

SEPARATION SCIENCE & ENGINEERING

偶联阳离子表面活性剂和常用阴离子表面活性剂混合溶液的分相和微观结构
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摘要 The properties of aqueous two-phase system (ATPS) of mixed solution containing gemini cationic surfactant trimethylene-1,3-bis(dodecyl dimethyl ammonium) bromide (12-3-12, 2Br-) and traditional anionic surfactant sodium dodecyl sulfate (SDS) with or without added salt have been studied. An ATPS is formed in a narrow region of the ternary phase diagram different from that of traditional aqueous cationic-anionic surfactant systems. In ATPS region, the lowest total concentration of surfactants varies with the mixing ratio of geminis to SDS. Photographs obtained from freeze-etching, negative-staining and transmission electron microscopy show that the microstructures of two phases are different from each other. Micelles and vesicles can coexist in a single phase. The addition of salts can change the phase diagram of ATPS. Furthermore, the added salts promote the aggregation of rod-like micelles to form coarse network structure that increase the viscosity of solutions. The negative ions of the added salts are the determining factor.

关键词 分液相, 微观结构, 表面活性剂, 阳离子, 二价染色体, 阴离子.

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Phase Separation and Microstructure of Mixed Surfactants Solution Containing Cationic Geminis and Traditional Anionic Surfactant

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Abstract The properties of aqueous two-phase system (ATPS) of mixed solution containing gemini cationic surfactant trimethylene-1,3-bis(dodecyl dimethyl ammonium) bromide (12-3-12, 2Br-) and traditional anionic surfactant sodium dodecyl sulfate (SDS) with or without added salt have been studied. An ATPS is formed in a narrow region of the ternary phase diagram different from that of traditional aqueous cationic-anionic surfactant systems. In ATPS region, the lowest total concentration of surfactants varies with the mixing ratio of geminis to SDS. Photographs obtained from freeze-etching, negative-staining and transmission electron microscopy show that the microstructures of two phases are different from each other. Micelles and vesicles can coexist in a single phase. The addition of salts can change the phase diagram of ATPS. Furthermore, the added salts promote the aggregation of rod-like micelles to form coarse network structure that increase the viscosity of solutions. The negative ions of the added salts are the determining factor.

Key words [cationic gemini surfactant](#), [anionic surfactant](#), [aqueous two-phase system](#), [microstructure](#).

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