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Application of cross-linked porous chitosan films for Congo red adsorption from aqueous solution

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ABSTRACT

The preparation, characterization, and environmental application of cross-linked porous chitosan (CPCS) films for Congo red adsorption have been investigated. The adsorbent was characterized by Fourier transform infrared spectrophotometer and scanning electron microscope. The adsorption experiments were carried out in a batch system to optimize operation variables: contact time, Congo red concentration, temperature, and pH. The results indicated that CPCS films could successfully remove 96% of Congo red. The adsorption kinetics and equilibrium isotherms showed that the sorption processes were better fitted by pseudo-second-order equation and Langmuir equation, respectively. Adsorption thermodynamics indicates the spontaneous nature and endothermic of the adsorption process.

Keywords: Chitosan; Adsorption; Congo red; Film

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