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Surface grafting of carbon nanotubes with conjugated polybenzoxazole polymer CHIH-WEI LIN, JEN-YOU LIN, ARNOLD CHANG-MOU YANG, Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan, CHEN-CHI M. MA, Department of Chemical Engineering, National Tsing Hua University, Hsinchu, Taiwan — Surface-grafted carbon nanotubes impart extraordinary mechanical reinforcement to the polymer nanocomposites but considerably reduce the superior electrical conductivity of the neat carbon nanotubes. The conjugated polymer of polybenzoxaole (PBO) for grafting carbon nanotube therefore is very interesting as it may warrant reinforcement of both electrical and mechanical performances. The PBO-grafted carbon nanotubes was obtained from graft polymerization on nanotubes of polyhydroxyamide (PHA), the precursor of PBO, via condensation of 2,2'-bis(3-amino-4- hydroxyphenyl)-hexafluropropane ($BisPF_6$) and isophthaloyl chloride (IC) at low temperatures. The microstructure of the hybrid nanocomposites was investigated by FTIR, SEM, and TEM. The PBO/MWNT nanocomposites demonstrated excellence electronic (resistivity 0.374 Ω-cm) and thermal (decomposition temperature 590 °C) properties. This work is supported by Air Force (AFOSR-04-4074) and National Science Council of Taiwan.

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