



## **THESIS**

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**KINETIC STUDY ON FERULIC ACID PRODUCTION FROM BANANA STEM  
WASTE VIA MECHANICAL EXTRACTION**

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**KINETIC STUDY ON FERULIC ACID PRODUCTION FROM BANANA STEM  
WASTE VIA MECHANICAL EXTRACTION**

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Thesis submitted in partial fulfilment of the requirements  
for the award of the degree of  
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## **SUPERVISOR'S DECLARATION**

We hereby declare that we have checked this thesis and in our opinion, this thesis is adequate in terms of scope and quality for the award of the degree of Bachelor of Chemical Engineering.

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## **STUDENT'S DECLARATION**

I hereby declare that the work in this thesis is my own except for quotations and summaries which have been duly acknowledged. The thesis has not been accepted for any degree and is not concurrently submitted for award of other degree

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Dedicated to my parents, and my siblings.

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## LIST OF SYMBOLS

K	reaction rate constant
V	volume
M	mass of the compounds
P	applied pressure
D	diameter of the capillary channel
$\eta$	dynamic viscosity
l	length of capillary channel
t	time

## LIST OF ABBREVIATIONS

UV	ultra violet
FA	ferulic acid
OPF	oil palm frond
LCC	lignin-carbohydrate complexes
AFEX	ammonia fibre explosion
HPLC	high performance liquid chromatography
CCP	chinese chive polysaccharides
UAE	ultrasound-assisted extraction
HWE	hot-water extraction