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Polymer Nanocomposites Containing Carbon Nanotubes and Exfoliated Nanoplatelets[1] HUNG-JUE SUE, DAZHI SUN, Texas A&M University, PROF. SUE'S TEAM — We report a simple and efficient method to disperse carbon nanotubes (CNTs) into an epoxy matrix through exfoliated nanoplatelets. Pre-oxidized CNTs were first dispersed in the presence of exfoliated nanoplatelets in water, followed by re-dispersion in epoxy matrix. Both individual CNTs and nanoplatelets are exfoliated and well dispersed in epoxy, which is confirmed by high-resolution transmission electron microscopy. The possible mechanisms responsible for the CNT dispersion in polymers are proposed. The epoxy nanocomposites containing CNTs and nanoplatelets show exceptional mechanical properties: significant improvements in both modulus and strength without reduction in ductility have been found from tensile testing. The implication of the present findings for the engineering applications of the CNT-based polymer nanocomposites is also discussed.

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