Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Self standing nanoparticulate networks by self assembly surfactant H_1 mesophase GURUSWAMY KUMARASWAMY, NCL, Pune, India, KAMENDRA SHARMA, SAYAM SEN GUPTA, NCL — We show that nanoparticles (size $>$ 10 nm) that are dispersed in nonionic surfactant/water system, assemble into networks on cooling into the H_1 phase, independent of particle surface chemistry. Coating the particles with a crosslinkable polymer, and covalent coupling of the coated particle assemblies in the H1 phase allows us to form free standing particulate networks that are stable after surfactant removal. Thus, dynamic templating of surfactant H_1 domains is a facile technique that involves near ambient temperatures, and a benign water wash for template removal. The network mesh size can be varied from the sub-micron to tens of microns by controlling the cooling rate. Particle networks can be flow-oriented prior to crosslinking, and interpenetrating networks can also be formed. We will show examples of macroporous nanoparticulate networks formed using nanoparticles of inorganic oxides, polymer latices, as well as bionanoparticles such as proteins.

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Date submitted: 28 Oct 2011 Electronic form version 1.4