

Fabrication of Polystyrene/Multi-Walled Carbon Nanotube (PS/MWNT) Nanocomposites through Noncovalent Grafting with End-Functionalized Polymers

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Polymer/carbon nanotube nanocomposites have the synergetic combination properties of a polymer matrix and carbon nanotubes. Carbon nanotubes provide extraordinary mechanical, electrical, and thermal properties owing to their extremely small size and large aspect ratio. By adding of carbon nanotubes in polymer matrix, nanocomposites exhibit optical transparency, high thermal and electrical conductivity, and mechanical flexibility. Here, we fabricated PS/MWNT nanocomposites films through noncovalent grafting with end-functionalized polystyrene. The end-functionalized polystyrene could enhance the dispersibility of carbon nanotubes in polymer matrix by forming hydrogen bonding between matrix and fillers. The nanocomposites were fabricated through simple solution mixing process and their enhanced optical, electrical, and mechanical properties were observed.