

研究报告

Fe₃O₄纳米磁性微粒对钴和锶的吸附

刘峰; 杨枝; 刘和连; 罗新

东华理工大学 应用化学系

收稿日期 2006-12-25 修回日期 2007-3-21 网络版发布日期: 2008-2-2

摘要

为降低⁹⁰Sr和⁶⁰Co对环境的污染,用共沉淀法制备了粒径为10 nm的Fe₃O₄磁性微粒,分散于水中生成饱和磁化强度(M)为350 kA/m的水基磁流体,用此磁流体对Co²⁺, Sr²⁺进行了吸附研究。结果表明,在45 °C,吸附60 min时,Co²⁺, Sr²⁺分别在pH=7和pH=8下达到吸附平衡,吸附容量为1.794, 0.962 mmol/g。用Langmuir等温模型、假二级动力学模型探讨了Fe₃O₄纳米磁性微粒对Co²⁺, Sr²⁺的吸附机制,研究结果表明,该过程是单离子层吸附过程。

关键词 [钴](#) [锶](#) [吸附](#) [Fe₃O₄纳米磁性微粒](#)

分类号 [0647.3](#)

Adsorption of Cobalt and Strontium on Fe₃O₄ Magnetic Nanoparticles

Abstract

Adsorption is an efficiency method to decrease the pollution of ⁹⁰Sr and ⁶⁰Co. The adsorption behavior of cobalt and strontium on Fe₃O₄ magnetic nanoparticles was studied in this paper. The adsorbent applied here was prepared by co-precipitation, and can form water based ferrofluids. Its saturation magnetization is 350 kA/m. The experiments show that the Q_{max} of cobalt and strontium are 1.794 mmol/g and 0.962 mmol/g at pH=7 and pH=8, respectively. The adsorption process follows a pseudo second kinetics and the Langmuir isotherm, which indicates the adsorption is a monolayer adsorption.

Key words

[cobalt](#) [strontium](#) [adsorption](#) [Fe₃O₄](#) [magnetic](#) [nanoparticles](#)

扩展功能

本文信息

- ▶ [Supporting info](#)
- ▶ [\[PDF全文\]\(165KB\)](#)
- ▶ [\[HTML全文\]\(0KB\)](#)
- ▶ [参考文献](#)

服务与反馈

- ▶ [把本文推荐给朋友](#)
- ▶ [文章反馈](#)
- ▶ [浏览反馈信息](#)

相关信息

- ▶ [本刊中 包含“钴”的 相关文章](#)
- ▶ [本文作者相关文章](#)

- [刘峰](#)
- [杨枝](#)
- [刘和连](#)
- [罗新](#)

