

Thermal Property of Multi-Walled-Carbon-Nanotube Reinforced Epoxy Composites

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Abstract : In this study, epoxy composite specimens reinforced with multi-walled carbon nanotube filler were fabricated using shear mixer and ultra-sonication processor. The mechanical and thermal properties of the fabricated specimens were measured and evaluated. From the electron microscope images and the results from the measurements of tensile strengths, the specimens having 0.6 wt% nanotube content show better dispersion and higher strength than those of the other specimens. The Young's moduli of the specimens increased as the contents of the nanotube filler in the matrix were increased. The specimen having a 0.6 wt% nanotube filler content showed higher thermal conductivity than that of the other specimens. While, in the measurement of thermal expansion, specimens having 0.4 and 0.6 wt% filler contents showed a lower value of thermal expansion than that of the other specimens. On the basis of the measured and evaluated properties of the composites, we believe that the simple and time-saving fabrication process used in this study was sufficient to obtain improved properties of the specimens.

Keywords : carbon nanotube filler, epoxy composite, ultra-sonication, shear mixer, mechanical property, thermal property

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