Facile synthesis of hollow mesoporous ZnO-SiO_2 mixed oxide/SiO_2 particles synthesis using dual surfactant system

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Silica-based mesoporous nanoparticles have been extensively studied due to thier low toxicity, hight chemical and mechanical stability. Among many types of silica mesoporous nanoparticles, hollow mesoporous silica nanoparticles have recently drawn considerable interest. The particles can be made by template-assited method. However, these method involves mult-step processes which are time and cost consuming. To solve the problem, we developed a novel single process to make hollow mesoporous silica nanoparticles. We used F127 as a structure-directing agent for hollow cavity and CTAC as a template for mesoporous structure. Through the method, we can get meporous ZnO-SiO2/SiO2 nanoparticles with a hollow cavity. By dissolving ZnO by acid. we also obtained silica nanoparticles with large hollow cavity. We belived these research suggested new synthesis method for hollow mesoporous silica nanoaparticles.