

## Accepted Manuscript

An insight into the adsorption of diclofenac on different biochars: mechanisms, surface chemistry, and thermodynamics

Linson Lonappan, Tarek Rouissi, Satinder Kaur Brar, Mausam Verma, Rao Y. Surampalli

PII: S0960-8524(17)31858-8  
DOI: <https://doi.org/10.1016/j.biortech.2017.10.039>  
Reference: BITE 19080

To appear in: *Bioresource Technology*

Received Date: 24 August 2017  
Revised Date: 6 October 2017  
Accepted Date: 7 October 2017

Please cite this article as: Lonappan, L., Rouissi, T., Kaur Brar, S., Verma, M., Surampalli, R.Y., An insight into the adsorption of diclofenac on different biochars: mechanisms, surface chemistry, and thermodynamics, *Bioresource Technology* (2017), doi: <https://doi.org/10.1016/j.biortech.2017.10.039>

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.



# An insight into the adsorption of diclofenac on different biochars: mechanisms, surface chemistry, and thermodynamics

Linson Lonappan<sup>a</sup>, Tarek Rouissi<sup>a</sup>, Satinder Kaur Brar<sup>a\*</sup>, Mausam Verma<sup>b</sup>, Rao Y. Surampalli<sup>c</sup>

<sup>a</sup>INRS-ETE, Université du Québec, 490, Rue de la Couronne, Québec, Canada G1K 9A9

<sup>b</sup>CO<sub>2</sub> Solutions Inc., 2300, rue Jean-Perrin, Québec, Canada G2C 1T9

<sup>c</sup>Department of Civil Engineering, University of Nebraska-Lincoln, N104 SEC P.O. Box 886105, Lincoln, NE 68588-6105, United States

(\*Corresponding author, Phone: +1 418 654 3116; Fax: +1 418 654 2600;

E-mail: satinder.brar@ete.inrs.ca)

## Abstract

Biochars were prepared from feedstocks pinewood and pig manure. Biochar microparticles obtained through grinding were evaluated for the removal of emerging contaminant diclofenac (DCF) and the underlying mechanism were thoroughly studied. Characterization of biochar was carried out using particle size analyzer, SEM, BET, FT-IR, XRD, XPS and zeta potential instrument. Pig manure biochar (BC-PM) exhibited excellent removal efficiency (99.6%) over pine wood biochar (BC-PW) at 500 µg L<sup>-1</sup> of DCF (environmentally significant concentration). Intraparticle diffusion was found to be the major process facilitated the adsorption. BC-PW

Download English Version:

<https://daneshyari.com/en/article/7068734>

Download Persian Version:

<https://daneshyari.com/article/7068734>

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