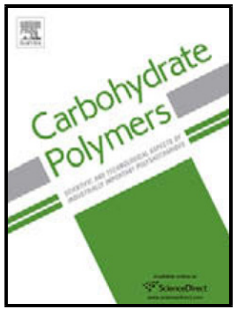

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PII: S0144-8617(18)30239-X
DOI: https://doi.org/10.1016/j.carbpol.2018.02.081
Reference: CARP 13343

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/Zeolite Electrospun Composite Nanofibrous Membrane.*Carbohydrate Polymers* https://doi.org/10.1016/j.carbpol.2018.02.081

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

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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