

SWNT/POLYMER COMPOSITES

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Polymer and single wall carbon nanotube (SWNT) composites have been inspiring the development of new high performance materials due to the unique combination of mechanical, electrical and thermal properties and density of SWNTs. The critical challenge of polymer/SWNT composites is how to control nanotube dispersion and alignment in the matrix. In this study, homogenous, well-aligned arrays of SWNTs were synthesized using alcohol catalytic chemical vapor deposition (ACCVD) and a monomer was infiltrated into the arrays, followed by in situ polymerization. This synthesis process is adaptable to various polymers. The pre-aligned single-wall carbon nanotube arrays were infiltrated with methyl methacrylate (MMA) and the MMA was then polymerized. Once polymerized, the PMMA/SWNT composite had higher thermal stability. Mechanical, electrical and thermal properties of SWNT- and MWNT-reinforced polymer composites have been studied and compared.