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离子色谱法测定水体中化学需氧量的研究

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摘要 本文提出了一种将离子色谱和纳米TiO₂-K₂S₂O₈共存体系相结合测定水体中化学需氧量(COD)值的新方法。其测定原理是基于纳米TiO₂-K₂S₂O₈共存体系对有机物的光催化氧化,

体系降解有机物产生的SO₄²⁻, 利用离子色谱电导检测法测定SO₄²⁻的浓度, 其电导率响应值的变化量与水体中化学需氧量呈一定的比例关系。本文研究了测定机理, 优化了测定条件, 结果表明, 本方法操作条件温和, 能实现快速、准确的测定。COD值在10.0~300.0mg·L⁻¹浓度范围内, 与电导信号值成线性关系, 以三倍信噪比计算检测限为3.3mg·L⁻¹。将本方法用于实际水样的检测, 测定结果与COD标准分析法有良好的一致性。

关键词 [离子色谱](#), [化学需氧量\(COD\)](#), [纳米TiO₂-K₂S₂O₈](#)

分类号

Study on Determination of Chemical Oxygen Demand in Water with Ion Chromatography

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Abstract A new method for determining chemical oxygen demand (COD) value in water using ion chromatography coupled with nano TiO₂-K₂S₂O₈ co-existing system was described. The photocatalytic oxidation system and nano TiO₂-K₂S₂O₈ co-existing system could degrade the organic compounds in water. All sulfur-containing species in the reactive solution were eventually transformed to sulfate which could be determined by conductivity detector in ion chromatography. The change of conductivity of sulfate was proportional to COD value. The optimal experimental conditions and the mechanism of the detection were discussed. The application range was 10.0—300.0 mg·L⁻¹ and the lowest limit of detection was 3.5 mg·L⁻¹. It was considered that the value obtained could be reliably correlated with the COD value obtained using the conventional methods.

Key words [ion chromatography](#), [chemical oxygen demand](#), [nano TiO₂-K₂S₂O₈](#)

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