

Abstract Submitted  
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**Surface chemistry of functionalized carbon nanotubes and their nanocomposites** Z.P. LUO, L. CARSON, A. OKI, L. ADAMS, N. SOBOYEJO, E.G.C. REGISFORD, A. HOLZENBURG, TEXAS A&M UNIVERSITY TEAM, PRAIRIE VIEW A&M UNIVERSITY COLLABORATION — Carbon nanotubes (CNTs) have been well recognized as a promising material due to their extraordinary mechanical, thermal and electrical properties for diverse applications. However, their behavior of hydrophobicity and chemical inertness, which cause tangling or poor dispersion, limits their commercial applications. In order to overcome the problem of tangling caused by CNT intrinsic van der Waals forces during the composite fabrication, a chemical functionalization process was introduced to achieve a better degree of dispersion, which is a critical factor determining the composite performance. This work is on the characterization the functionalized CNTs and their nano composites using advanced analytical transmission electron microscopy (TEM), including scanning TEM and energy dispersive spectroscopy for chemical compositional analysis using nanometer sized electron beam, electron energy-loss spectroscopic elemental mapping, and electron tomography for 3D reconstruction. It was found the functionalized CNTs showed better chemical bonding with matrices in the nanocomposites.

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