

Report : experiment n° 02-01-47

Sodium lithocholate (an elementary steroid derivative) forms gelling aqueous solutions at low concentrations ($\sim 0.1\%$ NaLC) in appropriate pH conditions. Nine shifts have been allocated on beam line D2AM (experiment n° 02-01-47) to elucidate the structure of the sodium lithocholate (SLC) aggregates.

Results show that sodium lithocholate can form tubular structures in dilute aqueous suspensions. The morphology of the sodium lithocholate (SLC) aggregates has been elucidated by using the complementarity of the SAXS and cryogenic-temperature transmission electron microscopy (cryo-TEM) techniques. The nanotubules show quite monodisperse cross-section (52 nm diameter) with a large inner cylindrical cavity of 49 nm diameter. Furthermore, this study shows that due to weak interactions between the tubules, they can be easily oriented under weak elongational stresses (Fig. 1). As regards to their easy preparation, their morphologies (hollow cylinders of 52 nm diameter), and their ability to orient, such system may find applications in nanotechnologies taking advantage of such tubular morphologies. Results of this study have been published as a Communication in Advanced Materials [1].

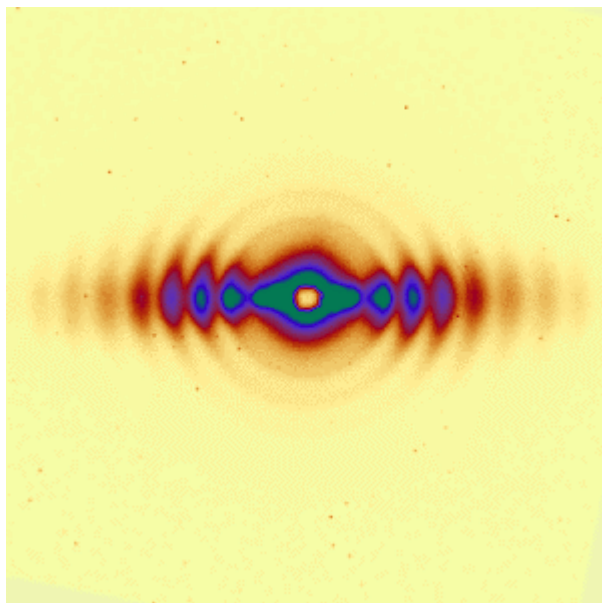


Fig. 1 : 2D small angle scattering pattern of a SLC viscous thread drawn out from a $C = 8$ wt. % suspension. The elongational axis is vertical. A side of the square corresponds to 0.233 \AA^{-1} .

Reference :

- [1] P. Terech, A. de Geyer, B. Struth, Y. Talmon, Adv. Mater., **14**, 496 (2002).