Synthesis of PNIPAm-grafted hollow silica particles

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3-(trimethoxysilyl) propyl methacrylate(MOP) was introduced onto the surface of hollow silica particles by the sequential addition of tetraethyl orthosilicate (TEOS) and MOP to W/O emulsion. The experiments were conducted with various concentration of cross-linking agent and the ratio of NIPAm monomer at 70℃ to prepare PNIPAm-grafted hollow silica particles. Surface of particles including PNIPAm was synthesized by radical copolymerization of NIPAm monomers with MOP-modified hollow silica particles. The PNIPAm-hollow silica composites were confirmed by FT-IR, FE-SEM, TEM, TGA, and DSC.