

Accepted Manuscript

A facile synthesis of mordenite zeolite nanostructures for efficient bleaching of crude soybean oil and removal of methylene blue dye from aqueous media

Mostafa Y. Nassar, Ehab A. Abdelrahman, Ahmed A. Aly, Talaat Y. Mohamed



PII: S0167-7322(17)31985-2
DOI: doi:[10.1016/j.molliq.2017.10.061](https://doi.org/10.1016/j.molliq.2017.10.061)
Reference: MOLLIQ 8023
To appear in: *Journal of Molecular Liquids*
Received date: 6 May 2017
Revised date: 7 October 2017
Accepted date: 12 October 2017

Please cite this article as: Mostafa Y. Nassar, Ehab A. Abdelrahman, Ahmed A. Aly, Talaat Y. Mohamed , A facile synthesis of mordenite zeolite nanostructures for efficient bleaching of crude soybean oil and removal of methylene blue dye from aqueous media. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Molliq(2017), doi:[10.1016/j.molliq.2017.10.061](https://doi.org/10.1016/j.molliq.2017.10.061)

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.

A facile synthesis of mordenite zeolite nanostructures for efficient bleaching of crude soybean oil and removal of methylene blue dye from aqueous media

Mostafa Y. Nassar^{a*}, Ehab A Abdelrahman^a, Ahmed A. Aly^b, and Talaat Y. Mohamed^a

^aChemistry Department, Faculty of Science, Benha University, Benha 13518, Egypt

^bHome Economics Department, Faculty of Specific Education, Benha University, Benha 13518, Egypt

*Corresponding authors. Tel.: +20 1068727555; E-mail addresses:

m_y_nassar@yahoo.com, m_y_nassar@fsc.bu.edu.eg

Abstract

In the current investigation, we have reported on the preparation of mordenite zeolite nanostructures using a low-cost hydrothermal treatment of silica gel, aluminum nitrate and sodium hydroxide. The influence of organic templates such as ethylene glycol, glycerol, and polyethylene glycol 200 (PEG 200) on the zeolite products was studied. The crystallite sizes of the as-fabricated samples increased in the following order: (PEG 200) < (ethylene glycol) < (glycerol) < (without template). The PEG 200 organic template generated a mordenite product with 57.51 nm crystallite size and 28.26 m²/g BET surface area. The as-prepared products were identified using FE-SEM, FT-IR, XRD, HR-TEM, and BET techniques. The as-prepared mordenite product could be successfully applied to purify the crude soybean oil from the yellow and red colors. The mordenite product also showed good adsorption properties toward the removal of methylene blue (MB) dye from wastewater. Kinetic data exhibited that the dye adsorption process obeyed pseudo-first-order, intra-particle diffusion, liquid film diffusion, and pore diffusion models

Download English Version:

<https://daneshyari.com/en/article/7843634>

Download Persian Version:

<https://daneshyari.com/article/7843634>

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