

Abstract Submitted
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Blends involving random copolymers designed for fast crystallization ONYENKACHI WAMUO, YING WU, SHAW HSU, University of Massachusetts, CHARLES (CHUCK) PAUL, ANDREA EODICE, Henkel, UMASS TEAM, HENKEL COLLABORATION — Blends involving random copolymers are needed for their specific surface characteristics and ideal mechanical properties. The inherent configurational defects present inhibit crystallization, a highly desired characteristic. In this study, the crystallization of propylene-ethylene copolymer possessing a bimodal distribution of crystallizable chain segments is compared to the kinetics of a blend of an oligomeric statistical random propylene-ethylene copolymer and an oligomeric model polypropylene. It was shown that specifically designed chain configuration can enhance crystallization kinetics. Evaluation of the crystallization kinetics was investigated using both isothermally and non-isothermally by DSC. The stability of crystalline features formed for different samples have been characterized by using high temperature spectroscopic methods. Regularity bands at 940, 998, 1100 and 1220 cm^{-1} were used to assess structural stability. As expected, the bimodal copolymer system having a higher percentage of longer crystallizable segments in its distribution crystallizes faster. The exceptional properties achieved are attributed to the fact that the longer sequences crystallize first forming a networked structure upon which subsequent crystallization of shorter sequences can occur.

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