



Adsorptive Removal of Alizarin Red-S from Aqueous Solutions by Using Cobalt and Copper Ferricyanides

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ABSTRACT

The adsorption behavior of alizarin red-S (ARS) from aqueous solution on cobalt ferricyanide and copper ferricyanide were studied under various conditions of contact time, different pH and temperature varying initial concentration of ARS using batch technique. Prepared metal ferricyanides were characterized by FTIR, CHN analysis, TGA and XRD. Adsorption capacity of alizarin red-S on cobalt ferricyanide and copper ferricyanide was found maximum at pH 4.15. Results were analyzed by Langmuir and Freundlich models of adsorption. The adsorption capacity of cobalt- and copper ferricyanides were increased gradually with an increase in initial concentration of ARS. Copper ferricyanide was found to be a better adsorbent. Thermodynamic data like free energy (ΔG), enthalpy (ΔH) and entropy (ΔS) of the system suggested that adsorption process was spontaneous and physisorption.

Keywords: Metal ferricyanide, alizarin red-S, adsorption isotherm model, thermodynamic parameters.
