

用液体闪烁计数法测定 $\sim(147)\text{Pm}$

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摘要 用液体闪烁计数法测量含 α -羟基异丁酸、 HNO_3 和 $\sim(241)\text{Am}$ 等杂质的 $\sim(147)\text{Pm}$ 。研究了闪烁液用量、 α -羟基异丁酸和 HNO_3 存在量对 $\sim(147)\text{Pm}$ 测量的影响及有 $\sim(241)\text{Am}$ 存在时的干扰情况;对 $\sim(147)\text{Pm}$ 的仪器探测效率进行了刻度。在所选定的测量 $\sim(147)\text{Pm}$ 条件下,被同时记录的 $\sim(241)\text{Am}$ 不超过 $\sim(241)\text{Am}$ 总计数的1%。方法还实测了核燃料后处理高放废液中经化学分离后的 $\sim(147)\text{Pm}$ 的绝对含量,相对标准偏差 $<1\%$ 。

关键词 [钷](#) [液体闪烁计数法](#)

分类号

THE DETERMINATION OF $\sim(147)\text{Pm}$ BY LIQUID-SCINTILLATION COUNTING TECHNIQUE

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Abstract The method of measuring β particle of $\sim(147)\text{pm}$ directly in the solution which contains α -hydroxy isobutanoic acid (α -HIBA), HNO_3 and $\sim(241)\text{Am}$ is described in this report. The effect of scintilliquid(PPOPOPOP-naphthalene dioxane) and α -HIBA and HNO_3 on the measurement of $\sim(147)\text{Pm}$ is studied. The effect of $\sim(241)\text{Am}$ on the measurement of $\sim(147)\text{pm}$ is also studied. Relative counting efficiency in the measurement of $\sim(147)\text{Pm}$ for several measured solution is determined. If the activity of $\sim(147)\text{Pm}$ and $\sim(241)\text{Am}$ is about the same in the sample, they can be measured at a threshold of 1.40—5.35 V and 6.00—7.40 V respectively and interference is smaller than 1%. Absolute content of $\sim(147)\text{Pm}$ in 12 samples of high-level liquid waste was measured by this method. The results are satisfactory. The relative standard deviation of measurement for the same kind of samples is $<1\%$.

Key words [PromethiumLiquid-scintillation counting technique.](#)

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