

**EMPTY FRUIT BUNCH (EFB) ACTIVATED CARBON
VIA ULTRASONIC ASSISTED H₂SO₄ ACTIVATION
FOR METHYLENE BLUE DYE REMOVAL**

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ABSTRACT

Empty Fruit Bunch (EFB) Activated Carbon Via Ultrasonic Assisted H₂SO₄ Activation For Methylene Blue Dye Removal

Producing activated carbon from agricultural waste is one of the most ecologically beneficial methods since it converts agricultural waste into usable material. In this study, empty fruit bunch (EFB) waste biomass will be employed as a precursor for the production of activated carbon by ultrasonic assisted chemical activation with H₂SO₄ as the activating agent. EFB are made into activated carbon to eliminate methylene blue from aqueous solutions. EFB will be carbonised at 700 °C for two hours before being cooled and washed to activate the pore structure. The activated carbon based on empty fruit bunch (EFB) was prepared using sulfuric acid as an activating agent and assisted with ultrasonic. Suitable characteristics tests for adsorbent have revealed, whereby parameters including bulk density and ash content obtained are 0.3 g mL⁻¹ and 2.74%, respectively. Overall, AC samples have shown a well-developed porous structure and are declared an amorphous region. Comparatively, the results of adsorption studies reveal the iodine value of activated carbon to be 318.33 mg.g⁻¹. The optimum dosage achieved was 0.14 g.ml⁻¹ while the optimum time was discovered to be within 210 min. Both of which revealed to have 99.9% methylene blue dye removal. Significantly, the activated carbon from empty fruit bunch (EFB) activated with sulphuric acid (H₂SO₄)

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