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研究报告

同位素稀释-电感耦合等离子体质谱法测定八氧化三铀中微量钍

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摘要 为了解决核燃料循环前端铀产品中痕量钍的分离、分析问题，将高分辨电感耦合等离子体质谱（HR-ICP-MS）与同位素稀释技术（ID）相结合，建立了灵敏、准确的八氧化三铀中微量钍的分析方法，方法的检出限为0.003 3μg/g，相对标准偏差小于3%（*n*=3）。

关键词 电感耦合等离子体质谱；同位素稀释；八氧化三铀；痕量钍

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Determination of Trace Thorium in Triuranium Octoxide by Isotope Dilution Inductively Coupled Plasma Mass Spectrometry

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Abstract

In nuclear industry, trace thorium in uranium product from mining and metallurgy is an important impurity. It is difficult to separate and analyze trace thorium in uranium product.

It has important significance to improve of the quality of uranium product in our country that this problem is solved and applied to the production. A method was developed for

determining the trace thorium in triuranium octoxide by ID-ICP-MS. The detection limit of this method is 0.003 3 μg/g（3*s*）, and s_r is less than 3%（*n*=3）. The results of the determination are in good agreement with the reference values in standard reference materials GBW04205, GBW04242

and GBW04243. These indicate that the method is a sensitive and accurate one and can meet the demand for trace thorium analysis in triuranium octoxide.

Key words ICP-MS _ isotope dilution _ triuranium octoxide _ trace thorium

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