



Sorption Kinetic Models of Pb(II) and Cu(II) from a Typical Hospital Wastewater Using Modified Cassava Peels (MCP) Biomass

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Received July 16, 2012; Accepted October 31, 2012

Abstract: The sorption of two divalent metal ions, Pb(II) and Cu(II) from a typical hospital wastewater onto modified cassava waste biomass over a wide range of reaction conditions and temperature was studied under batch conditions. The study showed that a pH of 8 was the best for the sorption of both metal ions onto the biomass. The time dependent experiments for the metal ions showed that the binding of the metal ions to the biomass was rapid and occurred within 20-120 min. Sorption efficiency increased with increase in adsorbent dosage. It increased from 10% -74% for Pb(II) and 27% -77% for Cu(II) when the adsorbent dose increased from 2g-12g. Increase in temperature led to an increase in sorption for both metals ions. The Langmuir model showed that the biomass has a high sorption capacity for Cu(II) than Pb(II), with $q_m = 9.25$ for Pb(II) and 8.33 for Cu(II). The separation parameter R_L for Pb(II) and Cu(II) was 0.58 and 0.51, indicating a favourable sorption. The Freundlich isotherm K_f was 1.00 for Pb(II) and 0.75 for Cu(II), indicating a preferential sorption of Pb(II) by the biomass. The sorption of the metal ions was also well described by the first pseudo-order model

Keywords: *Adsorption isotherms, Cu(II) and Pb(II) adsorption efficiency, First pseudo-order model and thermodynamic adsorption parameters*

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