

研究论文

溶胶凝胶法制备 β -环糊精聚合物/二氧化钛有机-无机杂化材料

毋登辉, 高子伟*, 高玲香, 张彩云, 王高峰

(陕西师范大学化学与材料科学学院 西安 710062)

收稿日期 2005-9-14 修回日期 2005-12-19 网络版发布日期 接受日期

摘要 通过烯丙基环糊精(allyl- β -CD)与丙烯酸(AA)的共聚合反应在环糊精聚合物链中引入了活性基团羧基, 运用溶胶-凝胶法制备了新型的环糊精聚合物P(CD-co-AA)/TiO₂有机-无机杂化材料. 溶剂抽提结果和FT-IR表明杂化材料中有机无机两相间存在着化学键. 通过XRD, SEM, TGA研究表明有机无机两相高度相容, 热稳定性能有大大的提高. 另外还发现, 在所制的材料中TiO₂的含量对材料的结构和性能有很大的影响, 当TiO₂的含量为60% (w)时, 材料表面均匀光滑, 有机无机两相相容性和材料的热稳定性性能最好.

关键词 [溶胶-凝胶法](#) [环糊精聚合物](#) [二氧化钛](#) [有机-无机杂化](#)

分类号

Preparation of β -Cyclodextrin Polymer/Titanium Dioxide Inorganic-Organic Hybrid Materials by Sol-gel Method

WU Deng-Hui, GAO Zi-Wei*, GAO Ling-Xiang, ZHANG Cai-Yun, WANG Gao-Feng

(Department of Chemistry, School of Chemistry and Materials Science, Shaanxi Normal University, Xi'an 710062)

Abstract Inorganic-organic hybrid materials of P(CD-co-AA)/TiO₂ were prepared by sol-gel process, and in order to introduce the chemical bond between the organic polymer chain and inorganic network of the hybrid, the carboxyl functional group was introduced into polymer side chain by copolymerization between allyl- β -CD and acrylic acid (AA). The results of solvent extraction and FT-IR show that there is the chemical bond between the TiO₂ phase and the polymer matrix of the hybrids. The hybrid materials were characterized by XRD, SEM and TGA, while the results indicate that the TiO₂ phase and polymer matrix were well dispersed evenly with each other. At the same time, it was found that the TiO₂ content influenced the structure and properties of the hybrid materials. The hybrid materials acquired more excellent thermal stability and the intermolecular regularity when the content of TiO₂ in the hybrid was 60% (w).

Key words [sol-gel](#) [cyclodextrin polymer](#) [titanium dioxide](#) [inorganic-organic hybrid](#)

DOI:

通讯作者 高子伟 zwgao@snnu.edu.cn

扩展功能

本文信息

▶ [Supporting info](#)

▶ [PDF\(272KB\)](#)

▶ [HTML全文\(0KB\)](#)

▶ [参考文献](#)

服务与反馈

▶ [把本文推荐给朋友](#)

▶ [加入我的书架](#)

▶ [加入引用管理器](#)

▶ [复制索引](#)

▶ [Email Alert](#)

▶ [文章反馈](#)

▶ [浏览反馈信息](#)

相关信息

▶ [本刊中 包含“溶胶-凝胶法” 的相关文章](#)

▶ 本文作者相关文章

- [毋登辉](#)
- [高子伟](#)
- [高玲香](#)
- [张彩云](#)
- [王高峰](#)