Study on Adsorption Behavior of Acid Black 1 Adsorption by Active Carbon

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Adsorption behavior in isothermal lines and kinetic parameters of Acid Black 1 using activated carbon were studied. The effects of various parameters of adsorbent, initial concentration, contact time, and temperature were investigated. As a result of matching the isothermal adsorption experiment data conducted at the temperature of 298, 308, 318 K with the isothermal adsorption formula such as Freundlich and Langmuir, AB is suitable for the Freundlich formula, and therefore, it is confirmed that it is multilayer adsorption. Freundlich's 1/n value range (0.697~0.7171) was found that adsorption of AB by activated carbon was an appropriate removal method.

Pseudo first order and pseudo second order model were used to determine the adsorption reaction kinetic. When AB solutions of 298K 10, 20, and 30 mg/L were adsorbed and The pseudo second order kinetics model was suitable with high r. Likewise as a result of the adsorption experiment of an AB solution of 20 mg/L at 298, 308 and 318K, it is confirmed that they match by the pseudo second order kinetics model with high r. Thermodynamic analysis confirms that the higher the temperature, the higher the spontaneity.