Equilidrium, Kinetics and Thermodynamic Parameters Studies on Acid Yellow14 Dye
Adsorption by Granular Activated Carbon

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The adsorption equilibrium was studied using granular activated carbon of Acid Yellow14 as an adsorbent. In this study, the amount of activated carbon, the initial concentration and temperature according to the adsorption time were taken as adsorption variables. adsorption equilibrium experiment. In each adsorption rate experiment, the pseudo first order models and the pseudo second order models were used to evaluate the kinetic model and the pseudo second order models were better matched. For the isothermal adsorption experiment using the amount of adsorbent as a variable, Langmuir, Freundlich, etc. isothermal equations were applied, and the Freundlich isothermal equation was applied well in the relationship of adsorption equilibrium. Thermodynamic analysis showed that the Gibbs free energy change (ΔG = +1.48 to −2.61 kJ/mol) was involuntary at 298 K, then decreased as the temperature rose, resulting in a spontaneous change at 318 K. The enthalpy change value (ΔH = +62.02 J/mol) was positive, indicating that the Acid Yellow14 adsorption process was an endothermic process.