

عنوان مقاله:

Adsorption of Cu^{2+} from aqueous solution onto modified glass beads with 3-aminopropyltriethoxysilane

محل انتشار:

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خلاصه مقاله:

pollutants are introduced into aquatic systems as a result of various industrial operations. This study investigates the efficiency of the modified glass beads with APTES ligand for removal of Cu^{2+} from the aqueous solution. Response surface methodology based on Box-Behnken was used to assess the effect of independent variables, including flow rate, solution pH, initial concentration and glass beads size on the response function and prediction of the best response value. Atomic absorption spectroscopic analysis of eluents of a column of the modified glass beads showed that Cu^{2+} ion was more than 90% entrapped on a column of glass beads. The isotherm evaluations indicate that the equilibrium data for Cu^{2+} adsorption could be fitted with the Langmuir model. Experimental data were also evaluated in terms of adsorption kinetics using the pseudo-first-order and pseudo-second-order kinetic models. The results also showed that the adsorption process of the Cu^{2+} well suited with the pseudo-second-order kinetics model. All the results demonstrated that modified glass beads successfully absorbed heavy metals from aqueous solution

کلمات کلیدی:

Heavy metals; Modified glass beads; Response Surface Modeling; Box-Behnken experimental design

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