

**UNIVERSITI TEKNOLOGI MARA**

**EFFECT OF GLUT PALMITATE SALT AS  
COUPLING AGENT ON THERMAL AND  
MECHANICAL PROPERTIES OF POLYVINYL  
ALCOHOL (PVA) AND OIL PALM EMPTY FRUIT  
BUNCH (OPEFB)**

**MOHD ZAKI BIN AZIZAN**

Thesis submitted in fulfillment of  
the requirements for the degree of  
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## AUTHOR'S DECLARATION

I declare that the work in this proposal was carried out originally with my own work otherwise indicated or acknowledged as a reference work.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi Mara regulating the conduct of my study and research.

Name of Student : Mohd Zaki bin Azizan  
Student I.D. No. : 2017413076  
Program : Bachelor of Science (Hons.) Polymer Technology – AS243  
Faculty : Applied Science  
Thesis : Effect of Glut Palmitate Salt as Coupling Agent on Thermal and Mechanical Properties of Polyvinyl Alcohol (PVA) and Oil Palm Empty Fruit Bunch (OPEFB)

Signature of Student : .....  
Date : July 2019

## ABSTRACT

Poly(vinyl alcohol) (PVA) can be used in many applications such as packaging and biomedical application . In this study, Oil Palm Empty Fruit Bunch (OPEFB) was used as fiber to incorporate into the PVA and coupling agent which is Glut Palmitate (GP) was used. PVA/OPEFB was prepared by using solvent casting method. This research aim to prepare PVA/OPEFB at various composition 0, 10%, 20%, 30%, 40% of OPEFB loading. PVA/OPEFB composites before and after GP was added have been analyzed by using tensile test, FTIR, DSC, water adsorption and density test. The tensile stress, Young modulus and elongation at break are decreasing as increasing fiber into the composite. Addition of GP increase 12% tensile stress of the composites. Composites 80/20 GP has lower intensity of hydroxyl group compared to pure PVA and composites 80/20 in the FTIR spectroscopy analysis. The crystallinity of the composites has increase 33% when incorporate with GP in DSC analysis. Besides, composites with 80/20 has the higher water adsorption than composites of 80/20 with addition of GP. Moreover, the density of the composites raises as the increase of percentage of fiber. Therefore, addition of GP enhance the thermal and mechanical of PVA/OPEFB composites.

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