

**SYNTHESIS OF FE(III)/ZNO AS COMPOSITE  
CATALYST USING IMPREGNATION METHOD  
FOR SONOCATALYTIC DEGRADATION IN  
TEXTILE WASTEWATER TREATMENT**

**WAN MUHAMMAD ARIFF BIN WAN YAHAYA**

**BACHELOR OF CHEMICAL ENGINEERING  
(ENVIRONMENT) WITH HONOURS**

**UNIVERSITY TEKNOLOGI MARA**

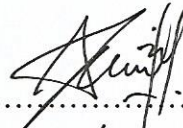
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I declare that the work in the thesis was carried out in accordance with the regulation of University Technology MARA. It is original and is the results of my own, unless otherwise indicated or acknowledge as reference work.

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Date : ..... 29/12/2016 .....

**Wan Muhammad Ariff Wan Yahaya**

Student ID : 2013172953

## SUPERVISOR'S CERTIFICATION

We declared that we read this thesis and in our point of view this report is qualified in terms of scope and quality for the purpose of awarding the Bachelor of Chemical Engineering (Environment) with Honours.

Signed :   
Date : 20/12/2016

Main Supervisor

**Nur Fadzeelah Abu Kassim**

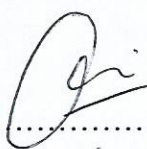
Faculty of Chemical Engineering

Universiti Teknologi MARA

Cawangan Pulau Pinang

13500 Permatang Pauh

Pulau Pinang

Signed :   
Date : 29/12/2016

Co-Supervisor

**Nor Aimi Abd Wahab**

Department of Applied Sciences

Universiti Teknologi MARA

Cawangan Pulau Pinang

13500 Permatang Pauh

Pulau Pinang

## ACKNOWLEDGEMENT

I would first like to thank my thesis advisor Miss Nur Fadzeelah Abu Kassim of the Faculty Chemical Engineering at Universiti Teknologi Mara (UiTM) Pulau Pinang. The door to Miss Nur Fadzeelah office was always open whenever I ran into a trouble spot or had a question about my research or writing. She consistently allowed this paper to be my own work, but steered me in the right the direction whenever he thought I needed it.

I would also like to thank the experts who were involved in the validation survey for this research project: Miss Nor Aimi Abd Wahab, laboratory assistants and other lectures. Without their passionate participation and input, the validation survey could not have been successfully conducted.

I would also like to acknowledge Dr Nuraida Zubir of the Faculty of Chemical Engineering at UiTM Pulau Pinang as the second reader of this thesis, and I am gratefully indebted to her for her very valuable comments on this thesis.

Finally, I must express my very profound gratitude to my parents and to my friends for providing me with unfailing support and continuous encouragement throughout my years of study and through the process of researching and writing this thesis. This accomplishment would not have been possible without them. Thank you.

**WAN MUHAMMAD ARIFF WAN YAHAYA**  
FACULTY OF CHEMICAL ENGINEERING  
UITM PULAU PINANG

## ABSTRACT

The present study addressed the properties effecting from textile wastewater such as high colour content, high variability in composition, high BOD and COD level. This wastewater also may contain carcinogenic material and harmful to aquatic life. The activity of a composite catalyst Fe(III)/ZnO in the presence of ultrasonic irradiation for degradation of synthetic dye, Reactive Blue 4 (RB4) as treatment of wastewater solution is to be determined. The composite catalyst was prepared through impregnation method. Different characterization techniques such as FT-IR, TGA, UV-VIS and Spectrophotometer were conducted to analyze the properties and performance of the composite catalyst. The performances on degradation of RB4 for both of composite catalyst Fe(III)/ZnO and bare ZnO were compared and studied. In term of the catalytic degradation of RB4, three system of sonication methods had been carried out which were sonolysis (without catalyst) and sonocatalytic by using ZnO and Fe(III)/ZnO respectively. The wastewater degradation showed the better performance of composite catalyst Fe(III)/ZnO with 33.533 % degradation rate compared to bare ZnO with only 8.383 % degradation rate through the absorbance analysis.