015**, 6, 7790.