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Crystallization Kinetics of a PBT/PET Blend According to a Continuous Cooling Transformation (CCT) Approach

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In recent years large attention has been paid to the development of high-performance polyesters blends, among which PBT/PET blend are expected to exhibit remarkable properties as far as the crystallization behaviour is concerned.

The solidification behaviour of a 60/40 w/w PBT/PET blend was studied in a wide range of cooling conditions, according to a Continuous Cooling Transformation (CCT) procedure developed by the authors, aiming to emulate the typical conditions encountered in polymer processing. A set of several samples characterized by an homogeneous structure was prepared by solidification from the melt through spray cooling, and the resulting structure and properties were post-mortem evaluated by means of density, Micro Hardness (MH), Wide Angle X-ray Diffraction (WAXD) measurements, in order to describe their dependence upon the imposed thermal history (cooling rate). The crystallization kinetics were also assessed in the framework of a modified two-phase model of the classical Kolmogoroff-Avrami-Evans (KAE) approach, and compared to the crystallization kinetics exhibited by the constituents of the blend (PET and PBT).