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Wide Angle X-Ray Scattering Investigations on Irradiated iPP-VGCNF Nanocomposites. ARNOLD FONSECA, DORINA CHIPARA, KAREN LOZANO, MIRCEA CHIPARA, The University of Texas Rio Grande Valley — Isotactic Polypropylene (iPP) has been loaded by various amounts of Vapor Grown Carbon Nanofiber (VGCNF), ranging between 0 and 20 % wt., via melt mixing. The as obtained nanocomposites were gamma irradiated in air, at room temperature, at a dose rate of about 1 kGy/h and various integral doses ranging between 0 and 28 kGy. by using a ^{60}Co source. Wide Angle X-Ray Spectroscopy has been used to quantify the changes in the crystalline structure and the degree of crystallinity of iPP-VGCNFs nanocomposites. The measurements have been carried out by a Bruker Discover 8 spectrometer. Additional measurements have been performed by Raman spectroscopy using a Renishaw InVia microscope system operating at 532 and 785 nm. The experimental spectra of the nanocomposite were fitted by assuming a superposition of extended Breit-Wigner-Fano line shapes. It is concluded that the observed modifications noticed in these nanocomposites are dominated by the radiation-induced degradation of the polymeric matrix. Differential Scanning calorimetry data provided additional information regarding the effect of the nanofiller on the degree of crystallinity.

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