

简述聚电解质-表面活性剂复合物为模板合成多级孔结构材料

史成香, 孙平川, 陈铁红

南开大学 化学学院 天津化学化工协同创新中心, 天津 300071

Brief Introduction of Hierarchically Porous Materials Synthesis With Polyelectrolyte-Surfactant Complex as Template

SHI Chengxiang, SUN Pingchuan, CHEN Tiehong

Collaborative Innovation Center of Chemical Science and Engineering, College of Chemistry, Nankai University, Tianjin 300071, China

- 摘要
- 参考文献
- 相关文章

Download: [PDF \(5814KB\)](#) [HTML \(1KB\)](#) Export: [BibTeX](#) or [EndNote \(RIS\)](#) [Supporting Info](#)

摘要 采用以聚电解质/表面活性剂复合物为模板引导无机硅源前驱体组装的方法,首次合成了具有多级孔结构的介孔二氧化硅SBA-1的单晶颗粒。改变合成条件可调节多级孔结构介孔二氧化硅的形貌及结构,由此合成了一系列具有多级孔结构的介孔二氧化硅样品,并通过直接掺杂法合成了多级结构的介孔杂原子分子筛,并将其应用在催化反应中。将此方法应用于介孔沸石的合成中,成功合成了介孔沸石Silicalite-1。结果表明,聚电解质/表面活性剂为动态模板制备的多级孔结构材料具有单晶体的特征,同时还具有二次孔,有利于物质传输以及物料扩散。与单一孔道的介孔及沸石材料相比,具有多级孔结构的材料在催化、吸附等应用中均表现出优越的性能。

关键词: 聚电解质-表面活性剂复合物 多级结构 介孔二氧化碳 介孔沸石

Abstract: Hierarchically structured mesoporous SBA-1 single-crystal particles were first synthesized by employing organic mesomorphous complexes of polyelectrolyte surfactant as templates to guide the assembly of inorganic silicon source precursor. By adjusting the synthesis conditions, the morphology and structure of hierarchically mesoporous silica could be controlled, and then a series of hierarchically mesoporous silica samples with various morphologies and structures were obtained. Hierarchically mesoporous molecular sieves with heteroatoms were produced by direct doping method, and applied in catalytic reactions. Moreover, with this method the mesoporous zeolite Silicalite-1 was successfully synthesized. Hierarchically porous synthesized by the method with polyelectrolyte-surfactant complex as template possessed the characters of single crystal and secondary pores, which were beneficial to the transmission and diffusion of materials. Compared to the mesoporous materials and zeolites with single channel, these hierarchically porous materials exhibited excellent performances in catalysis, adsorption, and so on.

Keywords: [polyelectrolyte-surfactant complex](#), [hierarchical structure](#), [mesoporous silica](#), [mesoporous zeolites](#)

收稿日期: 2013-11-05; 出版日期: 2014-02-19

基金资助:

国家自然科学基金项目(21373116)、天津市自然科学基金项目(13JCYBJC18300)和教育部博士点基金项目(20120031110005)资助

通讯作者 陈铁红,男,教授,博士,从事多相催化方面的研究; E-mail: chenth#nankai.edu.cn Email: chenth@nankai.edu.cn

作者简介: 第一作者: 史成香,女,博士研究生,从事多孔材料合成方面的研究

引用本文:

史成香, 孙平川, 陈铁红. 简述聚电解质-表面活性剂复合物为模板合成多级孔结构材料[J] 石油学报(石油加工), 2014, V30(1): 100-109

SHI Cheng-Xiang, SUN Ping-Chuan, CHEN Tie-Hong. Brief Introduction of Hierarchically Porous Materials Synthesis With Polyelectrolyte-Surfactant Complex as Template[J] ACTA PETROLEI SINICA (PETROLEUM PROCESSING SECTION), 2014, V30(1): 100-109

链接本文:

Service

- ▶ 把本文推荐给朋友
- ▶ 加入我的书架
- ▶ 加入引用管理器
- ▶ Email Alert
- ▶ RSS

作者相关文章

- ▶ 史成香
- ▶ 孙平川
- ▶ 陈铁红

没有本文参考文献

没有找到本文相关文献