EQUILIBRIUM AND THERMODYNAMIC STUDIES FOR DYE REMOVAL USING BIOSORPTION

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ABSTRACT

The efficiency of green adsorbent prepared from natural source for removal of a basic dye Methylene Blue (MB) from aqueous solution is examined in this study. Batch experiments were conducted at different temperatures to study the adsorption characteristics of MB removal on AAS powder. The equilibrium data were analyzed using Freundlich and Langmuir, adsorption isotherms. Freundlich adsorption isotherm model gave a good fit to the experimental data. The results proved that AAS powder has good adsorption capacity towards MB dye removal. Thermodynamic parameters, such as free energy change (ΔG^o), enthalpy change (ΔH^o) and entropy change (ΔS^o) were calculated. The analysis of experimental results revealed that MB adsorption on AAS powder was exothermic. Gibbs free energy change values from the experiments indicates that the adsorption process was spontaneous. Changes in values of entropy suggests that the adsorption process was favorable.

KEYWORDS: Adsorption, Methylene Blue, Isotherm, Thermodynamic Studies