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## **SYNTHETIC TEXTILE DYE REMOVAL FROM AQUEOUS SOLUTION USING MODIFIED LOCAL CLAY ADSORBENT**

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### **Abstract**

Locally sourced clay from Kuala-Kangsar town in Perak state Malaysia was used in both its raw (RKKC) and modified (MKKC) forms as adsorbent for the removal of methylene blue (MB) from synthetic textile wastewater in batch adsorption process. The raw clay was modified through H<sub>2</sub>SO<sub>4</sub> acid treatment, Al(OH)<sub>3</sub> ion exchange, calcinations and then molded into beads before freeze drying. The BET surface areas of RKKC and MKKC were 11 and 100 m<sup>2</sup>/g, respectively; their elemental analysis and surface morphology were determined using scanning electron spectroscopy (SEM). Adsorption isotherm studies of both adsorbents showed that the order of fitness in ascension was Langmuir, Freundlich and Redlich Peterson with their lowest correlation coefficient R<sup>2</sup> values of 0.883, 0.950 and 0.965, respectively; and the adsorption process obeyed pseudo-second-order reaction kinetic. Adsorption of MB on MKKC was spontaneous and endothermic as revealed by the thermodynamic studies of the process. The MKKC was good for adsorption of MB and found to be reusable.

*Key words:* adsorption, isotherm, kinetics, methylene blue, thermodynamics

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