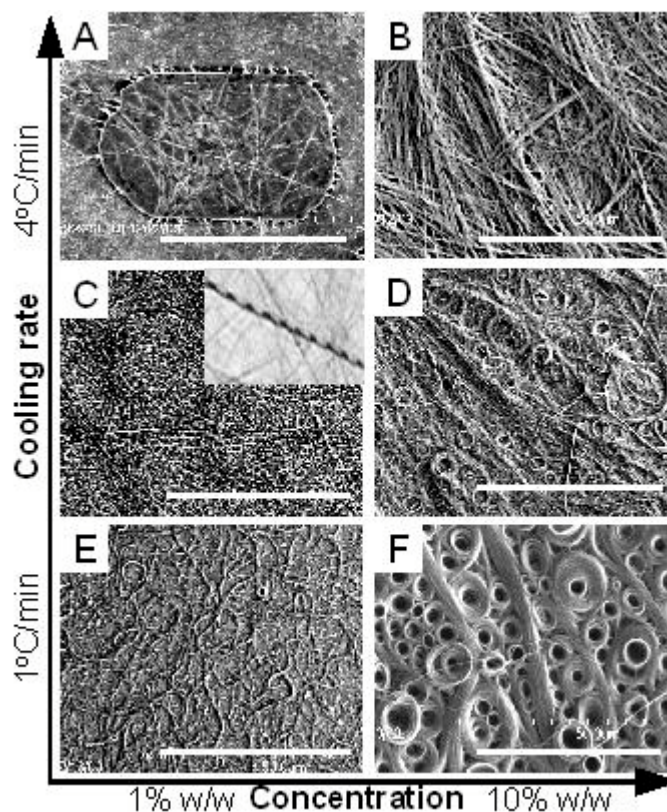


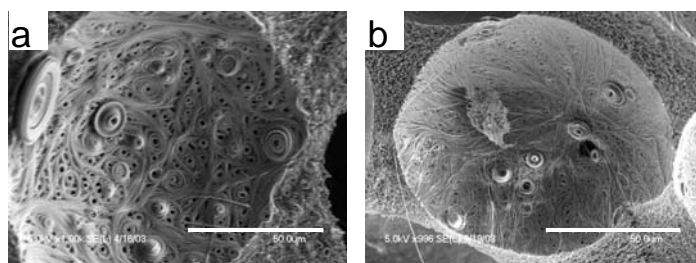
## Supporting Online Material

### Materials and Method

The fatty acids, *viz.* Myristic acid (98% pure), Lauric acid (98% pure), Palmitic acid (99% pure) and Stearic acid (98% pure) were sourced from Loba Chemie, Mumbai. Neutralisation of these fatty acids was carried out at 75°C using stoichiometric amount of NaOH (99% pure, Merck) dissolved in water (18.2 MΩ, Millipore Q), so as to obtain a surfactant solution of required concentration upon completion of reaction. The solutions at 75°C exist in isotropic phase with a pH of ~10.2. The solutions at 75°C were subjected to one of the following: (i) smearing as a film on glass slides; (ii) pouring into vials; (iii) pouring into moulds followed by injection of air bubbles using a syringe; (iv) aeration using a Silverson mixer followed by pouring into moulds. The samples were cooled to ambient temperature at varying cooling rates (1-5 °C/min) in a humid oven such that the gas phase above the solution was saturated with vapour to prevent drying. The solidified/'gelled' bulk and air-solid interfaces formed on cooling were examined using cryo-SEM (Hitachi-S4700 field emission SEM). Optical transmission microscopy studies of the surfactant fibre formation were carried out using a hot stage optical microscope (Carl-Ziess, Axioplan 2).



**Figure-1:** NaMy microstructures in the concentration-cooling rate space. 1A, 1C & 1E, show SEM surface micrographs of a 1% NaMy solution deposited on a glass slide and cooled at (a) 4°C/minute, (c) 2 °C/minute, (e) 1 °C./minute. 1b, 1d & 1f show corresponding micrographs for 10% NaMy. Scale bar = 50  $\mu$ m. 1C-inset shows a optical micrograph of an isolated twisted fibre.



**Figure-2:** (a) Spiral patterns and 3D 'micro-pottery' structure on the inner surface of an air bubble in Sodium Myristate, scale bar = 50  $\mu$ m and (b) Sodium Laurate, scale bar = 50  $\mu$ m