

研究论文

盐酸氯丙嗪作探针共振瑞利散射法测定环境水样中某些阴离子表面活性剂

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摘要 在pH 3.0~5.0的HAc-NaAc缓冲溶液中, 盐酸氯丙嗪与十二烷基苯磺酸钠(SDBS)、十二烷基硫酸钠(SDS)和十二烷基磺酸钠(SLS)等阴离子表面活性剂反应形成离子缔合物时, 能导致共振瑞利散射(RRS)的显著增强并产生新的RRS光谱, 最大RRS峰分别位于277, 369和277 nm处, 方法对SDBS, SDS和SLS的检出限分别为0.018, 0.046和0.200 $\mu\text{g/mL}$, 其线性范围分别为0.09~10.0, 0.15~15.0 和0.67~12.5 $\mu\text{g/mL}$. 研究了适宜的反应条件及分析化学性质, 提出了一种用RRS技术灵敏、简便并快速测定阴离子表面活性剂的新方法.

关键词 [共振瑞利散射](#) [盐酸氯丙嗪](#) [阴离子表面活性剂](#)

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Resonance Rayleigh Scattering Method for Determination of Some Anionic Surfactants with Chlorpromazine Hydrochloride as Probe

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Abstract In HAc-NaAc buffer medium with pH 3.0—5.0, Chlorpromazine can react with some anionic surfactants(AS) such as sodium dodecylbenzene sulfonate(SDBS), sodium dodecyl sulfate(SDS) and sodium lauryl sulfonate(SLS). As the result, the Resonance Rayleigh scattering(RRS) was enhanced greatly, and a new RRS spectrum appeared. The maximum RRS wavelengths of three anionic surfactants were located at 277, 369 and 277 nm, respectively. The method has a high sensitivity, the detection limits for three anionic surfactants are 0.018 $\mu\text{g/mL}$ for SDBS, 0.046 $\mu\text{g/mL}$ for SDS and 0.200 $\mu\text{g/mL}$ for SLS. There is a linear relationship between the RRS intensity and the drug mass concentration in the range of 0.09—10.0 $\mu\text{g/mL}$ for SDBS, 0.15—15.0 $\mu\text{g/mL}$ for SDS and 0.67—12.5 $\mu\text{g/mL}$ for SLS, respectively. In this work, the spectral characteristics of RRS, the optimum conditions of the reaction and the properties of analytical chemistry were investigated. A sensitive, simple and new method for the determination of anionic surfactants based on RRS was developed.

Key words [Resonance Rayleigh scattering](#) [Chlorpromazine hydrochloride](#) [Anionic surfactants](#)

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