

## Accepted Manuscript

Comparing chemometric and Langmuir isotherm for determination of maximum capacity adsorption of arsenic by a biosorbent

J.C. Vieira, L.C. Soares, R.E.S. Froes-Silva



PII: S0026-265X(17)31035-4  
DOI: doi:[10.1016/j.microc.2017.11.005](https://doi.org/10.1016/j.microc.2017.11.005)  
Reference: MICROC 2948  
To appear in: *Microchemical Journal*  
Received date: 26 September 2017  
Revised date: 6 November 2017  
Accepted date: 14 November 2017

Please cite this article as: J.C. Vieira, L.C. Soares, R.E.S. Froes-Silva , Comparing chemometric and Langmuir isotherm for determination of maximum capacity adsorption of arsenic by a biosorbent. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. *Microc*(2017), doi:[10.1016/j.microc.2017.11.005](https://doi.org/10.1016/j.microc.2017.11.005)

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.

## Comparing Chemometric and Langmuir isotherm for determination of maximum capacity adsorption of arsenic by a biosorbent

J. C. Vieira,<sup>a</sup> , L.C. Soares and R. E. S. Froes-Silva <sup>a\*</sup>

<sup>a</sup> Department of Chemistry, Institute of Biological and Exact Sciences, Federal University of Ouro Preto, Campus Morro do Cruzeiro, Bauxita, 35400-000, Ouro Preto, Minas Gerais, Brazil.

\* robertafroes@iceb.ufop.br

### Abstract

The determination of the maximum adsorption capacity for a biosorbent is crucial to evaluate the adsorption performance. This parameter is usually obtained from the Langmuir isotherm because it involves very simple and low-cost procedures. Nevertheless, acquisition of adsorption isotherm can be very laborious. Multivariate optimization can be used to improve the determination of the maximum adsorption capacity. In this work, Central Composite Design (CCD) and Surface Response Methodology (SRM) are used for a reliable determination of maximum adsorption capacity of arsenic by a biosorbent of lettuce flour and the result was very close to the value obtained from the Langmuir isotherm.

**Keywords:** Central Composite Design, Surface Response Methodology, water treatment, arsenic contamination, biosorption.

### 1. Introduction

Arsenic is a highly toxic and carcinogenic element and, nowadays, it is at first rank in the ATSDR 2015 Substance Priority List, a list of a prioritization of substances according to their toxicity, frequency and potential for human exposure at NPL — National Priorities List — sites

Download English Version:

<https://daneshyari.com/en/article/7641000>

Download Persian Version:

<https://daneshyari.com/article/7641000>

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