

Synthesis and Characterization of Novel Hollow Silica Particle through DODAB Vesicle Templating

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Abstract : Hollow micro-/nano- structured materials have proven to be promising in wide range of applications, such as catalysis, drug delivery and controlled release, biotechnology, and personal and consumer care. Hollow sphere structures can be obtained through various templating approaches; colloid templates, emulsion templates, multi-surfactant templates, and single crystal templates. Vesicles are generally the self-directed assemblies of amphiphilic molecules including cationic, anionic, and cationic surfactants in aqueous solutions. The directed silica capsule formations were performed at the surface of dioctadecyldimethylammoniumbromide(DODAB) bilayer vesicles as soft template. The size of DODAB bilayer vesicles could be tuned by extrusion of a preheated dispersion of DODAB. The synthesized hollow silica particles were characterized by conventional TEM, cryo-TEM and SEM to determine the morphology and structure of particles and dynamic light scattering (DLS) method to measure the particle size and particle size distribution.

Keywords : characterization, DODAB, hollow silica particle, synthesis, vesicle

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