

Effect of annealing temperature on crystallization ratio of PLA film with added flame retardant

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Poly(lactic acid)(PLA) has received an increasing attention for packing films and textile materials due to its high biodegradability, excellent material properties and availability from renewable resource. Due to these characteristics, PLA has been applied at universal plastic such as extrusion and injection plastic products. However, PLA has low heat stability and crystallization rate of PLA was very slow compared to commodity plastics such as polyethylene(PE). Because of these reasons, the commercial application of PLA is greatly limited. Recently, PLA has extended to packaging materials. Therefore, high heat stability and crystallization rate of the PLA film as well as injection molding and extrusion of PLA are necessary to control effectively. In this paper, to increase heat stability of PLA film, flame retardant was added into the PLA film with 1, 3, 5, 8, 10 wt%. After that, to analyze the effect of flame retardant on the crystallization rate of the PLA film, isothermal crystallization at the heat setting step of the casting process was investigated. Crystallization rate of each sample was measured by Avrami equation.