

研究报告

# Eu(III)和Am(III)在 $\text{Th}_4(\text{PO}_4)_4\text{P}_2\text{O}_7$ 上的吸附行为

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**摘要** 通过静态法研究了Am(III)和Eu(III)在 $\text{Th}_4(\text{PO}_4)_4\text{P}_2\text{O}_7$ 上的吸附行为, 主要包括吸附平衡时间、固液比、pH值、离子强度以及富里酸(FA)等因素对吸附的影响。实验结果表明, Am(III)和Eu(III)在 $\text{Th}_4(\text{PO}_4)_4\text{P}_2\text{O}_7$ 上的吸附具有相似的pH吸附曲线, pH值的变化对吸附的影响较大, 吸附率在pH=2~5时出现剧增; 在其他条件相同时,  $\text{KNO}_3$ 离子强度从0.01 mol/L增大到0.1 mol/L, 吸附率随着离子强度的增大而减小。通过对比实验发现, FA对Am(III)和Eu(III)在 $\text{Th}_4(\text{PO}_4)_4\text{P}_2\text{O}_7$ 上的吸附具有促进作用。Am(III)和Eu(III)在  $\text{Th}_4(\text{PO}_4)_4\text{P}_2\text{O}_7$ 表面可能形成了表面络合物。吸附剂的表面特征及其吸附机理研究是进一步深入研究的重点。

关键词 [Th<sub>4</sub>\(PO<sub>4</sub>\)<sub>4</sub>P<sub>2</sub>O<sub>7</sub>](#); [吸附](#); [Eu\(III\)](#); [Am\(III\)](#)

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## Sorption of Eu(III) and Am(III) on Thorium Phosphate Diphosphate

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**Abstract** Sorption of Eu(III) and Am(III) on thorium phosphate diphosphate as a function of equilibrium time, the ratio of adsorbent mass to solution volume ( $m/V$ ), pH, ionic strength and fulvic acid (FA) were studied under ambient condition using batch technique. The experimental results indicate that sorption of Eu(III) and Am(III) on thorium phosphate diphosphate are strongly affected by pH values, as compared Eu(III) and Am(III) adsorption on the same adsorbent. The Eu(III) and Am(III) adsorption on thorium phosphate diphosphate has the similar pH adsorption curves. The sorption of Eu(III) and Am(III) increases steeply with increasing pH from 2 to 5. The positive effect of FA on the adsorption of Eu(III) and Am(III) on thorium phosphate diphosphate are found from the compare study, and it is assumed that surface complexes are formed on the surface of thorium phosphate diphosphate. The study of adsorbent surface characteristics and adsorption mechanism are the important aspects of farther experiment.

**Key words** [thorium phosphate diphosphate](#) [sorption](#) [Eu\(III\)](#); [Am\(III\)](#)

DOI

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