Environmental Engineering and Management Journal xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
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Pb (II) REMOVAL FROM AQUEOUS SOLUTION BY ADSORPTION ON ACTIVATED CARBON FROM KIWI PEEL

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Abstract

A new low-cost activated carbon was developed from kiwi peel for removing Pb (II) from aqueous solution. The adsorbent characteristics were determined by different analyses such as BET, FTIR and SEM. The adsorbent demonstrated remarkable characteristics such as high surface area (306.18 $m^2 g^{-1}$) and large total pore volume (0.4810 $cm^3.g^{-1}$). The effect of pH, contact time, initial concentration, shaking rate and adsorbent dosage on the Pb removal efficiency was investigated. It was found that the optimum pH for removing Pb (II) was 6. The equilibrium experimental data were analyzed by several model isotherms. The adsorption models were found to fit the experimental data in the order of Freundlich> Langmuir >Tempkin. The maximum adsorption capacity of Pb (II) adsorbed by kiwi peel-based activated carbon, was 158.82 $\mu g.g^{-1}$. The kinetics of Pb (II) adsorption was investigated using different kinetics models. Experimental results were well fitted with pseudo-second-order model. It could be inferred from the results that kiwi peel is a promising and cost effective raw material for the removal of contaminants from wastewaters.

Key words: adsorbent, isotherm, kinetics, kiwi peel, Pb (II)

Received: February, 2014; Revised final: August, 2014; Accepted: August, 2014

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