



Study on synthesis and adsorption characterization of hydroxypropyl chitosan metal complex

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ABSTRACT

The studies on the modification of chitosan and the properties of its derivatives using physical fields (ultrasonic field) for raising the reaction speed and reaction yield have been carried out. The basic investigative data were provided for the development on the highly efficient, new water treatment agent. O-(hydroxyl isopropyl) chitosan-Fe(II) was synthesized via 1,2-epoxypropane derived reaction of Fe²⁺ with chitosan. The structure of the product was identified by its transform Fourier infrared spectrum, UV spectrum, and X-ray diffraction. The adsorptive properties of hydroxypropyl chitosan-Fe(II) complex (HPCTS-Fe²⁺) for heavy metal ions were researched. The experiments showed that the removal efficiencies were 99.8% and 78.8%, respectively, using 1% (g/mL) of the HPCTS-Fe²⁺, pH5, initial concentration 1 mg/L Cu²⁺, 0.1 mg/L Pb²⁺, respectively, equilibration for 30 min. It showed that HPCTS-Fe²⁺ might be used as a new highly efficient water treatment agent for adsorbing heavy metal ions.

Keywords: Chitosan modification; Adsorptive properties; Ultrasonic enhance; Cu(II); Pb(II)

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