

UNIVERSITI TEKNOLOGI MARA

**GRAFTING OF OPMF VIA
EXTRUSION**

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INTRODUCTION

Introduction

Utilization of natural fiber will give advantages compared to synthetic fiber which is low density, renewability and biodegradability. Natural fiber like silk and oil palm fiber has been studied for a long time to make a full use of natural fiber and try to reduce the usage of synthetic fiber.(Pickering, Efendy et al. 2016)

With difference interphase properties for natural-fiber-reinforced polymer can exhibit different mechanical properties and environmental aging resistance. A lack of good interfacial adhesion and poor resistance to moisture absorption make oil palm fibers less attractive as reinforcing agents. Oil palm fibers were grafted with different percentages of anhydride to improve the interfacial properties.(Verbeek and Hanipah 2010)

Problem Statement

Extrusion was grafted to LLDPE and OPMF using twin screw extruder and mixer that induced by residence time and peroxide composition. The increasing of percentage of anhydride and residence time will increase the degree of grafting but it only valid on certain limit.(Verbeek and Hanipah 2010)

Using di-cumyl peroxide (DCP) as the initiator resulted in higher degree of grafting compared to di-tert-butyl peroxide (DTBP) and required less reaction time to achieve the same degree of grafting.

However, raising anhydride also resulted increase in cross linking. Increasing the initiator concentration also resulted in a higher degree of grafting. However, if the limit of initiator are exceed it will showed similar results compared to using low percentage of anhydride due to termination by disproportionation, which has been shown to be more prevalent at high initiator

LITERATURE REVIEW

Introduction

Scientific name of oil palm is *Elais Guinensis* palm tree. There are so many country that planting oil palm tree to produce palm oil but Malaysia is the one of the major country that planting and producing palm oil in the world. Besides Malaysia, Indonesia and Nigeria are another major country that produced palm oil.(Trading 2016)

Palm Oil is the oil that produces from oil palm tree with so many derivatives and usage so it will be another alternative to other oil so the environment can be sustain. The example of palm oil is cooking oil.

After we process the oil palm fruit, the remaining part will be waste which is called as oil palm fibre. Oil palm fibre can be classified into three category which is Oil Palm Empty Fruit Bunch (OPEFB), Oil Palm Trunk Fibre (OPTF) and Oil Palm Mesocarp Fibre (OPMF).(Sreekala, Kumaran et al. 1997)

Process of separation of oil palm and oil palm fibre are not using and exposed to any chemical so it is completely bio-degradable and non-toxic. Oil palm fibre will be through numerous process such as press, shredded, separated and dried to make sure no palm oil left.

In crude oil palm, FFB (Fresh Fruit Bunch) is send for processing. After going through sanitization and cleaning, palm oil pack will undergo a Fruit Detachment to isolate between sterilized palm fruit and Empty Fruit Bunch.