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**PROPERTIES OF PBT/CLAY NANOCOMPOSITE TREATED BY ELECTRON-BEAM RADIATION**

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In recent years, several studies on the incorporation organophilic nanoclays in polymer resins have shown that the addition of clay is an effective strategy for achieving improved morphology and mechanical properties in polymer matrix nanocomposites. In this work, polybutylene terephthalate (PBT)/organophilic nanoclay were fabricated. The extrusion and injection molding techniques were used to process PBT/nanoclays nanocomposites in ASTM test pieces. The nanocomposite samples were irradiated in radiation doses of 70 and 100 kGy, using an electrostatic accelerator. The properties variation between irradiated and non-irradiated samples were examined by transmission (TEM) and scanning (SEM) electron microscopy. The sol-gel analysis were used to determine the degree of cross-linking, thermal analysis (TGA, DSC), X-ray diffraction (XRD) and Melt Flow Index (MFI) tests were also conducted and the correlation between the properties of the irradiated and non-irradiated samples were discussed. The results showed significant changes in the properties of PBT due to addition of organophilic nanoclays and electron-beam irradiation. The results suggest that organophilic nanoclays addition could lead to the obtaining of nanocomposite materials with better properties than PBT resin ones. Compared to electron beam radiation processing, the results showed an increase in the degree of radiation cross-linking to both PBT resin and nanocomposites.