高等学校化学学报 2006 , 27 (9): 1762-1766 ISSN: 0251-0790 CN: 22-1131/O6

研究论文

# 制备核-壳结构聚合物纳米微球和空心球的原位聚合方法的普适性研究

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收稿日期 2005-12-22 修回日期 网络版发布日期 2006-9-20 接受日期

摘要 采用原位聚合制备核-壳结构聚合物纳米微球和空心球的新方法, 利用甲基丙烯酸2-羟丙酯(HPMA)和乙酸乙烯酯(VAc)两种单体, 在类似的反应条件下, 成功地制备了以聚(ε-己内酯)(PCL)为核, 分别以交联PHPMA和PVAc为壳的纳米微球; 将微球的核酶解后, 分别得到了对应的交联PMAA空心球和交联PVA空心球. 结果表明, 原位聚合制备核-壳结构聚合物微球的新方法具有一定的普适性, 适用于单体可溶于水而生成的聚合物不溶于水的体系.

关键词 核-壳结构 聚合物纳米微球 空心球 制备 普适性

分类号 0631.1

# Generalization of *in-situ* Polymerization New Method for Preparing Core-shell Polymeric Nanospheres and Hollow Spheres

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**Abstract** According to the new method for preparing core-shell nanospheres developed in our group, using two monomers of 2-hydroxypropyl methacrylate(HPMA) and vinyl acetate(VAc), two kinds of core-shell nanospheres with poly(ε-caprolactone)(PCL) as the core and crosslinked PHPMA or PVAc as the shell were successfully prepared under the similar conditions. After degrading the PCL cores of the obtained two nanospheres by lipase, the corresponding cross-linked poly(methyl acrylic acid) hollow spheres and cross-linked poly-(vinyl alcohol) hollow spheres were obtained. The results indicate that the new method which we proposed for preparing core-shell polymeric nanospheres *via in-situ* polymerization can be generalized to a certain extent, and it is suitable for the system in which the monomer is soluble in the water while its corresponding polymer is insoluble in the water.

**Key words** Core-shell structure Polymeric nanosphere Hollow sphere Preparation Generalization

DOI:

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