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Thermal behavior of MWNT-reinforced thermoplastic natural rubber nanocomposites

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Abstract

This article studies the thermal properties of a multi-walled carbon nanotube (MWNT)-reinforced thermoplastic natural rubber (TPNR) nanocomposite. The nanocomposite was prepared using a melt blending method. Various percentages (1, 3, 5, and 7 wt%) of MWNTs were added into TPNR to improve its thermal properties. The laser flash technique was also employed to determine the thermal conductivity, thermal diffusivity, and specific heat capacity of the nanocomposite. The DMA result showed that the glass transition temperature (T_g) increased with the increase in MWNT content. TEM micrographs also demonstrated that a good dispersion of MWNTs was achieved in the TPNR environment.