

**ABSTRACT:**

Melt blending of polylactic acid (PLA) and linear low density polyethylene (LLDPE) was performed to investigate the effects of LLDPE loadings on the morphology, mechanical and thermal properties of PLA/LLDPE blends. LLDPE was blended with PLA from 5–15 wt% and prepared by counterrotating twin-screw extruder followed by injection molding into test samples. The mechanical properties of the blends were assessed through tensile, flexural and impact testings while thermal properties were analyzed using differential scanning calorimetry (DSC) and thermogravimetric analysis. Scanning electron microscope was used to study the dispersion and particle size of LLDPE in PLA matrix. The impact strength of PLA improved by 53% with addition of 10 wt% LLDPE. However, the tensile modulus and strength, and elongation at break of PLA/LLDPE blends decreased with increasing weight ratio of LLDPE. Similarly, flexural modulus and strength also dropped with addition of LLDPE. DSC results showed that glass transition temperature ( $T_g$ ) and crystallinity ( $X_c$ ) of PLA increased with blending of LLDPE. The LLDPE particles size was seen to increase with increasing loadings of LLDPE which explains the unexpected decrease of impact strength after 10 wt%.