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化学

萃取液闪α能谱法分析高放废液中的α核素

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摘要 萃取液闪α能谱法是一种将萃取法、液闪法和α能谱法的优点有机结合在一起的新方法，用该方法分析α核素，操作简单易行，可避免冗长的放化分离过程和复杂的α源制备程序。本文利用该方法分析了真实高放废液中的α核素，分析结果与历史数据符合良好。针对真实高放废液的特殊性，即大量^{90}Y干扰α/β甄别的问题，提出了两种方案来降低待测样品中^{90}Y的活度以消除^{90}Y的干扰，即推迟测量和稀释，实际应用时可根据具体情况进行选择。

关键词 萃取 液闪 α能谱 α核素 高放废液

分类号

Determination of α Nuclides in High Level Liquid Waste by Combining Extraction, Liquid Scintillation Counting, and α Spectrometry

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Abstract The approach combining solvent extraction, liquid scintillation counting (LSC), and α spectrometry has taken advantages of high counting efficiency (nearly 100%) of LSC for α radiation and high energy resolution of α spectrometry. Since the extraction processes are much shorter than those reported and no complicated procedures are required for preparation of α plate source, the new approach is easy to be used to determine α nuclides in mixed solution. Good agreements are achieved for real samples of high level liquid waste (HLLW) between accepted data and those obtained by this new approach. To deal with the interference with α/β discrimination from large amount of ^{90}Y in HLLW, two ways were proposed to decrease the radioactivity of ^{90}Y in sample, i.e. delaying measurement or diluting the sample, which can be used under different circumstances.

Key words extraction liquid scintillation counting α spectrometry αnuclides high level liquid waste

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