

Single and binary adsorptions isotherms of Cd(II) and Zn(II) on palm kernel shell based activated carbon

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ABSTRACT

A batch adsorption study was conducted to investigate the suitability of palm kernel shell (PKS)-based activated carbon for the removal of cadmium and zinc ions from aqueous solutions. Single component equilibrium data were analyzed using the Langmuir, Freundlich and Redlich–Peterson isotherms. Overall, the Redlich–Peterson isotherm showed the best fit for all adsorption under investigation. As the binary adsorption is competitive, the extended Langmuir (EL) model could not predict well the binary component isotherm. Three correlative models, the modified extended Langmuir (MEL), modified extended Freundlich (MEF) and modified extended Redlich–Peterson (MERP) models were used to fit binary system equilibrium data. It was found that the binary isotherm data could be described well by the modified extended Langmuir model.

Keywords: Palm kernel shell; Cadmium; Zinc; Binary isotherm; Adsorption

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