高等学校化学学报 2006, 27(5) 849-852 DOI: ISSN: 0251-0790 CN: 22-1131/O6

论文

金纳米微粒作探针共振瑞利散射光谱法测定亚甲蓝

鲁群岷, 何佑秋, 刘绍璞, 刘忠芳

西南大学化学化工学院, 重庆 400715

摘要:

在pH为6.5~9.5的中性或弱碱性介质中, 金纳米微粒可与亚甲蓝(MB)阳离子靠静电引力及疏水作用力结合, 形成粒径较大的聚集体(平均粒径从12 nm增至20 nm), 这种聚集体的形成导致共振瑞利散射(RRS)强度显著增强, 最大散射峰位于371 nm. 在适当条件下, 散射强度(ΔI)与亚甲蓝浓度成正比. 该法具有高灵敏度, 将金纳米微粒作为测定亚甲蓝的高灵敏RRS探针, 对亚甲蓝的检出限为21.17 ng/mL, 该法简便， 快速， 且有较好的选择性, 可用于血液中亚甲蓝的测定.

关键词： 关键词金纳米微粒; 共振瑞利散射光谱; 亚甲蓝

Resonance Rayleigh Scattering Spectral Method for Determination of Methylene Blue with Gold Nanoparticle as Probe

LU Qun-Min, HE You-Qiu, LIU Shao-Pu*, LIU Zhong-Fang

School of Chemistry and Chemical Engineering, Southwest University, Chongqing 400715, China)

Abstract:

In a neutral or weak alkaline medium(pH=6.5-9.5), the gold nanoparticle can combine with methylene blue by the virtue of electrostatic and hydrophobic interaction, forming aggregate with bigger diameters (average diameter increase from 12 to 20 nm). The aggregate arouse Resonance Rayleigh Scattering (RRS) intensity enhancing greatly. The maximum scattering peaks are at 371 nm. Under optimum conditions, there is a linear relationship between scattering intensity(ΔI) and the concentration of methylene blue. This method has a high sensitivity. So gold nanoparticle can be used as the RRS probe of high sensitivity for methylene blue. The detection limit of methylene blue is 21.17 ng/mL. The method which is simple and rapid has good selectivity. It was successfully applied to the detection of methylene blue in clinic serum samples.

Keywords: Gold nanoparticle; Resonance Rayleigh scattering spectrum; Methylene blue

收稿日期 1900-01-01 修回日期 1900-01-01 网络版发布日期

DOI:

基金项目:

通讯作者: 刘绍璞

作者简介:

(5): 849-852

本刊中的类似文章

文章评论

序号	时间	反馈人	邮箱	标题	内
					Snow ugg b The entire import o clothing pro