



Thermodynamics, isotherm and kinetics for adsorption of Cu(II) onto Na-bentonite

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ABSTRACT

The adsorption characteristic of low Cu(II) concentration onto Na-bentonite as an adsorbent as a function of pH, dosage of Na-bentonite, temperature, initial Cu(II) concentration and contact time was systematically studied using batch technique. In order to reveal the adsorption characteristic of Na-bentonite, surface area, total pore volume, mean pore diameter, IR, XRD, DTA and TG were carried out. Graphical correlation of various adsorption isotherm models like Langmuir and Freundlich have been investigated for Na-bentonite. The thermodynamic parameters such as variation of enthalpy, variation of entropy and variation of Gibbs free energy were calculated. The pseudo-first-order, pseudo-second-order, parabolic diffusion and Elovich models were used to fit the adsorption kinetics. The result showed Na-bentonite was suitable as a low cost adsorbent for removal of Cu(II) from aqueous solutions.

Keywords: Adsorption; Na-bentonite; Cu(II); Isotherm; Kinetics; Thermodynamics

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