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INNOVATIVE BIOSORBENT FOR THE REMOVAL OF CADMIUM IONS FROM WASTEWATER

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Abstract

In the present work, the removal of cadmium ions from aqueous solution using an agricultural waste as biosorbent, namely trunk palm fibers was investigated. The adsorption equilibrium and kinetics for this system were studied. Four adsorption models were applied to understand the nature of the adsorption process. Freundlich adsorption isotherm was found to best fit the experimental data. The maximum adsorption capacity was found to be 23.8 mg/g. The adsorption process was found to be very fast achieving equilibrium within 5 minutes. Four kinetic models were applied to explain the mechanism of adsorption. Among these models, pseudo second order model was found to perfectly fit the experimental data. Both equilibrium and kinetic models indicated the chemical nature of the adsorption process due to the interaction of cadmium ions and functional groups on the surface of the palm fibers.

Key words: adsorption, Cadmium, fiber, palm, wastewater

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