



## Equilibrium and Thermodynamics of Auramine-O Adsorption from Aqueous Solution by Activated Carbons

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### ABSTRACT

*This paper investigates the efficiency of activated carbons for the removal of Auramine-O (AO) dye from aqueous solution. The effect of pH, carbon dosage, contact time, initial dye concentration and temperature were determined by batch experiments. Influence of carbon-oxygen surface groups present on the carbon surface has also been studied. Calculated thermodynamic parameters indicate endothermic and spontaneous characteristics of the adsorption process. Langmuir and Freundlich adsorption isotherms were applied. Langmuir model gives a better fit than the Freundlich model for granulated carbon samples. Pseudo-first-order kinetic model was found to best represent the kinetic data. In a batch design of an adsorption system it has been calculated that the amount of oxidized carbon required to remove 95 % of the dye is 58% less than the amount of unoxidised carbon.*

**Keywords:** Adsorption, pH effect, Auramine-O, Langmuir isotherm, carbon oxygen surface groups.

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