

Kappaphycus alvarezii waste biomass : A potential biosorbent for chromium ions removal

Abstract

The Cr(III) sorption experiments onto *Kappaphycus alvarezii* waste biomass were conducted at different pH values (2-6) under the conditions of initial metal concentration of 10-50 mg/L and the chemical compositions of Cr-Cu and Cr-Cd. The Cr(III) sorption capacities were slightly dependent on pH, and the maximum sorption capacity was 0.86 mg/g at pH 3. The sorption capacities increased with increase in the initial metal concentration, whereas it was suppressed by the presence of Cu(II) and Cd(II) in the solution. The Cr(III) sorption equilibrium was evaluated using Langmuir, Freundlich and BET isotherms. The sorption mechanisms were characterised using scanning electron microscopy and Fourier transform infrared spectroscopy. The main mechanisms were ion exchange coupled with a complexation mechanism. *Kappaphycus alvarezii* waste biomass represents a potential for Cr(III) ion removal from aqueous solution.