

材料化学工程与纳米技术

HPAM-g-P(NIPA-co-DMAM)的合成与温敏行为

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摘要

利用端基转换法合成了不同组成及相对分子质量的端丙烯酰胺基聚(*N*-异丙基丙烯酰胺-co-*N,N*-二甲基丙烯酰胺) [poly(NIPA-co-DMAM), PID] 大分子单体;与丙烯酰胺聚合后再水解,得到以PID为侧链,浊点在37~63℃的接枝共聚物 [HPAM-g-P(NIPA-co-DMAM), HGPID]。利用¹H NMR及端基分析等对大分子单体和接枝物的组成及结构进行了表征;考察了接枝共聚物侧链的组成和链长、共聚物质量浓度和外加盐浓度等因素对其水溶液的热敏特性及温敏增稠性的影响。

关键词

[两亲性接枝共聚物](#) [聚丙烯酰胺](#) [热缩合](#) [温敏增稠](#) [大分子单体](#)

分类号

Synthesis and thermosensitive behavior of HPAM-g-P(NIPA-co-DMAM) copolymers

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Abstract

The graft copolymers hydrolyzed polyacrylamide-g-poly(*N*-isopropylacrylamide-co-*N,N*-dimethylacrylamide) [HPAM-g-P(NIPA-co-DMAM), HGPID] with different compositions and molecular masses of the side chains were prepared by the macromonomer copolymerization method. These graft copolymers had amphiphilic properties and showed thermo-associating characteristics as the temperature of their aqueous solution was higher than the association temperature. The association temperature was dependent on the cloud point of the side chain polymer, which was determined by the side chain composition. By changing the mole ratio of NIPA and DMAM in the side chain, the graft copolymers with the association temperature in the range of 37—63℃ were obtained. Above a certain concentration of the graft copolymers, their salt aqueous solutions exhibited thermo-thickening behavior. The effects of the composition and length of the side chain, the concentrations of the polymer and the added salt on the thermo-associating and thermo-thickening behavior were studied.

Key words

[amphiphilic graft polymer](#) [polyacrylamide](#) [thermoassociating](#) [thermothickening](#) [macromonomer](#)

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