

研究简报

流动注射-电感耦合等离子体质谱联用分析土壤样品中的铀

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摘要 建立了使用²³³U作为同位素稀释剂, 流动注射-电感耦合等离子体质谱联用法分离测量土壤样品中铀的方法。土壤样品经过微波消解后, 以UTEVA树脂在线预富集铀, 0.2 mol·L⁻¹ HCl解吸铀, 且直接将铀解吸液导入多接收电感耦合等离子体质谱仪测定同位素比, 从而得出样品中铀的同位素比及铀的浓度。通过对土壤标准样品的分析, 验证了方法的可行性, 结果与标称值一致。该方法对²³⁸U和²³⁵U的检测限分别为5.4×10⁻⁹g和5.7×10⁻¹¹g。

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分类号

Determination of Uranium in Soil Samples by Flow Injection on-ICP-MS

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Abstract A rapid on-line separation and preconcentration method for the determination of uranium in soil was developed by flow injection multi-collector inductively coupled plasma mass spectrometry(FI-MC-ICP-MS) using ²³³U as spike for the isotope dilution analysis. The on-line separation was based on uranium adsorption on UTEVA resin. The absorbed uranium was eluted with 0.2 mol·L⁻¹ HCl and directly introduced into MC-ICP-MS for measuring uranium isotopes. The method was examined by determining the uranium in soil standard reference materials. The results are in good agreement with the certified values. The limits of detection of ²³⁸U and ²³⁵U are 5.4×10⁻⁹ g and 5.7×10⁻¹¹g.

Key words [uranium](#) [microwave digestion](#) [UTEV](#) [isotope dilution](#); [multi-collector inductively coupled plasma mass spectrometry\(MC-ICP-MS\)](#) [on-line separation and preconcentration](#)

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