



Aqueous phase adsorption of organic compounds on activated carbon in fluidized bed

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ABSTRACT

In this study, the adsorption of an organic compound in aqueous phase on granular activated carbon (GAC) in a liquid fluidized bed has been studied. For this purpose first a mathematical model was proposed for simulation of this process. Based on the proposed model, the adsorption kinetic and dynamic simulation of organic compounds on activated carbon were investigated. In order to check the accuracy of the proposed model, an experimental set-up was constructed. This set-up was consisted of a feed tank, a pump, a flow meter and a liquid fluidized bed absorber column. In this set up, some experiments were conducted for adsorption of methyl-orange solution on AC particles. The results obtained by the proposed model were compared with the experimental results and once the validity of the model was verified, it was used for studying the effect of different operating parameters on the rate of adsorption in such beds.

Keywords: Surface adsorption; Fluidized bed; Granular activated carbon; Adsorption kinetics; Mathematical model

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