

TABLE OF CONTENTS

	Page
TITLE PAGE	i
APPROVAL SHEET	ii
DECLARATION OF AUTHENCITY	iii
ACKNOWLEDGEMENT	iv
TABLE OF CONTENTS	vi
LIST OF TABLES	viii
LIST OF FIGURES.....	ix
INTISARI.....	x
ABSTRACT	xi
CHAPTER 1 INTRODUCTION	1
1.1. Background.....	1
1.2. Problem Statement	2
1.3. Objectives	3
CHAPTER 2 LITERATURE REVIEW	4
2.1. Biopolymers and Biodegradable Materials.....	4
2.1.1. Classification.....	4
2.1.2. Bio-based Packaging Materials.....	5
2.2. Polylactides	6
2.2.1. Structure of Lactic Acid	7
2.2.2. Polylactide Chemistry	8
2.2.2.1. Tacticity	8
2.2.2.2. Molecular Weight and Density	8
2.2.2.3. Solubility.....	9
2.3. Nanocomposite	10
2.3.1. Types of Nanocomposite Based on Dimension	10
2.3.2. Principles of Nanocomposite Reinforcement.....	12
2.4. Graphene Nanocomposite.....	13
2.5. Surfactant	15
2.6. Hypotesis.....	16

CHAPTER 3 METHODOLOGY	17
3.1. Materials	17
3.2. Methods.....	17
3.2.1. Surfactant-stabilized Graphene Preparation	17
3.2.2. Surfactant-stabilized graphene / PLA Film Preparation	18
3.2.3. Analyses	18
3.3. Data Analyses	21
CHAPTER 4 RESULTS AND DISCUSSIONS.....	22
4.1. Mechanical Properties.....	22
4.1.1. Tensile Strength	22
4.1.2. Elongation at Break	27
4.2. Water Barrier Properties (Water Vapor Permeability)	28
4.3. Surface Morphology Properties	32
CHAPTER 5 CONCLUSIONS.....	34
5.1. Conclusion	34
5.2. Future Perspective	34
BIBLIOGRAPHY	35
APPENDIX	