

Accepted Manuscript

Title: Adsorption study of Methyl orange by
Chitosan/Polyvinyl Alcohol/Zelite Electrospun Composite
Nanofibrous Membrane.

Authors: Umma Habiba, Tawsif A. Siddique, Jacky Jia Li Lee,
Tan Chin Joo, Bee Chin Ang, Amalina M. Afifi



PII: S0144-8617(18)30239-X
DOI: <https://doi.org/10.1016/j.carbpol.2018.02.081>
Reference: CARP 13343

To appear in:

Received date: 29-10-2017
Revised date: 21-1-2018
Accepted date: 26-2-2018

Please cite this article as: Habiba, Umma., Siddique, Tawsif A., Lee, Jacky Jia Li., Joo, Tan Chin., Ang, Bee Chin., & Afifi, Amalina M., Adsorption study of Methyl orange by Chitosan/Polyvinyl Alcohol/Zelite Electrospun Composite Nanofibrous Membrane. *Carbohydrate Polymers* <https://doi.org/10.1016/j.carbpol.2018.02.081>

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.

Adsorption study of Methyl orange by Chitosan/Polyvinyl Alcohol/Zelite Electrospun Composite Nanofibrous Membrane.

Umma Habiba^a, Tawsif A Siddique^b, Jacky Jia Li Lee^a, Tan Chin Joo^a, Bee Chin Ang^c, Amalina M. Afifi^{a,*}

^a*Center of Advanced Material, Department of Mechanical Engineering, Faculty of Engineering, University of Malaya, Kuala Lumpur, 50603, Malaysia.*

^b*Department of Mechanical Engineering, School of Science and Engineering, University of Creative Technology Chittagong, Bangladesh.*

^c*Center of Advanced Material, Department of Chemical engineering, Faculty of Engineering, University of Malaya, Kuala Lumpur. Malaysia.*

* Corresponding author: Tel.: +60379675385; fax: +6037967 5317
E-mail address: amalina@um.edu.my (Amalina M. Afifi)

Highlights

- The chitosan/PVA/zeolite nanofiber was electrospun for dye degradation.
- Addition of zeolite results increased tensile strength of nanofibrous membrane.
- Most notable result of this study is the high adsorption rate.
- Adsorption capacity was decreased with increasing pH value.

Abstract

The chitosan/polyvinyl Alcohol/zeolite electrospun composite nanofibrous membrane was fabricated for adsorption of methyl orange. The EDX, TGA and tensile test were carried out for the characterization of the membrane. The Young's Modulus of the nanofibrous membranes increased by more than 100% with the addition of zeolite to chitosan/PVA. The batch adsorption tests were conducted by varying the initial concentration of methyl orange, contact time and pH of the dye solution. UV-vis results showed that most of the dye was adsorbed within 6 min. An adsorption kinetic study was carried out using the pseudo-second-order kinetic model, Lagergren-first-order model and intra particle diffusion model. The adsorption

Download English Version:

<https://daneshyari.com/en/article/7782711>

Download Persian Version:

<https://daneshyari.com/article/7782711>

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