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论文

# 正离子型疏水改性聚氧乙烯单成相组分双水相系统的相行为

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摘要 对正离子型疏水改性聚氧乙烯(HM-EO)单成相组分双水相系统的相行为进行了考察, 并分析其电荷特性. HM-EO在水溶液中呈现两亲性, 可以形成胶束, 进而形成带电的胶束簇集体. 通过改变溶液的pH值、盐浓度及添加带相反电荷的表面活性剂SDS, 可改变胶束簇集体的带电状态, 从而影响系统的相行为. 增大pH值, 有利于系统的分相. 盐的添加也可以增大双水相两相区域, 正离子影响次序为$K^+$>$Na^+$, 负离子次序为$SO_4^{2-}$>$F^-$>$Cl^-$>$Br^-$>$I^-$. 进一步考察了HM-EO和SDS之间的相互作用, 结果表明SDS能与HM-EO形成混合胶束簇集体, 改变HM-EO双水相系统的带电特性.

关键词 双水相系统 疏水改性聚氧乙烯 静电相互作用 胶束簇集体

分类号

# PHASE BEHAVIOR OF AQUEOUS TWO-PHASE SYSTEMS WITH ONE PHASE-FORMING COMPOSITION OF CATIONIC HYDROPHOBICALLY MODIFIED ETHYLENE OXIDE POLYMER

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**Abstract** A cationic hydrophobically modified ethylene oxide polymer(HM-EO)was used to form aqueous two- phase system with only one phase—forming composition. It was found that the phase separation could be achieved under room temperature. The phase behavior and charge properties of HM—EO aqueous two—phase systems were studied systematically. The amphiphilic property of HM—EO molecule resulted in the micellization and aggregation of miceLLes in water. The micellar aggregates formed in the bottom phase could be charged,and the net—charge could be adjusted by the pH and conductivity of bulk solution and adding sodium dodecyl sulfate(SDS). The increase of pH would improve the phase separation of HM-EO aqueous two-phase system. The effect of salts on the phase behavior was Observed. The influence of cations varied as $K^+$$Na^+$,and that of anions as $SO^{2-}_4$>$F^-$>$Cl^-$>$Br^-$>$I^-$. In addition. the interaction between HM-EO polymer and anion surfactant SDS was studied. The rosults indicated that the addition of SDS caused the formation of mixed miceHar aggregates of SDS and HM-EO which changed significantly the charge property of HM-EO aqueous two-phase systems.

**Key words** Aqueous two-phase system Hydrophobically modified ethylene oxide polymer Electrostatic interaction Micellar aggregates

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