Available online at **www.joac.info**

ISSN: 2278-1862

Journal of Applicable Chemistry

2018, 7 (5): 1252-1259

(International Peer Reviewed Journal)

Adsorption Study for Removal of Crystal Violet Dye using MMT-MWCNTs Composite from Aqueous Solution

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Accepted on 2nd August, 2018

ABSTRACT

Montmorillonite-MWCNTs composite was synthesized, characterized and used for removal of crystal violet from aqueous solution. Various parameters like pH, dye concentration and amount of composite were studied to obtain its effect on adsorption. The adsorption equilibrium was achieved in180 min and adsorption efficiency was found to be76.02% at optimum conditions. Kinetic studies made using pseudo-first order, pseudo second order and the intraparticle diffusion model, but were it was found that the adsorption data fitted well with pseudo-second order model (R^2=0.967).Langmuir and Freundlich isotherms were applied and thermodynamic parameters were evaluated, which indicated study that this adsorption process was not solely by physisorption but also some chemisorption.

Keywords: Adsorption, Crystal Violet, Montmorillonite, MWCNTs, Adsorption Kinetics, Thermodynamics.