

化学

基于电热蒸发辅助脉冲电晕放电大气压离子化源的重金属污染在线质谱检测技术

周建光, 林静, 张涛, 张体强, 牟颖

浙江大学 工业控制技术国家重点实验室, 智能系统与控制实验室, 分析仪器研究中心, 杭州 310058

摘要:

研制电热蒸发辅助脉冲电晕放电大气压离子化源, 将其与飞行时间质谱耦合联用, 建立了重金属污染的在线检测方法. 实验结果表明, 该方法对V, Cr, Mn, As等主要重金属污染物检测性能较好, 灵敏度高, 检出限一般可达 10^{-13} ~ 10^{-12} g, 具有结构简单、操作方便、能耗低等特点, 实现了在线监测.

关键词: 脉冲电晕放电; 电热蒸发; 重金属检测; 大气压电离; 在线质谱监测

On Line Mass Spectrometry Detection of Heavy Metals by Electrothermal Vaporization Assisted Pulsed Corona Discharge Ionization Source under Ambient Conditions

ZHOU Jian guang, LIN Jing, ZHANG Tao, ZHANG Ti qiang, MU Ying

State Key Lab of Industrial Control Technology, Institute of Cyber Systems and Control, Research Center for Analytical Instrumentation, Zhejiang University, Hangzhou 310058, China

Abstract:

A home made electrothermal vaporization assisted pulsed corona discharge atmospheric pressure ionization source was developed for coupling with a time of flight mass spectrometer for on line detection of heavy metals in water samples. Experimental results show that vanadium, chromium, manganese, arsenic, including arsenic, chromium, which are great harmful to the environment, could be detected. The source has a simple structure, convenient operation, low energy consumption, and is easy to use, with a high sensitivity. The limit of detection can get to 10^{-13} — 10^{-12} g, and the method can be used online.

Keywords: pulsed corona discharge electrothermal vaporization; detection of heavy metal atmospheric pressure ionization on line mass spectrometry detection

收稿日期 2010-03-25 修回日期 网络版发布日期

DOI:

基金项目:

通讯作者: 牟颖

作者简介:

作者Email: ymu100@yahoo.com.cn

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