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Modeling of tartrazine adsorption onto activated carbon fiber in a continuous fixed-bed reactor

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ABSTRACT

A column study was carried out using activated carbon fiber for the adsorption of tartrazine from aqueous solution. The effect of flow rate and inlet tartrazine concentration on the adsorption characteristics of the activated carbon fiber at 25°C was investigated. Adams–Bohart, Thomas, and Yoon-Nelson models each were applied to the experimental data to predict the breakthrough curves, and determine the characteristics and parameters of the column's usefulness for tartrazine adsorption. This study revealed that carbon fiber is suitable for use as an effective adsorbent to remove tartrazine from solution.

Keywords: Tartrazine; Fiber; Column adsorption; Thomas model