

December 06-07, 2018
Amsterdam, NetherlandsTrends in Green chem 2018 Volume: 4
DOI: 10.21767/2471-9889-C5-021

EFFECT OF MWCNT'S ON THE MORPHOLOGY, WETTING AND THERMAL PROPERTIES OF AN IMMISCIBLE POLYMER BLEND

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Poly(trimethyleneterephthalate)/polypropylene blend (PTT/PP) was prepared using melt mixing method and one weight percentage multi-walled carbon nanotubes (MWCNT's) were incorporated to study its effect on the morphology, thermal and wetting properties of the blend. The droplet morphology reveals the immiscibility of the neat blend and there was a reduction in the domain size of the dispersed phase with the addition of MWCNT's due to the compatibilization effect of MWCNT's. With the addition of MWCNT's, there was a slight improvement in the melting temperatures of both PTT and PP while an increase in the crystallization temperature and T_g was observed that may be due to the nucleation effect of MWCNT's. On blending with PP the thermal stability of PTT matrix was increased but with the addition of MWCNT's no such positive improvement in the thermal stability of the polymer components were noticed. With the addition of MWCNT's the contact angle of the blend slightly improved, may be due to the hydrophobic nature of MWCNT's.

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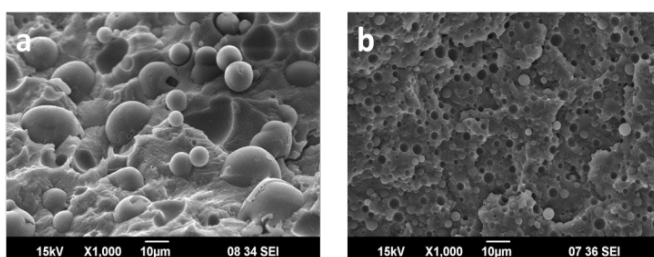


Figure: SEM images of a) 90PTT/10PP blend and b)90PTT/10PP/1CNT nanocomposite