# Removal of chromium ions through adsorption onto activated carbon: equilibrium study

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## Abstract

The equilibrium studies for dichromate anion adsorption from aqueous solution on commercial activated carbon (CAC) were carried out under different conditions of the initial concentrations (0.02 to 0.4 mg mL$^{-1}$), the adsorbent amount (0.2 g to 1 g), the adsorbent size and the initial solution pH, at room temperature. Dichromate anion removal was favoured by a smaller initial concentration (0.02 mg mL$^{-1}$), a smaller size of the adsorbent ($d < 1$ mm), as well as by a higher amount of CAC (2 g) used in the lab studies. The experiments performed over a pH range between 2.2 and 6.1 under the present study reveal that the maxima adsorption capacity of anion is at about pH 2.2 and it decrease above pH 3. The equilibrium data have been fitted by using Langmuir and Freundlich adsorption models. The values of the constants obtained using these two models proved contradictory. Based on these values, we concluded that the Freundlich adsorption isotherm is more suitable for describing the equilibrium data than the Langmuir one.
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