Preparation of activated carbon from coffee residues: characterization and

its use in aqueous-phase adsorption

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Abstract:

Coffee residues were used to prepare activated carbon by chemical activation at different ratio of potassium hydroxide. The influence of impregnation ratio on physical properties of activated carbon and removal of organic pollutants from aqueous phase (phenol and dichlorophenol) was studied. Comparison with a commercial activated carbon has been made. Textural characterization of the samples was performed by using nitrogen adsorption isotherms at 77K. Adsorption isotherms of pollutants onto produced and commercial activated carbons were experimentally determined by batch tests. Both Freundlich and Langmuir models are well suited to fit the adsorption isotherm data. All results chow that impregnation ratio of 2/1 was found optimum for preparing activated carbon from coffee residues with high pore surface area (1250 m2/g) and micropore volume (0.762 cm3/g). As a result, the coffee residues based activated carbon may be promising for organic pollutants removal from aqueous solutions.

Keywords: Coffee residue, Activated carbon, Adsorption

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