

ABSTRACT

ADSORPTION KINETICS AND ISOTHERM OF DIVALENT IONS OF Ca^{2+} , Cu^{2+} , AND Cd^{2+} IN SOLUTION USING *Spirulina* sp ALGAE BIOMASS

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In this research, it has been carried out adsorption process of Ca^{2+} , Cu^{2+} , and Cd^{2+} ions towards adsorbent of *Spirulina* sp. The identification of the functional groups of *Spirulina* sp algae biomass was performed using FTIR spectroscopy method and the amount of ions was analyzed using Atomic Absorption Spectrophotometer (AAS). Batch process was used in the adsorption of Ca^{2+} , Cu^{2+} , and Cd^{2+} ions by algae biomass to determine the algae biomass dosage as adsorbent, pH, interaction time, and initial metal ion concentration. The optimum algae biomass dosage was 0.1 g and the optimum adsorption was at pH 5. The kinetics adsorptions of Ca^{2+} , Cu^{2+} , and Cd^{2+} ions tend to follow the pseudo second order kinetics with rate constant values of 0.300, 0.090, and 0.015 $\text{g mg}^{-1} \text{min}^{-1}$, respectively. The adsorption isotherms of Ca^{2+} , Cu^{2+} , and Cd^{2+} ions tend to follow the Langmuir isotherm models, with the values of adsorption capacity of 22.52, 22.21, and 21.25 mg g^{-1} , respectively.

Keywords: *Spirulina* sp, adsorption kinetics, adsorption isotherm