

Adsorptive Removal of Methylene Blue using Groundnut Shell Activated Carbon Coated With Fe_2O_3

S.S. Imam^{1,2*} and P. Panneerselvam¹

¹ Department of Chemistry, SRM University, Kattankulathur-603203, Tamil Nadu, India.

² Department of Pure and Industrial Chemistry, Bayero University, P.M.B 3011, Kano, Nigeria.

Abstract : In this work, activated carbon prepared from groundnut shells (GSAC) by sulphuric acid treatment was coated with Fe_3O_4 (GSAC- Fe_3O_4) and tested for its efficiency as an adsorbent for the removal of methylene blue (MB) dye from aqueous solution. The structural morphology and functional groups present were investigated using scanning electron microscope (SEM) and Fourier transform infrared (FTIR) spectroscopy. Various sorption parameters such as effect of pH, contact time, initial dye concentration and adsorbent dosage were studied. The percentage removal of methylene blue increased with decrease in initial methylene blue concentration and increased with increase in contact time and dose of the adsorbent. Equilibrium data were analysed using Langmuir and Freundlich isotherm models. Kinetic data were studied using pseudo-first order and pseudo-second order kinetic models.

Keywords: GSAC, GSAC- Fe_3O_4 , MB, Isotherm, Kinetics.

S.S. Imam *et al* /International Journal of ChemTech Research, 2016,9(12): 588-599.
