

Thermal Transport in MWNT Sheets

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We present the comparative study of the anisotropic thermal conductivity and the thermal diffusivity of aligned multiwalled carbon nanotube sheet using two methods: laser flash and 3 omega methods. The highly aligned transparent nanotube sheets are drawn from a sidewall of a multiwalled carbon nanotube (MWNT) forest that was synthesized by chemical vapor deposition. The sectional analysis by AFM tip shows that suspended sheet consists on average one layer of 10 nm MWNT. Increase of the sheet density by stacking the layer to layer decreases the thermal conductivity and thermal diffusivity due to phonon-phonon interaction. High thermal conductivity and thermal diffusivity of studied specimens combined with extremely high surface area suggests a variety of application of MWNT sheets.