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Radiation Effects on Polypropylene Carbon Nanofibers JOHN HAMILTON, THOMAS MION, ALIN C. CHIPARA, The University of Texas Pan American, ELAMIN I. IBRAHIM, KAREN LOZANO, MAGDALENA CHIPARA, University of Texas Pan American, STEVEN C. TIDROW, MIRCEA CHIPARA, University of Texas Pan American — Dispersion of carbon nanostructures within polymeric matrices affects most physical and chemical properties of the polymeric matrix (increased Young modulus, improved thermal stability, faster crystallization rates, higher equilibrium degree of crystallinity, modified glass, melting, and crystallization temperatures, enhanced thermal and electrical conductivity). Such changes have been reported and explained by thorough spectroscopic investigations. Nevertheless, little is known about the radiation stability of such nanocomposites. The research is focused on spectroscopic investigations of radiation-induced modifications in isotactic polypropylene (iPP)-vapor grown nanofiber (VGCNF)composites. VGCNF were dispersed within iPP by extrusion at 180°C. Composites containing various amounts of VGCNFs ranging from 0 to 20 % wt. were prepared and subjected to gamma irradiation, at room temperature, at various integral doses (10 MGy, 20 MGy, and 30 MGy). Raman spectroscopy, ATR, and WAXS were used to assess the radiation-induced modifications in these nanocomposites. Acknowledgements: This research was supported by the Welch Foundation (Department of Chemistry at UTPA) and by US Army Research Office (AMSRD-ARL-RO-SI: 54498-MS-ISP).

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