

Accepted Manuscript

Single and binary adsorption of heavy metal ions from aqueous solutions using sugarcane cellulose-based adsorbent

Futao Wang, Yuanfeng Pan, Pingxiong Cai, Tianxiang Guo, Huining Xiao

PII: S0960-8524(17)30830-1
DOI: <http://dx.doi.org/10.1016/j.biortech.2017.05.162>
Reference: BITE 18188

To appear in: *Bioresource Technology*

Received Date: 13 March 2017
Revised Date: 20 May 2017
Accepted Date: 25 May 2017

Please cite this article as: Wang, F., Pan, Y., Cai, P., Guo, T., Xiao, H., Single and binary adsorption of heavy metal ions from aqueous solutions using sugarcane cellulose-based adsorbent, *Bioresource Technology* (2017), doi: <http://dx.doi.org/10.1016/j.biortech.2017.05.162>

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.



Single and binary adsorption of heavy metal ions from aqueous solutions using sugarcane cellulose-based adsorbent

Futao Wang^a, Yuanfeng Pan^{a,*}, Pingxiong Cai^a, Tianxiang Guo^b, Huining Xiao^c

^a Guangxi Key Lab of Petrochemical Resource Processing and Process Intensification Tech.,
School of Chemistry and Chemical Eng., Guangxi University, Nanning 530004 China

^b Department I of Environment Sci & Eng., North China Electric Power University, Baoding
071003 China

^c Department of Chemical Eng., University of New Brunswick, Fredericton, NB, E3B 5A3
Canada.

Abstract: A high efficient and eco-friendly sugarcane cellulose-based adsorbent was prepared in an attempt to remove Pb^{2+} , Cu^{2+} and Zn^{2+} from aqueous solutions. The effects of initial concentration of heavy metal ions and temperature on the adsorption capacity of the bioadsorbent were investigated. The adsorption isotherms showed that the adsorption of Pb^{2+} , Cu^{2+} and Zn^{2+} followed the Langmuir model and the maximum adsorptions were as high as 558.9, 446.2 and 363.3 $\text{mg} \cdot \text{g}^{-1}$, respectively, in single component system. The binary component system was better described with the competitive Langmuir isotherm model. The three dimensional sorption surface of binary component system demonstrated that the presence of Pb^{2+} decreased the sorption of Cu^{2+} , but the adsorption amount of other metal ions was not affected. The result from

* Corresponding authors.
E-mail address: panyf@gxu.edu.cn (Y. Pan).

Download English Version:

<https://daneshyari.com/en/article/4997020>

Download Persian Version:

<https://daneshyari.com/article/4997020>

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