

## Accepted Manuscript

Fabrication of core – shell structured magnetic nanocellulose base polymeric ionic liquid for effective biosorption of Congo red dye

Mostafa Hossein Beyki, Mehrnoosh Bayat, Farzaneh Shemirani

PII: S0960-8524(16)30886-0  
DOI: <http://dx.doi.org/10.1016/j.biortech.2016.06.069>  
Reference: BITE 16691

To appear in: *Bioresource Technology*

Received Date: 6 April 2016  
Revised Date: 11 June 2016  
Accepted Date: 15 June 2016

Please cite this article as: Beyki, M.H., Bayat, M., Shemirani, F., Fabrication of core – shell structured magnetic nanocellulose base polymeric ionic liquid for effective biosorption of Congo red dye, *Bioresource Technology* (2016), doi: <http://dx.doi.org/10.1016/j.biortech.2016.06.069>

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.



**Fabrication of core – shell structured magnetic nanocellulose base polymeric ionic liquid  
for effective biosorption of Congo red dye**

Mostafa Hossein Beyki, Mehrnoosh Bayat, Farzaneh Shemirani\*

University of Tehran, University College of Science, School of Chemistry, PO Box 14155-6455,  
Tehran, Iran

[Shemiran@khayam.ut.ac.ir](mailto:Shemiran@khayam.ut.ac.ir)

**Abstract**

Ionic liquids are considered to be a class of environmentally friendly compounds as combination of them with bioresource polymeric substances such as; cellulose, constitute emerging coating materials. Biosorption by polymeric ionic liquids exhibits an attractive green way that involves low cost and irrespective of toxicity. As a result, a novel polymeric ionic liquid has been developed by the reaction of one step synthesized Fe<sub>3</sub>O<sub>4</sub>- cellulose nanohybrid, epichlorohydrin and 1-methylimidazole and employed as a green sorbent for efficient biosorption of Congo red dye. Effective parameters on dye removing as well as their interactions were determined with response surface methodology (RSM). Congo red adsorption showed fast equilibrium time (11 min) with maximum uptake of 131 mg g<sup>-1</sup>. Isotherm study revealed that Langmuir adsorption model can better describe dye adsorption behavior. Regeneration of the sorbent was performed with a mixture of methanol – acetone - NaOH (3.0 mol L<sup>-1</sup>) solution.

**Keywords:** Cellulose, Dye, Magnetic sorbent, Polymeric ionic liquid.

Download English Version:

<https://daneshyari.com/en/article/7070273>

Download Persian Version:

<https://daneshyari.com/article/7070273>

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