عنوان مقاله:

Study of ۱-Chloro-۴-Nitrobenzene adsorption on Carbon nanofibers by experimental design

محل انتشار:

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خلاصه مقاله:

In this study, the adsorption of ۱-chloro-۴-nitrobenzene (۱C۴NB) on carbon nanofibers (CNFs), was investigated in a batch system. The combined effects of operating parameters such as contact time, pH, initial ۱C۴NB concentration, and CNFs dosage on the adsorption of ۱C۴NB byCNFs were analyzed using response surface methodology (RSM). The analysis of variance results confirmed that there was significant agreement between the model and experimental data. In addition, it was indicated that the residuals followed a normal distribution.The screening experiments showed that significant factors in ۱C۴NB removal were CNFs dosage, interaction between initial ۱C۴NB concentration-CNFs dosage and CNFs dosage-contact time. High efficiency removal (>۹۰%) was obtained under optimal value of process parameters in the first ۶ min of the removal process. The results indicate that RSM is a suitable method for modeling and optimizing the process, so that experimental design by RSM leads to time and cost saving.Non-linear form of Langmuir, Freundlich and Temkin models were fitted to adsorption equilibrium data. The results showed that the isotherm data can be well described by Freundlich isotherm equation.

کلمات کلیدی:

Chloro-۴-Nitrobenzene, Adsorption, Carbon nanofibers, Experimental design, Response surface methodology-۱