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Application of physicochemically prepared activated carbon fiber for the removal of basic blue 3 from water

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ABSTRACT

In this study the adsorption of basic blue 3 (BB3) from aqueous solution onto activated carbon fiber (ACF) derived from Kenaf have been investigated. The adsorption studies include both equilibrium and kinetics. Langmuir, Freundlich and Temkin isotherm models were used to illustrate the experimental Equilibrium data and their constants. Obtained results revealed that equilibrium data fitted reasonably to the Langmuir isotherm model. According to Langmuir model, adsorption of BB3 on ACF was monolayer and the maximum adsorption capacity was 666.67 mg/g. The kinetic of adsorption was evaluated by pseudo-first-order, pseudo-second-order and intraparticle diffusion kinetic models. Results of Kinetic studies showed that the adsorption process follows the pseudo-second-order model. According to pseudo-second-order model the rate limiting step may be chemisorptions.

Keywords: Activated carbon fiber; Kenaf; Basic blue 3

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