Electronic Supplementary Information

for

Solid lipid nanoparticles (SLN) templating of macroporous silica beads

Andreea Pasc,*[a] Jean-Luc Blin[a], Marie-José Stébé[a] and Jaafar Ghanbaja[b]

[a] *SRSMC UMR 7565, Nancy-Université, BP 70239, F-54506 Vandoeuvre-lès-Nancy, France*, [b] *SCMEM, Nancy-University, BP 70239, 54506 Vandoeuvre-lès-Nancy, France*

Supporting information 1: X-ray scattering analysis

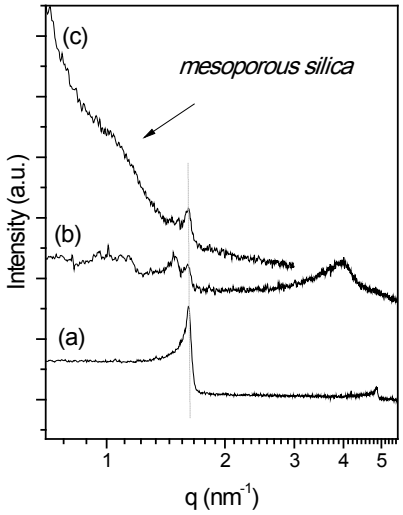

Fig. S1. SAXS measurements showing (a) the polymorphism of the powder NHP solid lipid, and the lamellar of the solid lipid in both (b) solid lipid particles and (c) hybrid SLN-silica material

X-ray measurements were realised with SAXSess mc2 (Anton Paar). It is attached to a ID 3003 laboratory X-Ray generator (General Electric), equipped with a sealed X-ray tube (PANalytical, $\lambda_{Cu\ (K\alpha)}$ = 0.1542 nm, P = 3.3 kW). A multilayer mirror and a block collimator provide a monochromatic primary beam. A translucent beam stop allows the measurement of an attenuated primary beam at q= 0. Samples are introduced into a quartz capillary (for liquids), a powder cell (for solids) or a paste cell (for viscous samples) and placed inside an evacuated chamber. Acquisition times are typically in the order of 1- 60 minutes. Scattering of X-ray beam is recorded by a CCD detector (Princeton Instruments, 2084 x 2084 pixels array with 24 x 24 µm² pixel size) for small angle measurements in the q range 0.04 to 5 nm^{-1}

(q=4πsinθ/λ, where 2θ is the scattering angle). The detector is placed at 309 mm from the sample holder.

Supporting information 2: Micelles characteristics of the Tween 20 dispersions

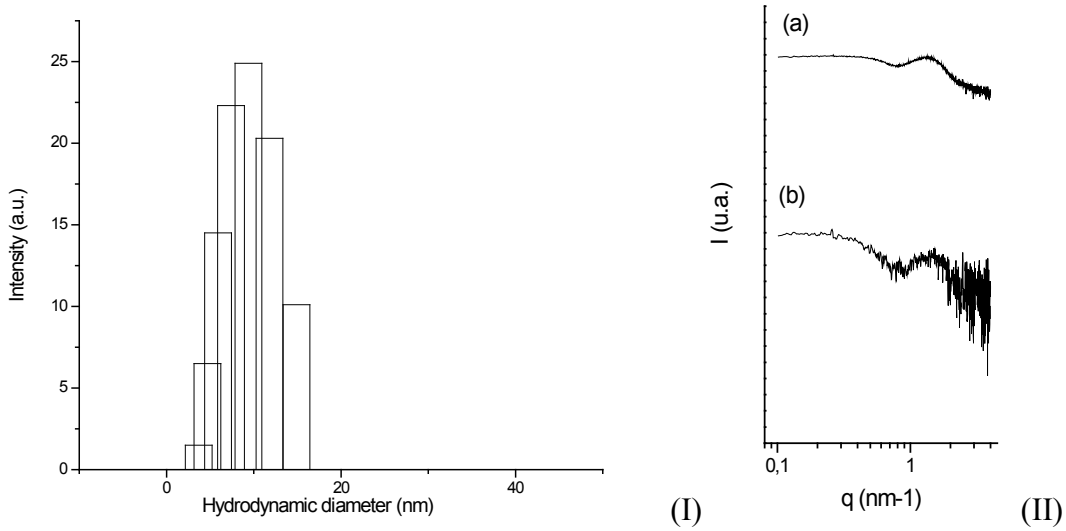

Fig. S2. (I) DLS analysis and (b) X-ray scattering data of Tween 20 dispersions [15% (a) and 1.5% (b)]

Supporting information 3: Transmission electron microscopy

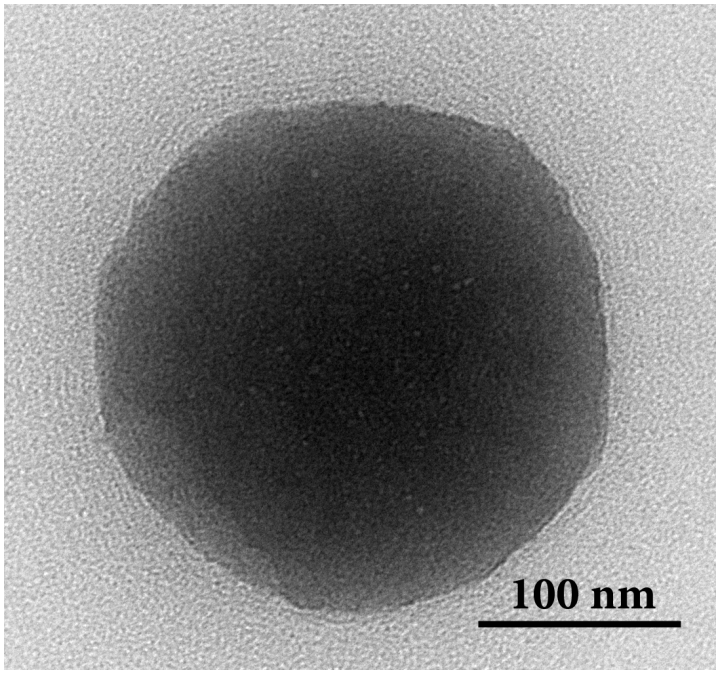

Fig. S3. Transmission electron microscopy of n-hexadecylpalmitate (NHP) based SLN

TEM was performed using a Philips CM20 type microscope at 200 keV. Samples for TEM were prepared by the negative-staining technique with a 2% ammonium molybdate. A drop of the SLNs sample diluted 25 times was left on the carbon-coated copper grids for 2 min. Then, excess liquid was sucked away with a filter paper and the deposited film was allowed to evaporate for 5 min. A drop of ammonium molybdate solution was left on the cooper grid for 5 min and the excess liquid was sucked away with a filter paper.

Supporting information 4: Nitrogen adsorption/desorption isotherms

Nitrogen adsorption/desorption isotherms were obtained at -196 °C over a wide relative pressure range from 0.01 to 0.995 with a volumetric adsorption analyzer, TRISTAR 3000 manufactured by Micromeritics. The samples were degassed under vacuum for several hours at 320 °C before nitrogen adsorption measurements. The pore diameter and size distribution were determined by the BJH (Barret, Joyner, Halenda) method.

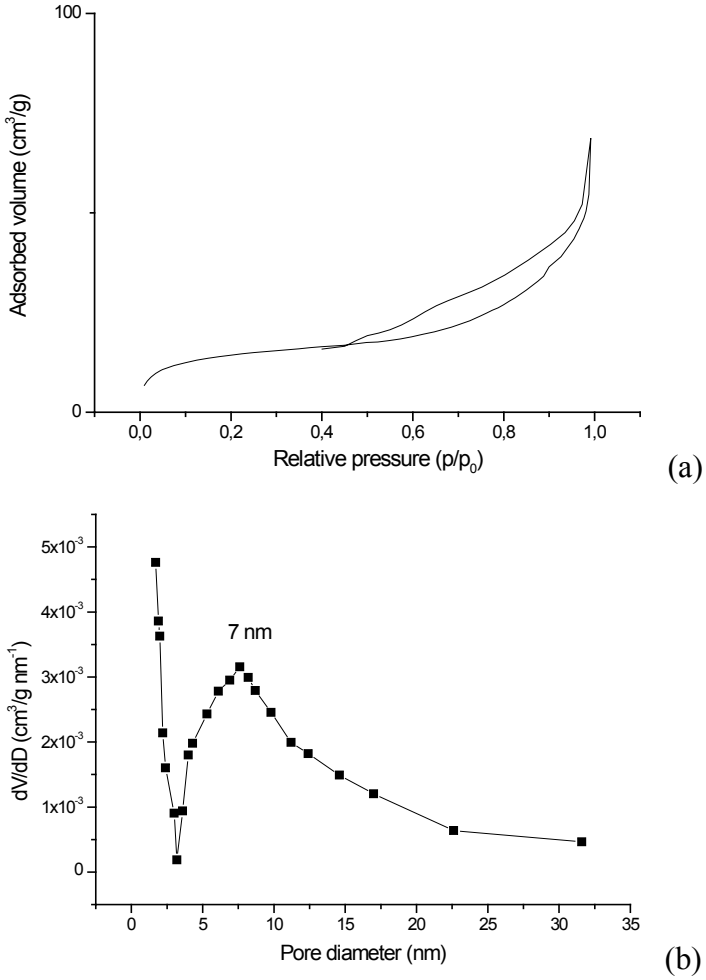

Fig. S4. Nitrogen adsorption–desorption isotherms (a) and the corresponding BJH pore size distribution curve (b) of the SLN-free silica beads