



Color and COD reduction from cotton textile processing wastewater by activated carbon derived from solid waste in column mode

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ABSTRACT

Rattan-activated carbon was evaluated for color reduction and chemical oxygen demand (COD) of a cotton textile mill wastewater in a fixed-bed adsorption column. The maximum adsorption capacities of color and COD were 100.15 Pt/Co and 73.23 mg/L, respectively, at 10 mL/min flow rate and 80 mm bed height. Kinetic models, Adams–Bohart, Thomas and Yoon–Nelson were applied to experimental data to predict the breakthrough curves using linear regression. The Thomas and Yoon–Nelson models were found suitable for the description of the breakthrough curve while the Adams–Bohart model was only used to predict the initial part of the dynamic process. The results of this study indicated the applicability of fixed-bed column for reduction of color and COD from textile mill wastewater.

Keywords: Rattan waste; Activated carbon; Textile wastewater; Fixed-bed column; Adsorption; Modeling

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