

研究论文

一种制备单分散SiO₂空心微球的新方法

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摘要 在乙醇/氨水介质中, 分别以分散聚合和无皂乳液聚合方法制得的不同粒径聚苯乙烯(PS)微球为模板, 以正硅酸乙酯(TEOS)为前驱体, 通过控制介质中氨水的初始体积, 一步法制得了不同粒径的单分散SiO₂空心微球. 整个过程无需添加其它溶剂溶解或高温煅烧的方法来除去模板微球. 对SiO₂空心微球进行测试表征, 提出了SiO₂空心微球的可能形成机制.

关键词 [二氧化硅](#) [空心微球](#) [溶胶-凝胶](#) [制备](#)

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A Facile Approach for the Fabrication of Monodisperse Hollow Silica Spheres

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Abstract This paper presents a facile method for fabrication of monodisperse hollow silica spheres. In the approach, the monodispersed PS microspheres with different sizes prepared by dispersion polymerization or emulsifier-free emulsion polymerization were used as the template microspheres respectively, the silica shells were then coated on the PS microspheres by sol-gel method. During the coating of silica shell, the PS cores were dissolved subsequently even synchronously in the same medium to directly form monodispersed hollow spheres. TEM, SEM and porosity measurements were used to characterize the monodisperse hollow silica spheres. Based on the experimental results and discussion, a possible formation mechanism of the hollow silica spheres was proposed.

Key words [Silica](#) [Hollow spheres](#) [Sol-gel](#) [Fabrication](#)

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