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Adsorption of methylene blue and methyl orange from aqueous solution by iron oxide-coated zeolite in fixed bed column: predicted curves

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ABSTRACT

Fixed bed column study were carried out to investigate the performance of iron oxide-coated zeolite (IOCZ) in removal of methylene blue (MB) and methyl orange (MO) from aqueous solution in single dye system. The effects of various experimental conditions, such as the flow rate, initial metal concentration and bed depth were studied. The Thomas model, modified-dose–response model (MDR) and the bed depth service time (BDST) model were used to fit the experimental data. The results were that MDR model was better for the description of breakthrough curves at all experimental conditions than Thomas model. BDST model was applied to predict the service times with various flow rate and initial concentration. IOCZ can be used to remove dyes from solution.

Keywords: Iron oxide-coated zeolite (IOCZ); Adsorption; Methylene blue; Methyl orange; Colum

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