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Reinforcement of Epoxies Using Single Walled Carbon Nanotubes RAMANAN KRISHNAMOORTI, JITENDRA SHARMA, TIRTHA CHATTERJEE, University of Houston — The reinforcement of bisphenol-A and bisphenol-F epoxies using single walled carbon nanotubes has been approached experimentally by understanding the nature of interactions between the matrices and nanotubes. Unassisted dispersions of single walled carbon nanotubes in epoxies were studied by a combination of radiation scattering (elastic small angle scattering and inelastic scattering), DSC based glass transition determination, melt rheology and solid-state mechanical testing in order to understand and correlate changes in local and global dynamics to the tailoring of composite mechanical properties. Significant changes in the glass transition temperature of the matrix can successfully account for changes in the viscoelastic properties of the epoxy dispersions for concentrations below the percolation threshold, while above the percolation threshold the network superstructure formed by the nanotubes controls the viscoelastic properties.

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