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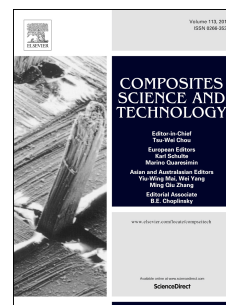
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**In situ construction of dual-noncovalent bonding to prepare enhanced carbon
nanotubes/poly(methyl methacrylate) nanocomposites**

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Abstract: Interfacial interaction between carbon nanotubes (CNTs) and polymer matrix is crucial in preparing high-performance CNTs/polymer composites. In this work, dual-noncovalent bonding was constructed via in situ polymerization to improve the interfacial interaction between CNTs and polymer. Two functional monomers, 2-(methacryloyloxy) ethyltrimethyl ammonium chloride (MTC) and styrene (St), were utilized to copolymerize with methyl methacrylate (MMA) via in situ polymerization, meanwhile, carboxylic CNTs was adsorbed through electrostatic interaction and π - π interaction during the polymerization process. ^1H -NMR and GPC measurements verified that the successful synthesis of copolymer and its adsorption onto the surface of CNTs, while the enhanced interfacial interactions were confirmed by FTIR and Raman. Compared with neat PMMA, the thermal decomposition temperature and tensile strength of the prepared CNTs/PMMA composites were improved by 40°C and 55.2 %, respectively.

Keywords: Carbon nanotubes (A); Polymer-matrix composites (A); Interfacial strength (B);

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