



Adsorption of methylene blue by residue biochar from coprolysis of dewatered sewage sludge and pine sawdust

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ABSTRACT

The potential of residue biochar derived from coprolysis of dewatered sewage sludge (80% of moisture content) and pine sawdust for the adsorption of methylene blue (MB) from aqueous solution was studied. The biochar was characterized by scanning electron microscope, X-ray fluorescence, and Brunauer–Emmet–Teller (BET). Adsorption experiments were carried out to investigate effects of various parameters on MB adsorption and evaluate the batch adsorption kinetics and isotherms. The results showed that the biochar had a BET surface area of 168.27 m²/g and the maximum adsorption capacity of 16.75 mg/g for MB at 35°C. The adsorption process was followed the second-order kinetic equation, suggesting that the adsorption might be a chemisorption process. The experimental adsorption isotherm data were well fitted with both Langmuir model and Freundlich model.

Keywords: Adsorption; Biochar; Dewatered sewage sludge; Methylene blue

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