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Carbon Nanotube Composites from Modified Plant Oils IAN MCANINCH, RICHARD WOOL, Dept Chemical Engineering, University of Delaware — Carbon nanotubes (CNTs) with their impressive mechanical properties are ideal reinforcement material. Acrylated epoxidized soy oil (AESO) has been previously shown to have favorable interactions with carbon nanotubes. CNTs mixed into AESO, both with and without styrene as a co-monomer, using mechanical shear mixing showed dispersion only on the micron level, resulting in modest mechanical property improvements. Greater improvements were seen, especially in the rubbery modulus, when the resin's viscosity was kept high, either through a reduction of the styrene content, or by curing at a lower temperature. CNTs were also dispersed via sonication in methyl methacrylate. The resulting dispersion was then mixed with AESO. The resulting composites showed better CNT dispersion, with no micron-sized aggregates, as verified using SEM and optical microscopy. The mechanical properties also showed greater improvement.

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