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Radiation-Induced Changes of Thermal Properties of Polypropylene Carbon Nanofibers Composites RAFAEL VILLEGAS, ALIN CRISTIAN CHIPARA, THOMAS MION, JOHN HAMILTON, ANANTA ADHIKARI, ELAMIN I. IBRAHIM, KAREN LOZANO, DORINA MAGDALENA CHIPARA, STEVEN TIDROW, MIRCEA CHIPARA, The University of Texas Pan American — Dispersion of nanostructures within polymeric matrices affects their thermal properties and stability. Shifts, convolutions, and splitting of the main transitions (glass transition, melting transition, and crystallization temperature) were reported. In most cases, the thermal decomposition of the polymeric matrix is delayed or shifted towards higher temperatures. Nevertheless, little is known about the effect of ionizing radiation on the thermal stability and phase transitions in such nanocomposites. Spectroscopic investigations of radiation-induced modifications in isotactic polypropylene (iPP)-vapor grown nanofiber composites (VGCNF) are reported. VGCNFs were dispersed within iPP by extrusion at 180^oC. Composites containing various amounts of VGCNFs ranging from 0 to 20 % were prepared and subjected to gamma irradiation, at room temperature, at various integral doses (10 MGy, 20 MGy, and 30 MGy). Thermal characteristics were of iPP-VGCNF composites were measured by TGA, DSC, and DMA. Acknowledgements: This research was supported by the Welch Foundation, Air Force Research Laboratory (FA8650-07-2-5061), and US Army Research Laboratory/Office (W911NF-08-1-0353).

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