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FIXED-BED-COLUMN STUDIES FOR METHYLENE BLUE REMOVAL BY CELLULOSE CELLETS

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Abstract

The *Cellels* product represents a cellulose material, which combines different properties such as the perfect sphericity, fine particle size distribution, low friability and solubility, and inertness. The experiments were carried out with *Cellels 200* granulated celluloses used as a filling material for a laboratory glass column, using diluted dye solution (9-10 mg of dye /L of solution) at adequate initial pH (4.7). The effect of flow rate was investigated, and the modeling of experimental data for dynamic adsorption of Methylene Blue organic dye from aqueous solution in a fixed bed column was studied based on Thomas, and Yoon-Nelson models. The optimal volume of working dye solution per adsorbent mass was determined as higher than 0.01368 m³/day and the adsorption capacity of *Cellels 200* celluloses in fixed-bed column study for Methylene Blue dye removal was in the range of 1.375-3.303 mg/g. The obtained results confirm that the tested granulated cellulose can be considered as a good adsorbent into dynamic operating systems, which can be used in the treatment of wastewater containing organic dyes.

Key words: cellulosic adsorbent, cationic dye, dynamic adsorption, flow rate effect, Thomas and Yoon-Nelson model

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