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INTEGRATING ULTRASOUND WITH ACTIVATED CARBON PREPARED FROM MANGOSTEEN FRUIT PEEL FOR REACTIVE BLACK 5 REMOVAL

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Abstract

In this study, the effectiveness of integrating ultrasound with mangosteen fruit peel activated carbon (MFPAC) for the removal of reactive black 5 (RB5) dye was investigated. MFPAC prepared by the potassium carbonate activation method was characterized using BET, SEM and FTIR. The effects of ultrasound power, contact time, pH and adsorbent quantity on the removal of RB5 were examined. Obtained results indicate that the MFPAC has a higher removal efficiency with ultrasound integration and can remove 95% of the dye at neutral pH. It followed pseudo second order kinetics. Integrating ultrasound with sorption was proved to be an efficient method to remove RB5 dye.

Key words: adsorption, Langmuir isotherm, Mangosteen fruit peel activated carbon, reactive black 5 dye, ultrasound

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