高等学校化学学报 2007 , 28 (9): 1759—1761 ISSN: 0251-0790 CN: 22-1131/O6

研究简报

漂浮法制备SiO_2有序大孔材料

王晓冬, 仪桂云

河南理工大学材料科学与工程学院, 焦作 454003

收稿日期 2007-3-30 修回日期 网络版发布日期 2007-10-24 接受日期

摘要 用漂浮组装方法以亚微米尺度单分散的聚苯乙烯(PS)微球作为模板, 在悬浮液气-液界面处组装PS模板微球与纳米级胶体颗粒, 形成二元胶体颗粒共混物, 再去除模板得到有序大孔材料.

关键词 有序大孔材料 漂浮法 SiO_2颗粒 聚苯乙烯微球

分类号 0648

Preparation of SiO_2 Ordered Macroporous Material by Floating Assembly Method

WANG Xiao-Dong*, YI Gui-Yun

Institute of Materials Science and Engineering, Henan Polytechnic University, Jiaozuo 454003, China

Abstract Floating assembly method is a new way for preparing ordered macroporous materials. In this process, the co-mixture of binary colloidal particles was fabricated through the rapid assembly of polystyrene(PS) as a template and SiO_2 nanoparticles at the air-water interface of the suspension, the ordered macroporous materials were obtained by removing the template. Scanning Electron Micrographs(SEM) show that macroporous material had regular close-packed face-centered cubic(*fcc*) structure and spaces left by templates were connected through some windows. The results indicate that the formation of ordered porous structure was influenced by the diameter of PS microspheres remarkably. When the diameter was in the range of 200—500 nm the ordered structure could be obtained easily. And the volume ratio of PS microspheres to SiO_2 nanoparticles in the maxed suspension wasn't primary factor of the the formation of the ordered structure.

Key words Ordered macroporous materials Floating assembly method SiO_2 nanoparticle Polystyrene microsphere

DOI:

通讯作者 王晓冬 wangxd0863@yahoo.com.cn