

Fixed-Bed Column Studies of Green Malachite Removal by Use of Alginate-Encapsulated Aluminium Pillared Clay

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Abstract : The main objective of this study, concerns the modeling of breakthrough curves obtained in the adsorption column of malachite green into alginate-encapsulated aluminium pillared clay in fixed bed according to various operating parameters such as the initial concentration, the feed rate and the height fixed bed, applying mathematical models namely: the model of Bohart and Adams, Wolborska, Bed Depth Service Time, Clark and Yoon-Nelson. These models allow us to express the different parameters controlling the performance of the dynamic adsorption system. The results have shown that all models were found suitable for describing the whole or a definite part of the dynamic behavior of the column with respect to the flow rate, the inlet dye concentration and the height of fixed bed.

Keywords : adsorption column, malachite green, pillared clays, alginate, modeling, mathematic models, encapsulation.

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