



P-2-1040

THE STUDY ABOUT THERMAL STABILITY OF POLY (LACTIC ACID) (PLA) REINFORCED WITH FLAX FIBER

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Environmental issues have led to an escalated interest in biodegradable polymer such as poly(caprolactone)(PCL), poly(glycolide), poly(lactide) etc, as alternatives to traditional commodity plastics. Among biodegradable polymers, PLA has attracted considerable attention because of its biodegradability and miscibility with various polymers. PLA has properties similar to those conventional packing resins; therefore, it can be used for food packaging. In the present investigation, in order to achieve a kind of biodegradable food package material with good performance and excellent thermal stability, the PLA reinforced with flax is prepared by melt extrusion. Its thermal stability is determined by TG and DSC. The experimental results show that the thermal stability of PLA/flax composite is improved when a few of flax is imported. When 0.5% (wt %) flax is added, the glass transition temperature (T_g) of the composite is improved from 52 degree to 60 degree. The reason and mechanism is analyzed by studying its crystal process. From figure1, we can see that its crystal temperature is reduced from 100 degree to 92 degree. The reason leading to this phenomenon is that the flax plays a role as nucleating agent and nucleation centre (as figure1). As a result, the incorporating flax improves the thermal stability of composite.