

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Structure, Morphology and Properties of Carbon Nanotube Containing Polymeric Materials LINGYU LI, STEVE KODJIE, CHRISTOPHER LI — Carbon nanotubes (CNTs) are considered an ideal reinforcing fillers in polymer nanocomposites because of their high aspect ratio, nanosize diameter, very low density and excellent physical properties (such as extremely high mechanical strength, high electrical and thermal conductivity). However, in order to achieve homogeneous dispersion of CNTs without damaging their extraordinary properties, non-covalent functionalization is an essential step. Our study of functionalization of CNTs via controlled polymer crystallization method has resulted in the formation of “nano hybrid shish-kebab” (NHSK), which is CNT periodically decorated with polymer lamellar crystals. By tuning the experimental parameters such as concentration of polymer and crystallization temperature, hybrid polymer spherulite with CNT inside was achieved. This can be considered as CNT reinforced composite with ideally controlled CNT dispersion. Both Nylon 6, 6 and PE were used as the matrix materials. Excellent dispersion of CNTs in polymer matrix was achieved and the nanocomposites showed improved thermal stability.

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Date submitted: 04 Dec 2005

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