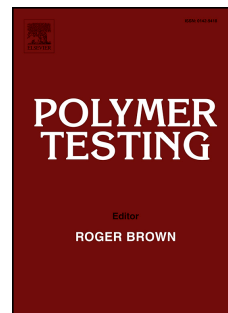


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Multiwalled carbon nanotube promotes crystallisation while preserving co-continuous phase morphology of polycarbonate/polypropylene blend

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Abstract:

The influence of multiwall carbon nanotubes (MWCNTs) on phase morphology, lamellar structure, thermal stability, melting behaviour and isothermal crystallisation kinetics of polycarbonate/polypropylene (PC/PP) blend nanocomposites has been investigated. Both neat blends and PC/PP (60/40)/MWCNT nanocomposites were prepared by melt mixing method. Morphological analyses were performed by high-resolution X-ray micro-computed tomography and scanning electron microscopy. The co-continuous morphology of the blend was retained irrespective of MWCNT loading. In addition, a substantial refinement in the co-continuous structure was observed. Wide angle and small angle X-ray scattering studies were used to analyse the structural properties of the blend nanocomposites. The addition of MWCNT increases the long period of polypropylene. The influence of addition of MWCNT on the crystallization temperature and equilibrium melting temperature (T_m°) of polypropylene was followed. The MWCNTs promote crystallisation rate of polypropylene in the blend nanocomposites.

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