

研究论文

空心纳米水凝胶的葡萄糖和温度双重刺激响应性

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摘要: 采用两步胶体模板聚合再引入苯硼酸基团和刻蚀模板, 制备了一种具有温度和葡萄糖双重刺激响应性的新型智能空心纳米水凝胶, 用傅立叶变换红外光谱、核磁共振、透射电镜和动态激光光散射等手段对其进行了表征。结果表明, 空心纳米水凝胶由聚(N--异丙基丙烯酰胺)和聚(N--苯硼酸基丙烯酰胺)组成, 具有互穿聚合物网络结构和内部为空腔的形态结构, 并具有葡萄糖和温度双重刺激响应性。

关键词: 有机高分子材料 智能空心纳米水凝胶 互穿聚合物网络结构 葡萄糖刺激响应性 温度刺激响应性

Glucose and Temperature Dual Stimuli Responsiveness of Intelligent Hollow Nanogels

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Abstract: A novel type of intelligent hollow nanogels was prepared by two - step colloidal template polymerization, followed by introduction of phenylboronic acid groups and etching of the template, and was characterized by the Fourier transformation infrared spectroscopy, nuclear magnetic resonance, transmission electron microscopy and dynamic light scattering. The results show that the hollow nanogels are composed of poly(N - isopropylacrylamide) and poly(N - phenylboronic acid acrylamide), have interpenetrating polymer network structure and the morphological structure of inner cavity, and have both temperature and glucose stimuli responsive properties.

Keywords: organic polymer materials intelligent hollow nanogel polymerization interpenetrating polymer network structure glucose stimulus responsiveness temperature stimulus responsiveness

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