

## Evaluation of organogel nanoparticles as new vehicle for lipophilic compounds

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In recent years, a growing interest has emerged in the development of semi-solid colloidal carriers for the delivery of water-insoluble drugs. Solid Lipid Nanoparticles (SLN) and Nanostructured Lipid Carriers (NLC) are example of such systems. As an alternative to SLN, we propose the use of an original family of organogel nanoparticles. Organogels are semi-solid materials in which an organic solvent (e.g., vegetable oil) is entrapped in the three-dimensional fibrous network formed by self-aggregation of a low molecular mass organic gelator (12-Hydroxystearic acid). The preparation process of the gelled oil nanoparticles is based on the sol-gel phase transition of the organogel obtained by hot emulsification ( $T^* > T^{\circ}_{gel}$ ) in presence of an aqueous solution of stabilizing agent (Polyvinylalcohol 80), leading to a stable semi-solid dispersion after cooling ( $T^* < T^{\circ}_{gel}$ ), (Figure 1). In a first part, we will present the preparation and the characterization of the aqueous dispersions of the gelled oil particles. Then we will evaluate the encapsulation properties and delivery of the prepared system using different drugs and models, varying their hydrophobicity and pKa (indomethacin, ibuprofen, ketoconazole, efavirenz, Nile red). Encapsulation efficiency studies showed an impressive drug loading of 99% and no significant drug expulsion during storage. *In vitro* dialysis release experiments showed different kinetic profiles in comparison with control buffer solutions, underlying the importance of the drug solubility in the gelled oil and its possible ionization in water. The results obtained have enabled us to evaluate the drug delivery capabilities of these gelled particles and their possible use in different pharmaceutical pathways (oral or skin).

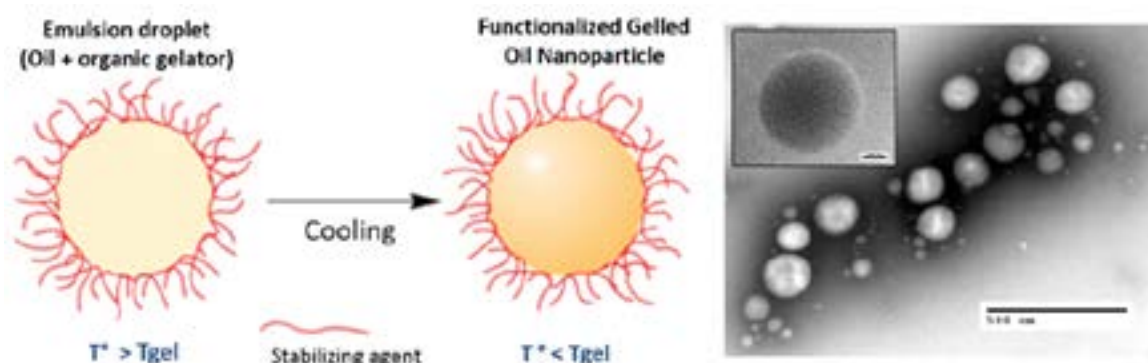


Figure 1 : Scheme of elaboration and TEM micrograph of the organogel nanoparticles.

## Biography

Sophie Franceschi has her expertise in chemical and physicochemical studies of organized molecular systems for drug delivery and material applications. She has 20 years of experience in research and teaching. She graduated with a PhD from the Paul Sabatier University of Toulouse (France) in 1997 and has a Master's degree in Molecular and Supramolecular Chemistry. Currently, she is Researcher in SMODD group in the IMRCP Laboratory at the University Paul Sabatier of Toulouse and also Teacher at Paul Sabatier University.

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