

浊度仪法快速测定水体中硫酸盐含量

Rapid determination of sulfate in water by turbidimetry

投稿时间: 2012-02-23 最后修改时间: 2012-07-04

DOI:

中文关键词: [硫酸盐](#) [浊度仪法](#) [快速测定](#)

英文关键词: [sulfate](#) [turbidimetry](#) [rapid determination](#)

基金项目: 福建省厦门市科技计划项目(3502Z20103034); 中央高校基本科研业务费专项资金资助(JB-ZR1114)

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中文摘要:

为了适应野外水质快速测定的要求, 根据硫酸钡比浊法的方法原理, 采用浊度仪测定浊度的方法, 建立了水体中硫酸盐含量的快速测定方法。实验考察了浊度、氯化钡加入形态、时间, 静置时间等影响因素。结果表明, 浊度在5-25 NTU时, 其对硫酸盐的测定几乎没有影响。在实验最佳条件下, 氯化钡的加入量为0.2 g, 中速手摇40 s, 静置时间5 min, 所建立方法的线性范围为5-90 mg/L, 相关系数 $R^2=0.9998$, 方法的检出限为0.25 mg/L。加标回收率为94.00%-105.25%, 相对标准偏差(RSD)为0.19%-1.75%($n=5$), 方法便携、简单, 适用于野外与浊度同步测定。

英文摘要:

To achieve a rapid field determination, a new method for the determination of sulfate in water with nephelometer was developed basing on the turbidity colorimetric method. Influencing factors such as background turbidity, addition amount of barium chloride, shaking time, and settle time, were investigated. Result revealed that 5-25 NTU of background turbidity had negligible effects on the determination. The optimal conditions were optimized to be barium chloride addition amount of 0.2 g, hand shake of 40 s, and settle time of 5 min. Under the optimal conditions, the linear range of the method was 5-90 mg/L with a correlation coefficient of 0.9998. The method detection limit was 0.25 mg/L. Recoveries of spiked samples were in the range of 94.00%-105.25% with an relative standard deviation (RSD) less than 1.75%($n=5$). The established method is portable and simple, and has the potential application with the simultaneous determination of turbidity.

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