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Enhancing Dispersion and Properties of SWNT-polymer Nanocomposites by Controlled Non-covalent Interactions[1] DIAS LINTON, University of Tennessee — The enhancement of the dispersion and properties of singlewalled carbon nanotubes in a polymer nanocomposite via non-covalent interaction is studied. 1% w/w SWNT are dispersed in random copolymers of methyl methacrylate and 2-(dimethylamino)ethyl methacrylate (DMAEMA), where the composition of the copolymer varies from 0% to 50% DMAEMA. The resulting nanocomposites indicate the existence of interactions between the carbon nanotube and polymer matrix by a shift of the D* peak position ($\sim$2600-2700 cm^{-1}) of the polymer nanocomposite. The copolymer with 30% DMAEMA shows the smallest shift, suggesting that the nanotubes are debundled, where it is expected that this non-covalent interaction originate from the tertiary amino group in DMAEMA by formation of an electron-donor interaction with the SWNT.

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