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Microwave Irradiation on Graphene Dispersed Within Polymeric Matrices. JORGE CISNEROS, BRIAN YUST, MIRCEA CHIPARA, Univ of Texas Rio Grande Valley — Graphene is a two dimensional nanomaterial with high thermal and electric conductivity and Young modulus. These features make graphene an ideal reinforcement for polymeric matrices. However, the mechanical features of polymer-carbon nanostructured composites are limited by the dispersion of the filler and by the delamination or microcracks initiated at the interface between the polymeric matrix and nanofiller. This last weakness can be addressed by improving the interface via chemical and physical methods. Microwave heating of graphite is a very efficient approach if the polymeric matrix does not also have a strong absorption. During the irradiation, the nanofiller is preferentially heated; the local melting of the polymer at the interface improves the interface by filling the microcracks and delaminations. Nanocomposites of polystyrene-poly(ethylene-ran-butylene)-polystyrene loaded by various amounts of graphene ranging from 0 % to 20 % wt. have been prepared by solution mixing using chloroform as solvent. The as obtained nanocomposites have been subjected to microwave irradiation in an Anton Paar Monowave 300 system operating at 75 W, for various irradiation times 5, 10, 15, 30, 45, and 60 minutes. The effect of microwave irradiation has been studied by Raman spectroscopy.

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