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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 α -SiO₂ 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 methatesis 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.

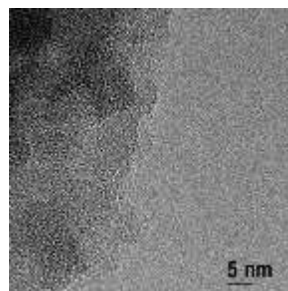
3. Hydrophobically functionalized biopolymers for nanobiomedicine

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

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PUBLICATIONS

F. Asaro, A. Benedetti, I. Freris, P. Riello, N. Savko *Evolution of the Nonionic Inverse Microemulsion-Acid-TEOS System during the Synthesis of Nanosized Silica via the Sol-Gel Process* Langmuir (2010). dx.doi.org/10.1021/la101737x

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>