

论文

荧光淬灭法研究疏水缔合共聚物(PAM-*b*-PPOEA)_{*n*}自组装聚集数

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摘要 运用荧光淬灭技术,包括稳态荧光淬灭法(SSFQ)和时间分辨荧光淬灭法(TRFQ),研究了疏水缔合水溶性丙烯酸酰胺2苯氧基丙烯酸酯多嵌段共聚物[P(AM-POEA)]在水溶液中自组装的聚集数.这类聚合物在水溶液中易形成胶束状聚集体,探针芘分子和淬灭剂二苯酮增溶于疏水微区,荧光测定结果很好地符合Poisson淬灭模型.实验结果表明聚合物链结构、聚合物浓度和无机盐对聚集体的尺寸具有重要影响.聚合物自组装聚集数 N_A 随疏水单体含量的增加和疏水嵌段长度的减小而增大,同时也随聚合物浓度和NaCl浓度增加而增大.另外对聚合物链结构、聚集数和溶液粘度的相互关系进行了讨论.

关键词 [疏水缔合多嵌段共聚物 \(PAM-*b*-PPOEA\)_{*n*}](#) [荧光淬灭](#) [聚集数](#) [粘度](#)

分类号

FLUORESCENCE QUENCHING STUDIES OF SELF-ASSEMBLY AGGREGATION NUMBERS OF HYDROPHOBICALLY ASSOCIATING COPOLYMER (PAM-*b*-PPOEA)_{*n*}

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Abstract The fluorescence quenching techniques, including steady-state fluorescence quenching (SSFQ) and time-resolved fluorescence quenching (TRFQ), were applied to determine the aggregation number (N_A) of self-assembled aggregates of the hydrophobically associating water-soluble multicopolymer of acrylamide (AM) and 2-phenoxyethyl acrylate (POEA). This polymer easily hydrophobically associates in water to form micelle-like aggregates, which serve as solubilization sites of pyrene probe molecules and quencher benzophenone. Fluorescence results measured were well fit to the Poisson quenching model. It was found that the N_A was influenced significantly by the hydrophobe content and the hydrophobic block size of the copolymer. The N_A enhanced with increasing the hydrophobe content and decreasing the block length, as well as increased with increasing the concentration of copolymers and sodium chloride. The relationship among the polymer chain structure, aggregation number and viscosity of polymer solutions were discussed.

Key words [Hydrophobical association multicopolymer \(PAM-*b*-PPOEA\)_{*n*}](#) [Fluorescence quenching technique](#) [Aggregation number](#) [Viscosity](#)

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