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Characterization of functionalized carbon nanotubes and their composites Z.P. LUO, Texas A&M University, L. CARSON, L. ADAMS, N. SOBOYEJO, A. OKI, E.G.C. REGISFORD, Prairie View A&M University — Carbon nanotubes (CNTs) have received considerable attention due to their extraordinary properties of strength, toughness, as well as thermal and electrical conductivities. They are ideal fillers for polymer nanocomposites to enhance the composite physical and mechanical properties. In order to overcome the problem of tangling caused by intrinsic van der Waals forces during the composite fabrication, chemical functionalization process has been introduced. In this work, we characterized the chemical coating on the functionalized CNTs and their composites using analytical electron microscopy. It was observed that the CNT surfaces were coated with reactants from the chemical reactions. In the CNT/epoxy nanocomposites, such a coating significantly improved the CNT dispersion. In the CNT/chitosan composite, it was observed that the unfunctionalized CNTs without coating did not bond with the chitosan particles, while the functionalized CNTs could bond with the chitosan particles through the surface adhesive coating, which is an ideal medium to make the CNT/chitosan composites.

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