Micelles as Nanoreactors and Drug Delivery Agents

Via L. Giorgieri 1 Trieste

Reference person: Fioretta Asaro e-mail: fasaro@units.it

1. **Reverse micelles as nanoreactors for the synthesis of silica nanoparticles by acidic catalysis**
   Inverse micelles are the only reaction medium that allows to obtain discrete nanoparticles of a-SiO$_2$ from the sol-gel process carried out in acidic environment. The NPs exhibit photoluminescence properties and are amenable to doping by various transition metal ions.

2. **Water micellar medium for green ring closing metathesis of olefins**
   Surfactant micelles are a promising reaction milieu for the achievement of medium sized cyclic lactones through ring closing metathesis catalyzed by second generation Grubbs catalyst. Using as starting material the opportune enantiopure dienes one can synthesize various positional isomers of (R)-12-hydroxystearic acid, one of the most famous organogelators.

3. **Hydrophobically functionalized biopolymers for nanobiomedicine**
   Chemical functionalization of polysaccharides, study of the self-assembly of the functionalized polymers into micelles and nanoparticles and of their solubilizing ability of lipophilic drugs and fluorescent dyes. The goal are nanostructures suited to the delivery and targeting of lipophilic drugs.

**TECHNIQUES**
- PGSTE NMR, TEM, SEM, nanoparticle tracking analysis, vibrational and electronic spectroscopies, mass spectrometry

**PUBLICATIONS**

**COLLABORATIONS**
- DSMN University of Venice Ca’ Foscari, Dept. Ind. Chem. “Toso Montanari” University of Bologna

**PROJECTS**
- University of Trieste FRA 2014 and FRA 2015

**INSTITUTION WEBSITE** https://dscf.units.it