

415e Styrene/Isoprene-Carbon Nanotube Composites Via Emulsion and Miniemulsion Polymerization

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Composite materials of single-wall carbon nanotubes (SWNTs) and styrene-isoprene copolymers have been prepared using sodium dodecyl benzene sulfonate as the surfactant in both miniemulsion and normal emulsion polymerizations. Nanotube level, ultrasound intensity, comonomer ratio and surfactant level have been studied. The resulting composites have been characterized using mechanical, thermal and electrical techniques. The addition of nanotubes leads to significant increases in both the molecular weight and stiffness of the 75 /25 styrene isoprene copolymer, with little or no changes in the 100% styrene homopolymer. Using the percolation threshold as a measure of dispersion, the dispersion of the nanotubes is better than in some similar systems, but not as good as in others.