

Accepted Manuscript

Title: Kinetic, equilibrium and thermodynamic studies on sorption of uranium and thorium from aqueous solutions by a selective impregnated resin containing carminic acid

Author: Abolfazl Rahmani-Sani Ahmad
Hosseini-Bandegharai Seyyed-Hosseini Hosseini Keivan
Kharghani Hossein Zarei Ayoob Rastegar



PII: S0304-3894(14)01031-0
DOI: <http://dx.doi.org/doi:10.1016/j.jhazmat.2014.12.047>
Reference: HAZMAT 16482

To appear in: *Journal of Hazardous Materials*

Received date: 18-8-2014
Revised date: 21-12-2014
Accepted date: 24-12-2014

Please cite this article as: Abolfazl Rahmani-Sani, Ahmad Hosseini-Bandegharai, Seyyed-Hosseini Hosseini, Keivan Kharghani, Hossein Zarei, Ayoob Rastegar, Kinetic, equilibrium and thermodynamic studies on sorption of uranium and thorium from aqueous solutions by a selective impregnated resin containing carminic acid, Journal of Hazardous Materials <http://dx.doi.org/10.1016/j.jhazmat.2014.12.047>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Kinetic, equilibrium and thermodynamic studies on sorption of uranium and thorium from aqueous solutions by a selective impregnated resin containing carminic acid

Abolfazl Rahmani-Sani¹, Ahmad Hosseini-Bandegharai^{*, 1, 2}, Seyed-Hossein Hosseini², Keivan Kharghani³, Hossein Zarei², Ayoob Rastegar^{1, 2}

¹ Wastewater Division, Faculty of Health, Sabzevar University of Medical Sciences, PO Box 319, Sabzevar, Iran

² Department of Engineering, Kashmar Branch, Islamic Azad University, PO Box 161, Kashmar, Iran

³ Water Division, Department of Engineering, Torbatheydarieh Branch, Islamic Azad University, PO Box 121, Torbatheydarieh, Iran

* Correspondence should be addressed to

Ahmad Hosseini-Bandegharai

E-mail: ahoseinib@yahoo.com; ahoseinib@iaukashmar.ac.ir

+98-532-8250550; Fax: +98-532-8250525

Abstract

In this work, the removal of uranium and thorium ions from aqueous solutions was studied by solid-liquid extraction using an advantageous Extractant-Impregnated Resin (EIR) prepared by loading Carminic Acid (CA) onto Amberlite XAD-16 resin beads. Batch sorption experiments using CA/XAD-16 beads for the removal of U(VI) and Th(IV) ions were carried out as a function of several parameters, like equilibration time, metal ion concentration, etc. The equilibrium data obtained from the sorption experiments were adjusted to the Langmuir isotherm model and the calculated maximum sorption capacities in terms of monolayer sorption were in agreement with those obtained from the experiments. The experimental data on the sorption behavior of both metal ions onto the EIR beads fitted well in both Bangham and intra-particle

Download English Version:

<https://daneshyari.com/en/article/576122>

Download Persian Version:

<https://daneshyari.com/article/576122>

[Daneshyari.com](https://daneshyari.com)