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ISOTHERMAL CRYSTALLIZATION AND MELTING BEHAVIOR OF POLYPROPYLENE /POLY (TRIMETHYLENE TEREPHTHALATE) BLEND IN PRESENCE OF NANOCCLAY PARTICLES

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In this work, isothermal crystallization and melting behavior of melt mixed polypropylene (PP)/poly(trimethylene terephthalate)(PTT) blend in presence of nanoclay particles compatibilized by poly(ethylene–butylacrylate–glycidyl methacrylate) (Elvaloy PTW) were investigated by differential scanning calorimetry (DSC). The result show that PTT acts as nucleating agent for PP component and increases its crystallinity in blend and nanocomposites. while during the PTT crystallization PP remained in melt condition and prevented the nucleation of PTT component and subsequent PTT crystallization. Cloisite 30B locates in two phases include PTT and PP/PTT interphase, a part located in PTT droplet acts as nucleating agent for PTT component and increases its crystallinity. While a part located in interphase acts as compatibilizer and decreases crystallinity of PP component. Compatibilizer reduced crystallinity of the both components in different mechanisms. According to existence of single crystallization peak at DSC cooling scan and two melting peaks related to PP and PTT components in DSC heating scan, we conclude that in blend and compatibilized nanocomposite, PP and PTT components crystallized simultaneously in PP crystallization region.