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{THE EFFECT OF ULTRASONIC PRE-TREATMENT ON PREPARATION OF ACTIVATED CARBON FROM SAWDUST}

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THE EFFECT OF THE ULTRASONIC PRE-TREATMENT ON THE PREPARATION OF ACTIVATED CARBON FROM SAWDUST

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This Final Project Report entitled "The Effect Of Ultrasonic Pre-Treatment On Preparation Of Activated Carbon From Sawdust" was submitted by Ridwana Dini Binit Roduan in partial fulfilment of the requirements for the Degree of Bachelor of Sciences (Hons.) Applied Chemistry in the Faculty of Applied Sciences and was approved by

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ABSTRACT

This research proposal addresses two critical environmental issues: the improper disposal of sawdust waste and the reliance on unsustainable methods for activated carbon (AC) production. Current disposal methods such as open burning and landfilling contribute significantly to environmental degradation. Simultaneously, conventional AC production depends on expensive, non-renewable raw materials and energy-intensive processes, raising concerns about long-term sustainability.This study aims to investigate the effect of ultrasonic pre-treatment on the preparation of activated carbon from sawdust. The experimental approach will involve fixed the ultrasonic but varies bath temperature sonication time (20, 40, and 60 minutes) during the chemical activation process using potassium hydroxide (KOH). The resulting activated carbon will be characterized based on physicochemical properties such as moisture content, ash content, iodine number, and pH at the point of zero charge (pHpzc), as well as structural and surface characteristics using FTIR and BET analysis.The expected outcome of this study is the development of an environmentally friendly and cost-effective method to produce high-quality activated carbon from an abundant waste resource. The optimized ultrasonic pre-treatment is anticipated to enhance surface area, pore structure, and adsorption capacity, contributing to the growing body of knowledge on sustainable AC production for environmental applications

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