

Equilibrium, kinetics and thermodynamic studies: adsorption of Remazol Black 5 on the palm kernel shell activated carbon (PKS-AC)

ABSTRACT

The removal of Remazol Black 5 from the synthetic wastewater using palm kernel shell activated carbon was investigated in terms of initial pH, initial concentration, contact time and temperature. The optimum pH was found at acidic range, pH 2. For equilibrium studies, two isotherm models were used in this study, which is Freundlich and Langmuir, for different temperatures and it is found that Freundlich fitted experimental data very well. In the kinetics study, pseudo-first order and pseudo-second order were tested; the latter equation showed the best represent the experimental data. The change in entropy and enthalpy for an adsorption of the dye were estimated -24.26J/mol K and -9.246kJ/mol respectively.

Keyword: Remazol Black 5; PKS-AC; Isotherms model; Kinetics; Thermodynamics