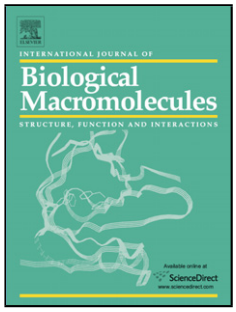

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Fabrication of pure chitosan nanofibrous membranes as effective absorbent for dye removal

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Abstract: The pure chitosan nanofibrous membranes with average fiber diameter of 86±18, 114±17,164±28 nm were successfully prepared by electrospinning. Batch adsorption experiments of using chitosan nanofibrous membranes as adsorbent to remove acid blue-113 were conducted. The adsorption capacity of 1377 mg/g was achieved by the chitosan nanofibrous membrane with average fiber diameter of 86 nm, which was superior to the chitosan microscale sample with the adsorption capacity of 412 mg/g. The average fiber diameter and the corresponding equilibrium adsorption capacity of pure chitosan nanofibrous membranes fitted well with linear relationship in our test range. The results also showed that the adsorption followed with pseudo second-order kinetics model, and the adsorption behavior was accordance with the Langmuir isotherm model. The pure chitosan nanofibrous membrane showed promise and feasibility as an effective adsorbent for dye removal.

Key words: Chitosan; Nanofiber; Adsorption; Dye removal; Electrospinning

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