

Accepted Manuscript

Review

Evaluation of adsorption processes of metal ions in multi-element aqueous systems by lignocellulosic adsorbents applying different isotherms: A critical review

Jordan Brizi Neris, Francisco Heriberto Martinez Luzardo, Erik Galvão Paranhos da Silva, Fermin Garcia Velasco

PII: S1385-8947(18)31842-4
DOI: <https://doi.org/10.1016/j.cej.2018.09.125>
Reference: CEJ 19964

To appear in: *Chemical Engineering Journal*

Received Date: 26 April 2018
Revised Date: 3 September 2018
Accepted Date: 17 September 2018

Please cite this article as: J.B. Neris, F.H.M. Luzardo, E.G.P. da Silva, F.G. Velasco, Evaluation of adsorption processes of metal ions in multi-element aqueous systems by lignocellulosic adsorbents applying different isotherms: A critical review, *Chemical Engineering Journal* (2018), doi: <https://doi.org/10.1016/j.cej.2018.09.125>

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.



**Evaluation of adsorption processes of metal ions in multi-element aqueous systems by
lignocellulosic adsorbents applying different isotherms: A critical review**

Jordan Brizi Neris^a, Francisco Heriberto Martinez Luzardo^{a,*}, Erik Galvão Paranhos da Silva^a, Fermin Garcia Velasco^a

^a Department of Exact and Technological Sciences, State University of Santa Cruz, BR415 Jorge Amado Highway - Km 16, CEP 45662-900, Ilhéus, Bahia, Brazil.

*Corresponding author: fmartinezluzardo@gmail.com

Abstract:

In recent years studies demonstrated good efficiency of lignocellulosic materials for adsorption and removal of toxic ions from water, however many of them are related to mono-element adsorption processes, which does not adequately describe a real aqueous system. This critical review article provides recent studies on adsorption processes in multi-element aqueous systems using natural or modified lignocellulosic adsorbents, characteristics of lignocellulosic materials, competition between metal ions in multi-element solutions, main adsorption isotherms for bi-element and multi-element systems and their applications. Trend, evolution and application of lignocellulosic materials in multi-element systems and main factors responsible for adsorption process of metal ions in lignocellulosic materials are also discussed and evaluated. It is evident, from the bibliographical research, that works on mono-element adsorption are abundant, whereas in multi-element systems are scarce. Several studies describing mechanisms of adsorption of toxic ions in lignocellulosic materials have been found, but they have reported several contradictory or non-complementary results, which makes necessary to study in depth how these mechanisms occur. In addition, many studies demonstrated good fits of multi-element isotherms to the experimental data, although some limitations of these models were found in specified cases.

Keywords: multi-element adsorption isotherm, lignocellulosic adsorbent, sorption of metal, competitive adsorption, natural adsorbents.

Summary:

1	Introduction.....	3
---	-------------------	---

Download English Version:

<https://daneshyari.com/en/article/11024458>

Download Persian Version:

<https://daneshyari.com/article/11024458>

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