



**THE EFFECT OF ULTRASONIC  
PRE-TREATMENT PARAMETERS ON PREPARATION OF  
ACTIVATED CARBON FROM COCONUT SHELL**

Name : NOR NAZHATUL SHARINA BINTI AHMAD  
Student ID : 2022646102  
Program : AS222  
Course code : FSG671  
Mobile Phone :  
E-mail : nornazhatulsharina@gmail.com

**Approval by Main Supervisor :**

I certify that the work conducted by the above student is completed and approve this report to be submitted for evaluation.

Supervisor's name : MOHD FAUZI BIN ABDULLAH  
Date : 16/2/2026  
Turnitin Similarity % : 27%  
Signature :

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**THE EFFECT OF ULTRASONIC**  
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**ACTIVATED CARBON FROM COCONUT SHELL**

**NOR NAZHATUL SHARINA BINTI AHMAD**

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This Final Project Report entitled "The Effect Of Ultrasonic Pre-Treatment Parameters on Preparation of Activated Carbon From Coconut Shell" was submitted by Nor Nazhatul Sharina Binti Ahmad in partial fulfilment of the requirements for the Degree of Bachelor of Sciences (Hons.) Chemistry with Management in the Faculty of Applied Sciences and was approved by

---

Encik Mohd. Fauzi bin Abdullah  
Supervisor  
B. Sc (Hons.) Applied Chemistry  
Faculty of Applied Sciences  
Universiti Teknologi MARA  
02600 Arau  
Perlis

---

Dr. Farhana Binti Othman  
Coordinator  
B. Sc. (Hons.) Applied Chemistry  
Faculty of Applied Sciences  
Universiti Teknologi MARA  
02600 Arau  
Perlis

---

Dr. Nur Nasuha Binti Kasim  
Head Faculty  
B. Sc. (Hons.) Applied Chemistry  
Faculty of Applied Sciences  
Universiti Teknologi MARA  
02600 Arau  
Perlis

## **ABSTRACT**

### **THE EFFECT OF ULTRASONIC PRE-TREATMENT PARAMETERS ON PREPARATION OF ACTIVATED CARBON FROM COCONUT SHELL**

This study investigates the production of activated carbon from coconut shell biomass using ultrasonic pre-treatment parameters such as phosphoric acid activation ratio and sonication time. The work evaluates how these conditions influence key physicochemical properties, including moisture content, ash content, bulk density and iodine number. Results show notable improvements in pore development and adsorption characteristics after activation, reflected by increased iodine value and reduced bulk density. UV-Vis analysis demonstrated enhanced methylene blue removal, with the activated carbon achieving a higher adsorption capacity compared to raw coconut shell. AAS analysis further confirmed reductions in residual copper content after activation, indicating a cleaner carbon surface suitable for adsorption applications. Finally, the findings highlight coconut shell as an effective precursor for activated carbon and demonstrate that the ultrasonic pre-treatment parameters can significantly improve structural and adsorption performance, supporting its potential use in environmental remediation.

## TABLE OF CONTENT

	<b>Page</b>
<b>ABSTRACT</b> .....	1
<b>ABSTRAK</b> .....	2
<b>ACKNOWLEDGEMENTS</b> .....	3
<b>TABLE OF CONTENT</b> .....	4
<b>LIST OF TABLES</b> .....	6
<b>LIST OF FIGURES</b> .....	7
<b>LIST OF SYMBOLS</b> .....	8
<b>LIST OF ABBREVIATIONS</b> .....	9
<b>CHAPTER 1 INTRODUCTION</b>	
1.1 Research Background.....	10
1.2 Problem Statement.....	12
1.3 Research Questions.....	13
1.4 Objectives.....	14
1.5 Significance of study.....	14
1.6 Expected Output/ Outcomes/ Implication.....	15
<b>CHAPTER 2 LITERATURE REVIEW</b>	
2.1 Introduction to Activated Carbon.....	18
2.2 Biomass as a Precursor for Activated Carbon.....	19
2.3 Preparation Methods of Activated Carbon.....	21
2.3.1 Physical Activation.....	22
2.3.2 Chemical Activation.....	22
2.3.3 Limitations of Conventional Methods.....	23
2.4 Ultrasonic Pre-treatment in Biomass Processing.....	23
2.4.1 Mechanism of Ultrasonic in Biomass Treatment.....	24
2.4.2 Impact on Carbon Structure and Surface Properties.....	24
2.5 Effect of Ultrasonic Parameters.....	25
2.5.1 Sonication Time.....	26
2.5.2 Activating Chemical.....	26
2.6 Physicochemical Properties of Activated Carbon.....	27
2.7 Characterization Techniques for Activated Carbon.....	28
2.7.1 FTIR .....	29
2.7.2 UV-Vis and AAS.....	30
2.7.3 BET.....	31
2.8 Research Gaps and Summary.....	32