CHAPTER I
INTRODUCTION

In the present days, mono-layered films cannot desire the specific properties of films, for example, vacuum and high barrier properties (Fereydoon *et al.*, 2013), since the properties are limited with the material in use. Therefore, multi-layered films are alternative choice to use in specific applications and reaches to the commercialized films. Multi-layered films comprise of two or more polymer layers in a single films. It can produce in many machines such as lamination and blown-film co-extrusion. At present conventional multi-layered films, petroleum-based polymers, are satisfying the basic functions (transparency, high modulus, and high strength (Goulas *et al.*, 2003) and specific functions. For instance, Thellen *et al.* (2009) reported multi-layered film of polyamide incorporated with clay and low-density polyethylene which provided good oxygen barrier.

Nowadays, biodegradable polymers are recognized as the materials for environmental friendly. However, it has limitation due to the high cost of biodegradable polymers. Therefore, creating value-added product, for example multi-layered film, it is accepted as an answer for solving this problem. In this present work, considering the combined properties of each biodegradable polymer, poly(lactic acid) (PLA), poly(butylene succinate) (PBS), and thermoplastic starch (TPS) are good models for biodegradable multi-layered films. The combination of PLA and PBS might lead to the high strength and high toughness films regarding to the high tensile strength of PLA and high toughness of PBS. In term of TPS, it has efficiency which reduces cost of multi-layered film. The work also concerns the problem of phase separation between PLA and PBS polymers by proposing the use of PLA/PBS block copolymers. The systematic variations in processing condition are expected to the models of PLA-based multilayer films.