

树枝聚醚改性聚丙烯酰胺和阴离子表面活性剂的缔合行为

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**摘要** 采用粘度法、荧光探针技术和<sup>1</sup>H NMR弛豫和自扩散方法,研究了树枝聚醚疏水改性聚丙烯酰胺共聚物(PDAM)和十二烷基硫酸钠(SDS)在水溶液中的相互作用. 这种共聚物含有少量的树枝聚醚,具有疏水性,容易和SDS发生相互作用,在表面活性剂浓度远低于临界胶束浓度(cmc)的情况下,生成混合胶束状聚集体. 它们的缔合行为和溶液性质明显地取决于表面活性剂的浓度,随着聚合物溶液中加入SDS,溶液粘度发生急剧变化,并在较低的表面活性剂浓度处出现很大的最高点. 荧光和<sup>1</sup>H NMR测定结果表明,这是由于在不同SDS浓度范围内,PDAM/SDS形成的聚集体结构不同的缘故.

**关键词** [聚醚](#) [聚丙烯酰胺](#) [阴离子表面活性剂](#) [粘度](#) [缔合](#) [聚集体](#) [质子磁共振谱法](#) [十二烷基硫酸钠](#) [相互作用](#)

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## Association Behaviors of Dendritic Polyether Modified Polyacrylamide with Anionic Surfactant

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**Abstract** The interactions of the hydrophobically modified acrylamide copolymer (PDAM) with anionic surfactant sodium dodecyl sulfate (SDS) in aqueous solution have been studied by viscometry, fluorescence probe technique and <sup>1</sup>H NMR relaxation and self-diffusion measurement. The polymer, which contains a small amount of dendritic polyether block, exhibits a larger hydrophobic effect and easily interacts with SDS, to form a mixed micelle-like aggregate within the concentration region far below the critical micelle concentration ( cmc). With the addition of SDS to the copolymer solution, the viscosity of the polymer solution changed dramatically and a more pronounced maximum appeared at the lower surfactant concentration. Fluorescence and <sup>1</sup>H NMR results indicated that these complex behaviors can be attributed to the different structures of PDAM/SDS aggregates formed in the different SDS concentration regions.

**Key words** [POLYETHER](#) [POLYACRYLAMIDE](#) [ANIONIC SURFACTANTS](#) [VISCOSITY](#) [ASSOCIATION](#) [AGGREGATES](#) [<sup>1</sup>H NMR](#) [SDS](#) [INTERACTIONS](#)

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