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Raman Investigations on PVC-Functionalized Single Wall Carbon Nanotube Composites.[1] JORGE CISNEROS, DORINA CHIPARA, ELAMIN IBRAHIM, MIRCEA CHIPARA, University of Texas Rio Grande Valley — Polyvinylchloride (PVC) is a widely used polymer whose applications are limited by poor thermal and flame stability. Nanofillers typically enhance the thermal stability and reduce flammability of polymers. Composites containing PVC loaded by COOH functionalized SWNT (PVC-fSWNT) have been obtained by solution mixing. The polymeric matrix was dissolved in THF, the nanofiller was added to the solution, and the as obtained mixture was sonicated for 1 hour. The solvent has been evaporated by heating at 90 oC in an oven for about 12 hours. The concentration of fSWNT ranged from 0 {\%}wt. up to 20 {\%}wt. Thermo gravimetric analysis (TGA) has been performed by using a TA instrument Q500 operating at various heating rates (ranging from 10 to 50 oC/min) from 50 oC to 1000 oC. Measurements have been performed by using a Renishaw InVia confocal Raman microscope, equipped with lasers operating at 432 and 785 nm. The analysis is focused on the effect of polymeric matrix on the fSWNT lines and on the modifications of the Raman lines assigned to the polymeric matrix. Raman measurements on PVC-fSWNT nanocomposites thermally degraded in air in the temperature range 50 to 300 oC are reported.

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