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论文

无皂种子分散聚合法制备单分散双重响应性微凝胶

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摘要:

以*N*-异丙基丙烯酰胺及2-乙烯基吡啶为主要单体, 采用无皂种子分散聚合法制备了单分散的、具有温度及pH双重响应性能的核-壳结构微凝胶, 并以扫描电镜及动态激光光散射等手段对微凝胶粒子的结构和性能进行了研究. 溶胀行为研究表明, 微凝胶粒子具有独立的互不干扰的温度及pH敏感性能, 其体积相变温度与纯聚*N*-异丙基丙烯酰胺(PNIPAM)凝胶基本一致, 说明局部分布的弱电离单体不会对PNIPAM凝胶的体积相变温度造成影响.

关键词: 无皂种子分散聚合; 单分散; 响应性; 微凝胶

Soap-free Seeded Dispersion Polymerization Toward Monodisperse pH- and Temperature-Responsive Microgels

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Abstract:

Monodisperse core-shell microgels with pH- and temperature-sensitivity were prepared by soap-free seeded dispersion polymerization with *N*-isopropylacrylamide and 2-vinylpyridine as main monomers. Scanning electron microscopy and dynamic laser light scattering were employed to investigate the structure and property. Independent and unperturbed pH- and temperature-sensitivity were observed in the swelling investigation, *i.e.*, the volume phase transition temperature (VPTT) of the microgels keeps almost the same as that of pure poly(*N*-isopropylacrylamide) (PNIPAM) gels. It is concluded that pH-ionizable monomer with local distribution does not perturb the VPTT of PNIPAM gels.

Keywords: Soap-free seeded dispersion polymerization; Monodisperse; Sensitivity; Microgels

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