



**BIODEGRADABILITY STUDY OF
PLA/SYZYGIUM AROMATICUM COMPOSITE
IN BURIED SOIL AND OPEN ENVIRONMENT**

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“I declare that this thesis is the result of my own work except the ideas and summaries which I have clarified their sources. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any degree”


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ABSTRACT

The issue of plastic wastes especially from food packaging has becoming one of the most crucial world agenda. An alternative to using plastic is by replacing it with biodegradable plastic such as polylactide (PLA). However, huge usage of Polylactic Acid (PLA) has contributed to the high wastes which mainly come from the worn parts. Although PLA degraded much faster than petroleum based polymer, excessive waste has again contributed to environment pollution. Adding of suitable filler in PLA could accelerate the degradation process. In this work, syzygium aromaticum (SA) is added in virgin PLA matrix and recycled PLA. The virgin PLA/SA composite and recycled PLA/SA composite have been prepared using solvent casting method. The amount of filler is various from 0wt% to 20wt% in 5wt% incremental. The samples are exposed under two extreme environments; buried in organic soil and open environment under direct sunlight for 6 weeks. The degradation rate is calculated based on weight loss. As expected, the degradation rate is increased as the amount of SA filler increases. The results show the degradation rate of PLA/in buried soil is higher as comparing to degradation rate in open environment. Nevertheless, the results also indicated that the degradation rate of recycled PLA/SA composite is more accelerated than degradation rate in virgin PLA/SA composite.