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ADSORPTION PROPERTIES OF ACTIVATED CARBON FROM WILD PLANT PREPARED BY CHEMICAL ACTIVATION

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Abstract

Activated carbon was prepared from renewable plant material, that is *Euphorbia rigida*, by chemical activation using zinc chloride as activating reagents. The adsorption of Basic Blue 9 (BB9) onto activated carbon was investigated in a batch system with respect to contact time, pH and temperature from aqueous solutions. The experimental data indicated that the adsorption isotherms are well described by the Langmuir isotherm model and the calculated maximum adsorption capacity of activated carbon was 155.62 mg g⁻¹ at 40°C. The experimental data fitted very well to pseudo-second order kinetic model and also followed by the intraparticle diffusion model up to 60 min. The thermodynamic parameters such as change of free energy, enthalpy and entropy of adsorption were also calculated to estimate the nature of adsorption. The results show that activated carbon prepared from *Euphorbia rigida*, which is a wild and abundant plant, by zinc chloride chemical activation could be employed as low-cost material to compare with commercial activated carbon for the removal textile dyes from textile wastewater processes.

Key words: activated carbon, adsorption, basic dye, isotherms, kinetics

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