

Copper (II) and Nickel (II) sorption onto seaweed (*Kappaphycus alvarezii*) waste biomass: equilibrium and mechanism studies

ABSTRACT

Cu (II) and Ni (II) sorption were investigated using seaweed (*Kappaphycus alvarezii*) waste biomass. The metal sorption experiments were conducted at different pH values (pH 2-6) and initial metal concentrations (10-50 mg/L). The equilibrium sorption data were fitted to Langmuir and Freundlich isotherms and the isotherm parameters were evaluated at different initial metal concentrations. The metal sorption capacities were found to be pH dependent and increased with initial metal concentration. The maximum observed Cu (II) and Ni (II) sorption capacities (Q) were 4.5872 and 12.3460 mg/g (according to the Langmuir isotherm). The metal sorption mechanisms were determined to be ion exchange and complexation. In combination, *Kappaphycus alvarezii* waste biomass represents a cost-effective and efficient metal sorbent to remove metal ions.

Keyword: Sorption; Copper; Nickel; *Kappaphycus alvarezii*