

同位素稀释-火花源质谱法测定U_{3O₈}标样中8个微量元素

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收稿日期 修回日期 网络版发布日期:

摘要 建立了同位素稀释-火花源质谱法(ID-SSMS)测定U_{3O₈}中微量元素的分析方法。本方法具有灵敏、直接、多元素同时测定及绝对测量等特点。工作中对测量线对、最佳稀释条件和导电介质等的选择进行了研究。方法经分析IAEA SR-54 U_{3O₈}杂质标样得到了验证,为我国核工业研制的U_{3O₈}杂质标样中Mo,Cu,Fe,Ca,Pb,Ba,K和Zn八个微量元素提供了定值分析数据,测定值与整体中位值相符情况良好。相对均方偏差平均为11%。

关键词 [ID-SSMS](#) [U_{3O₈}标样](#) [微量元素](#)

分类号

DETERMINATION OF EIGHT TRACE ELEMENTS IN U_{3O₈} STANDARD REFERENCE MATERIAL BY ISOTOPE DILUTION SPARK SOURCE MASS SPECTROMETRY

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Abstract An isotope dilution spark source mass spectrometric method (ID-SSMS) is developed for the certification of trace elements in U_{3O₈} standard reference material. The advantages of this method are: (a) high sensitivity and simple sample preparation; (b) simultaneous determination of many elements; and (c) measurements independent of calibration standard and providing results of precise absolute analysis. A detailed study is performed for selections of the interference lines, the optimum dilution condition and the conducting medium. In applying this method for the certification of the trace elements Mo, Cu, Fe, Ca, Pb, Ba, K and Zn in domestic U_{3O₈} standard reference material, the determined concentrations in the sample are in good agreement with the medium values. The average of all relative standard deviations is $\pm 11\%$.

Key words [ID-SSMS](#) [U_{3O₈} standard reference material](#) [Trace elements](#)

DOI

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