



Removal and Recovery of Copper Ions using Chitosan as an Adsorbent

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Accepted on 4th July 2015

ABSTRACT

Removal and recovery of copper ions using chitosan as adsorbent was carried out using batch adsorption process. The various parameters viz., pH, contact time, adsorbent dosage, particle size and concentration were optimized to get effective removal of Cu (II) ions. Maximum removal (99.16%) of copper ions (0.01M) was observed at pH5, contact time 90min, adsorbent dosage 0.5g and particle size 600 μ m. The thermodynamics of adsorption was studied by varying the temperature between 30-60 $^{\circ}$ C. From these studies, it was revealed that adsorption of Cu (II) ions on chitosan was spontaneous and endothermic in nature. The adsorption process followed Freundlich, D-R and Temkin isotherms and obeys pseudo first order kinetics. Recovery of Cu (II) ions was found to be 84.87% using 0.1M NaOH as an eluent. The study revealed that chitosan is a potential adsorbent for removal of Cu (II) ions.

Keywords: Chitosan; Adsorption; copper ions; Thermodynamics; Adsorption isotherm; Kinetics; Desorption.
