Accepted Manuscript

Title: Microwave preparation of triethylenetetramine modified graphene oxide/chitosan composite for adsorption of Cr(VI)

Author: Huacai Ge Ziwei Ma

PII: S0144-8617(15)00530-5

DOI: http://dx.doi.org/doi:10.1016/j.carbpol.2015.06.025

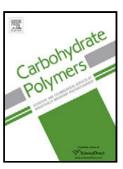
Reference: CARP 10012

To appear in:

Received date: 13-2-2015 Revised date: 4-6-2015 Accepted date: 6-6-2015

Please cite this article as: Ge, Н., and Ma, Z., Microwave triethylenetetramine modified preparation of graphene oxide/chitosan composite for adsorption of Cr(VI), Carbohydrate **Polymers** (2015),http://dx.doi.org/10.1016/j.carbpol.2015.06.025

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.



ACCEPTED MANUSCRIPT

ı	Microwave preparation of triethylenetetramine modified graphene
2	oxide/chitosan composite for adsorption of Cr(VI)
3	Huacai Ge*, Ziwei Ma
4	College of Chemistry and Chemical Engineering, South China University of Technology,
5	Guangzhou 510640, China
6	*Corresponding author. Tel.: +86 20 87112900; fax: +86 20 22236337. E-mail address:
7	chhcge@scut.edu.cn (H. Ge).
8	Highlights:
9	Triethylenetetramine modified graphene oxide/chitosan composite was prepared.
10	Conventional and microwave preparations were used and compared.
11	• Adsorption of Cr(VI) on the composite was systematically studied.
12	• The product prepared by microwave has higher yield and uptake.
13	• The composite can removed the Cr(VI) in solution and reused.
14	
15	Abstract: A novel triethylenetetramine modified graphene oxide/chitosan composite (TGOCS)
16	was successfully synthesized by microwave irradiation (MW) method and compared with one
17	prepared by conventional heating. This composite was characterized by FTIR, XRD, SEM, BET
18	and elemental analysis. Adsorption of Cr(VI) on the composite was studied. The experimental
19	results indicated that the product obtained by MW had higher yield and uptake than one obtained
20	by the conventional and uptake of TGOCS for Cr(VI) was higher than that of the recently reported
21	adsorbents. The effects of various variables on adsorption of Cr(VI) by TGOCS were further
22	researched. The highest adsorption capacity of 219.5 mg g ⁻¹ was obtained at pH 2. Adsorption
23	followed pseudo-second-order kinetic model and Langmuir isotherm. The capacity increased as
24	increasing temperature. The adsorbent could be recyclable. These results have important
25	implications for the application expansion of microwave preparation and the design of new
26	effective composites for Cr(VI) removal in effluents

Download English Version:

https://daneshyari.com/en/article/7787762

Download Persian Version:

https://daneshyari.com/article/7787762

<u>Daneshyari.com</u>