



Adsorption removal of Congo red by epichlorohydrin-modified cross-linked chitosan adsorbent

Chunguang Li*, Jiehu Cui, Fan Wang, Weigong Peng, Yanhong He

Key Laboratory of Environment Functional Materials, Zhengzhou Institute of Aeronautical Industry Management, Zhengzhou 450015, China, emails: hycgli@126.com (C. Li), cuijiehu@163.com (J. Cui), faye91@163.com (F. Wang), zziapwg@163.com (W. Peng), hyh@zzia.edu.cn (Y. He)

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ABSTRACT

A new cross-linked chitosan-based adsorbent was prepared by the cross-linked reaction between chitosan and epichlorohydrin under alkaline conditions. The chemical structure of this new adsorbent was characterized by infrared spectra analysis. The static adsorption using Congo red solution as simulated dye wastewater was investigated. The results suggested that there was an increased surface roughness and granular material on the cross-linked chitosan adsorbent surface and that the adsorption capacity of the modified chitosan adsorbents was higher than the parent chitosan. It was found out that adsorption behavior match well with Freundlich isotherm and pseudo-second-order kinetic models. The optimal conditions about the adsorption of Congo red are as follow: The dosage of modified chitosan was 30 mg/25 mL, the pH was 4, the time was 120 min, and the temperature was 40 °C.

Keywords: Chitosan; Congo red; Modify; Adsorption; Epichlorohydrin

*Corresponding author.