

Abstract Submitted
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Single-Walled Carbon Nanotubes in Epoxy – Investigating Behavior under Strain and Alignment Using Fluorescence Spectroscopy¹

TAMIKA THOMAS, KENA SENEGAL, SARENA SENEGAL, PAUL WITHEY, Northwestern State University, SERGEI BACHILO, R. BRUCE WEISMAN, Rice University — Single-walled carbon nanotubes (SWCNTs) have been successfully embedded into EPON 862/W epoxy both with and without a surfactant. Applying strain to the nanocomposite permitted the interfacial adhesion between the SWCNT and host to be studied at the single-particle level using near-infrared fluorescence spectroscopy. Load transfer from the host to an embedded CNT is clearly observed as a shift in the nanotube's spectral emission. Loss of adhesion, or slipping, is also detected. Attempts at enhancing CNT-alignment within the nanocomposite will also be discussed. Near-infrared fluorescence imaging and spectroscopy prove to be ideal methods for monitoring the behavior of SWCNTs within nanocomposites, especially at the single-particle level. Much of this work has been carried out by undergraduate physics and chemistry majors.

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