



Adsorptive transfer of methylene blue from aqueous solutions to hazelnut husk carbon activated with potassium carbonate

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ABSTRACT

Removal of methylene blue (MB) using activated carbon prepared from hazelnut husk by potassium carbonate (HHPCAC) chemical activation was investigated batchwise. In order to optimize the process, the effect of pH, contact time and initial MB concentration was studied. MB adsorption was favorable at near to neutral conditions. The adsorption of MB also depended on the contact time and reached equilibrium at 120 min. The MB equilibrium was modeled by Langmuir and Freundlich's isotherm equations. The MB adsorption onto prepared activated carbon was found to be compatible with the Langmuir isotherm providing a monolayer adsorption capacity of 333.3 mg g⁻¹. The adsorption kinetics was evaluated with pseudo-first-order, pseudo-second-order kinetic and intraparticle diffusion models. The prepared hazelnut husk activated carbon was found to be an effective adsorbent for removal of MB from aqueous solutions.

Keywords: Methylene blue; Adsorption; Hazelnut husk; Activated carbon; Chemical activation; Potassium carbonate

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