

反应堆辐照元件中锝的测定

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摘要 <正> 一、前言 核燃料燃耗的测定是极为重要的,历年来作为燃耗监测体的有 ^{99}Mo 、 ^{137}Cs 、 ^{144}Ce 、 ^{148}Nd 和 ^{99}Tc 等,其中 ^{99}Tc 是60年代以来就受到重视的一个。在铀的裂变产物中质量数为99的仅有 ^{99}Tc 的寿命较长。而且 ^{99}Tc 具有高裂变产额,因此在堆温小于 1400°C 时它是一个较好的燃耗监测体。有关锝的分析方法文献中作了较为详细的介绍。为了准确测定核燃料元件溶液中的 ^{99}Tc ,首先应将 Tc 与大量放射性元素分离,其中Foster Jr R.E.等提出了一个

关键词 [锝](#) [分光光度法](#) [萃取](#) [元件](#)

分类号

MEASUREMENT OF TECHNETIUM IN THE SPENT FUEL

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Abstract The extraction-spectrophotometrical determination (with the precision of $\pm 1\%$) of technetium, which recovery is about more than 96%, is described. First Tc in the $\text{NaOH-Na}_2\text{CO}_3$ solution of fission products is extracted into the 2,6-dimethyl-pyridine and reextracted into H_2SO_4 solution from the organic phase by the addition of CCl_4 , then Tc is extracted into tetra-alkyl-ammonium(7402)-n-butylchloride phase by in order to be purified and spectrophotometric determined. The n-butyl chloride phase contacts with H_2SO_4 solution containing KSCN and become purplish red. The colored complex with peak of absorption at 512 nm. has a molar absorptivity of 5×10^4 , and is stable for several hours. Of over 20 common metals are studied, none interferes for the spectrophotometric determination of Tc. The results of Tc determination of 8 samples from spent fuel elements are in coincidence with the monitor of ^{148}Nd for burnup determination.

Key words [Technetium](#) [Extraction](#) [Spectrophotometry](#)

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