TITLE	INFLUENCE OF INJECTION MOLDING CONDITION ON STRUCTURE AND PROPERTIES OF PINEAPPLE LEAF FIBER REINFORCED NYLON 6/66 COMPOSITE
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ABSTRACT	The aim of this research was to investigate the use of pineapple leaf fiber (PALF) as a reinforcement for nylon 6/66 in injection molding. The research was divided in to three parts. First, the effect of injection parameters on the properties of nylon 6/66 was studied. The parameters were injection pressure and mold temperature. In the second part, the effect of PALF on the properties of nylon 6/66 composites was studied. PALF was modified with sodium hydroxide solution and silane treatment. Injection molded specimens of nylon 6/66 and PALF/nylon 6/66 were prepared and tested for their mechanical properties, molecular orientation and thermal properties. Non-isothermal crystallization kinetics of nylon 6/66 and its composites was studied on the last topic. The study was carried out in a differential scanning calorimeter. Injection pressure did not significantly affect the mechanical properties of the injection molded specimens. Crystals of nylon aligned both parallel and perpendicular to the flow. However, the lamellar were only oriented parallel to the flow. On the contrary, the mold temperature significantly affected the properties of the injection molded specimen. The tensile and flexural properties were improved with increasing mold temperature. However, the impact strength decreased. Crystal and lamellar orientation were similar to that observed previously. Increasing mold temperature also increased the tensile properties of both neat nylon and their composites. In the case of flexural properties, however, the improvement occurred only in neat nylon while the composites displayed decreased properties with increasing mold temperature. The mold temperature affected impact properties of the neat nylon but not the composites. PALF and lamellar clearly oriented along the flow direction while the crystals aligned in both directions. SEM results suggested good compatibility between fiber and nylon. Non-isothermal crystallization behavior of the nylon and their composites were described by some kinetic equations. Modified Avrami equations indicated that only untreated PALF and silane treated PALF retarded the crystallization process of nylon while sodium hydroxide did not.