



Investigation of Equilibrium and Thermodynamic parameters of Crystal Violet Adsorption onto Bottom Ash

P. V. Nidheesh, R. Gandhimathi*, S. T. Ramesh, T. S. Anantha Singh

Department of Civil Engineering, National Institute of Technology, Tiruchirappalli, Tamilnadu, India

Received June 9, 2011; Accepted October 20, 2011

Abstract: In this work, batch adsorption experiments were carried out for removal of crystal violet (CV) dye from aqueous solution using bottom ash as adsorbent. Effect of temperature, bottom ash dosage, agitation speed and pH on CV removal efficiency by bottom ash was carried out. Removal of CV by bottom ash is an endothermic nature of adsorption. Batch isotherm study was carried out to find the equilibrium capacity of bottom ash. The maximum removal was found to be 84.1, 90.5 and 97.33% at the dose of 1.1g/L and temperature of 20, 30 and 40°C respectively. All the isotherm models fit well for the experimental data. The CV adsorption capacity of bottom ash was found to be 13.12, 16.13 and 28.74mg/g at temperature of 20, 30 and 40°C respectively. Adsorption capacity of bottom ash increases with agitation speed and temperature. Adsorption capacity of bottom ash increases with pH for pH >8 and remains constant for pH <7.

Key Words: *Adsorption, Crystal violet, bottom ash, Isotherm, Thermodynamic Parameters*

*Corresponding: E-Mail: rgmathii@nitt.edu; Tel: +91 431 2503171; Fax: +91 431 2500133