



Assessment on thermodynamics and kinetics parameters on reduction of methylene blue dye using flyash

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ABSTRACT

Flyash has been explored in the laboratory scale experiment as a low cost adsorbent for the removal of methylene blue dye from aqueous solution. The influence of dye concentration, weight of adsorbent, stirring rates, influence of temperature, pH on adsorption capacity was studied in batch experimental method. From experimental results it was observed that almost 95–99% of dye colour could be removed from the solution using flyash at different initial conditions. Langmuir, Freundlich and Tempkin isotherm models were used to describe the distribution of dye between the liquid and solid phases in batch studies and it has observed that Langmuir isotherm better represents the phenomenon than Freundlich and Tempkin isotherms. From the experimental results the adsorption rate constant, activation energy, Gibbs free energy, enthalpy and entropy of the reaction were calculated in order to determine the mechanism of the sorption process.

Keywords: Adsorption; Methylene blue; Adsorption isotherm; Adsorption kinetics; Thermodynamic parameters

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