

## Accepted Manuscript

High performance hydroxyiron modified montmorillonite nanoclay adsorbent for arsenite removal

Dema A. Almasri, Tarik Rhadfi, Muataz A. Atieh, Gordon McKay, Said Ahzi

PII: S1385-8947(17)31737-0  
DOI: <https://doi.org/10.1016/j.cej.2017.10.031>  
Reference: CEJ 17815

To appear in: *Chemical Engineering Journal*

Received Date: 14 June 2017  
Revised Date: 12 September 2017  
Accepted Date: 6 October 2017

Please cite this article as: D.A. Almasri, T. Rhadfi, M.A. Atieh, G. McKay, S. Ahzi, High performance hydroxyiron modified montmorillonite nanoclay adsorbent for arsenite removal, *Chemical Engineering Journal* (2017), doi: <https://doi.org/10.1016/j.cej.2017.10.031>

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.



# High performance hydroxyiron modified montmorillonite nanoclay adsorbent for arsenite removal

*Dema A. Almasri,<sup>a,b</sup> Tarik Rhadfi,<sup>a</sup> Muataz A. Atieh,<sup>\*a,b</sup> Gordon McKay,<sup>b</sup> Said Ahzi<sup>\*a,b</sup>*

<sup>a</sup>Qatar Environment and Energy Research Institute (QEERI), Hamad Bin Khalifa University (HBKU), Qatar  
Foundation, PO Box 34110, Doha, Qatar

<sup>b</sup>College of Science and Engineering, Hamad Bin Khalifa University, Qatar Foundation, PO Box, 34110,  
Doha, Qatar

## Abstract

In the present study, hydroxyiron-modified montmorillonite (HyFe-MMT) nanoclay was prepared using a simple wet chemical synthesis method. Arsenite (As (III)) removal using raw montmorillonite and HyFe-MMT was compared and evaluated by adsorption experiments conducted under various conditions (adsorbent dosage, iron loading, contact time, pH, and initial As (III) concentration). The nanoclays were characterized using X-ray diffraction (XRD), X-ray fluorescence (XRF), Fourier transform infrared spectrometry (FTIR), BET surface area analysis, thermogravimetric analysis, scanning electron (SEM) microscopy, and transmission electron microscopy (TEM). Fast adsorption kinetics were observed in which more than 55% of As (III) was removed using HyFe-MMT within the first 30 s of the adsorption

Download English Version:

<https://daneshyari.com/en/article/6580766>

Download Persian Version:

<https://daneshyari.com/article/6580766>

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