J. Int. Environmental Application & Science, Vol. 9(5): 657-668 (2014)

Removal of Alizarin Red S from Aqueous Solutions by Adsorption Using Activated Carbons Prepared from Walnut Shell by $ZnCl_2$ Activation

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Received June 01, 2014; Accepted June 06, 2015

Abstract: Adsorption of alizarin Red S (ARS) from aqueous solution onto activated carbon with $ZnCl_2$ (WZAC) prepared by chemical activation from walnut shell was investigated. The effect of pH, dye concentration, and contact time on the adsorption behaviour this dye has been studied. The kinetic of adsorption of ARS have been discussed using three kinetic model, i.e., the pseude-first-order model, pseudo-second-order model, and the intraparticle diffusion model. Kinetic parameter and correlation coefficients were determined. Equilibrium isotherms fort he adsorption of ARS on WZAC were measured experimentally. Results were analyzed by the Langmuir, Freundlich, Dubinin-Kaganer-Radushkevich (DKR), Temkin, Frumkin, Harkins-Jura, Halsey, Henderson models of adsorption using linearized correlation coefficient at different temperature. The characteric parameters for each isotherm have been determined.

Keywords*:* Alizarin Red S; Active Carbon; $ZnCl_2$, Walnut Shell; Adsorption isotherm; Equilibrium; Kinetics

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This paper has been presented at (IESSV) 2014, Van, Turkey