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Impact of Non-Covalent Interactions on the Miscibility of Fullerenes in Polymers SAY LEE TEH, DIAS LINTON, Department of Chemistry, University of Tennessee, Knoxville, TN 37996, MARK DADMUN, Oak Ridge National Lab, Oak Ridge TN and Department of Chemistry, University of Tennessee, Knoxville, TN 37996 — Our recent studies have demonstrated that the incorporation of electron donor-acceptor (EDA) interactions in single-walled carbon nanotubes (SWNT) polymer nanocomposites dramatically improves the dispersion of the SWNT in the polymer matrix. These results indicate that the polymer connectivity and curvature of the nanoparticle play a crucial role in the realization of this improvement. As such, the importance of nanoparticle shape and curvature on the formation of the non-covalent interaction becomes an interesting question. To examine this problem, we have used UV-Vis spectroscopy and x-ray diffraction to quantify the miscibility limit of C60 fullerene with the incorporation of electron donor-acceptor interactions between the polymer and fullerene. The results indicate a distinct difference in the ability of EDA interactions to improve the dispersion of fullerenes relative to their impact on SWNT.

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