

同位素稀释质谱法测定高放废液中的铀

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摘要 用双同位素稀释质谱法测定高放废液中的微量铀,采用TBP/Kel-F粉反相分配色层法分离铀,双稀释剂分别为浓缩 ^{235}U 及 ^{238}U ,铀同位素丰度比的质谱测定相对标准误差优于0.1%,化学处理及质谱测定全流程铀的空白值为 $3\times 10^{-9}\text{g}$,方法检测限对于铀为 $1\times 10^{-9}\text{g}$,高放废液中微量铀测定结果不确定度为 $\pm 2\%$ 。

关键词 [高放废液](#) [铀](#) [同位素稀释质谱法](#)

分类号

DETERMINATION OF URANIUM IN HIGH-LEVEL LIQUID WASTE (HLLW) BY ISOTOPE DILUTION MASS SPECTROMETRY

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Abstract The determination of uranium in HLLW by double isotope dilution mass spectrometry is described. Uranium is separated from HLLW by TBP/Kel-F reversed-phase partition chromatography. The spikes are enriched in ^{235}U and ^{238}U , respectively. The relative standard error is better than 0.1% for the determination of uranium isotope abundance ratio by mass spectrometry. The blank value of whole procedure is $3\times 10^{-9}\text{g}$ and the detectable limit of the method is $1\times 10^{-9}\text{g}$ for uranium. The uncertainty of the determination is 2% for uranium content in HLLW.

Key words [HLLW](#)[Uranium](#)[Isotope dilution mass spectrometry](#).

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