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Studies of Microwave Absorption Properties of Carbon Nanotubes-Epoxy Composites Z. YE, Z. LI, Southern University and A&M College, J.A. ROBERTS, University of North Texas, G.L. ZHAO, Southern University and A&M College — Less weight, excellent mechanical properties, and high efficiency in absorbing electromagnetic (EM) wave make carbon nanotubes (CNTs) composites attractive for microwave technology applications. Six groups of multi-walled carbon nanotube (MWCNT)-epoxy composite samples with various outside diameter (OD) distributions were fabricated. The weight percentages of MWCNTs in the polymer composites were controlled in the range from 1 to 10%. A microwave resonant cavity technique was utilized to measure the microwave absorption properties of all the sixty samples near a central frequency of 9.968 GHz. The results show that the maxima of EM wave absorptions for the six groups of samples were all around 7% MWCNTs weight percentage. In general, the MWCNTs with smaller diameters have higher microwave absorption at 9.968 GHz. However, the sample group M5 (OD<8nm) shows unusual results, a lower microwave absorption than other samples. SEM was used to study the morphologies of the MWCNT samples. Based on the SEM analysis and microwave absorption measurements, it was found that the efficiency of the microwave absorption of MWCNT-Epoxy composites is also affected by the morphologies/structures of MWCNTs in individual bundles. *The work is funded in part by AFOSR, NSF, and Louisiana Board of Regents.

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