

STUDY ON PROPERTIES OF HYBRID  
REINFORCED COMPOSITE USING  
GLASS FIBERS AND EMPTY FRUIT BUNCH  
(EFB) FIBERS

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STUDY ON PROPERTIES OF HYBRID REINFORCED  
COMPOSITE USING GLASS FIBERS AND  
EMPTY FRUIT BUNCH (EFB) FIBERS

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for the award of the degree of  
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### **SUPERVISORS' DECLARATION**

I hereby declare that I have checked the thesis and in my opinion, this thesis is adequate in terms of scope and quality for the award of the degree of Bachelor of Applied Science (Honor) Material Technology.

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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 the award of another degree.

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## **DEDICATION**

I dedicated this work to my respected supervisor, Dr. Nurjannah Binti Salim, who has been a constant source of knowledge, motivation and inspiration. A special feeling of gratitude towards my mother, Sarabanun Binti Haji Saibi who always been there, giving unconditional love while supporting me and thanks to all my siblings, Nazrah Binti Hussin (sister), Mohd. Zulkifli Bin Hussin (brother), Mohd Zulhilmi Bin Hussin (brother) and Adibah Binti Hussin (sister), that keep on giving words of encouragement to me.

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**LIST OF SYMBOLS**

%	-	percent
$\mu$	-	micron ( $10^{-6}$ )
$^{\circ}\text{C}$	-	degree celcius
G	-	grams
h	-	hour
t	-	time
$\ell$	-	length
MPa	-	Mega Pascal
ml	-	mili-litre
min	-	minute
kg	-	kilograms
N	-	Newton

**LIST OF ABBREVIATIONS**

CMC	-	ceramic matrix composite
EFB	-	empty fruit bunch
MEKP	-	methyl ethyl ketone peroxide
MMC	-	metal matrix composite
PMC	-	polymer matrix composite
RTM	-	resin transfer molding
SEM	-	scanning electron microscope
TGA	-	thermogravimetric analysis
UTM	-	universal testing machine