عنوان مقاله:

The influence of decorated multi walled carbon nanotubes with TiO2 nanoparticles on the thermal conductivity of water based nanofluids

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خلاصه مقاله:

In this paper, we report for the first time the thermal conductivity behavior of nanofluids containing MWCNTs which decorated with different amount of TiO2 nanoparticles. For this purpose we synthesis the TiO2 nanoparticles and decorated MWCNTs with different amount of TiO2 nanoparticles using hydrolysis method. The samples are characterized by transmission electron microscopy (TEM). TEM image confirmed that the ends of MWCNTs successfully opened. Meainwhile acid treatment leads to the cutting of MWCNTs to the short length and the outer surface of MWCNTs successfully decorated withTiO2 nanoparticles. Measurements of thermal conductivity behavior of nanofluids were carried out in the range of temperature varying from 25 to 70 °C. The mass fraction of the TiO2 nanoparticles, MWCNTs and decorated multi walled carbon nanotubes with TiO2 nanoparticles in water is 0.25, 0.5, 1 and 1.5 %wt..The results of thermal conductivity behavior of nanofluids revealed that the thermal conductivity and enhancement ratio of thermal conductivity of MWCNTs-TiO2 at different amount of TiO2 nanoparticles are higher than those of TiO2 and MWCNTs nanofluids. Temperature and weight fraction dependence study also show that the thermal conductivity of all nanofluids increases with temperature and weight fraction. However the influence of .temperature is more significant than that of weight fraction

کلمات کلیدی:

MWCNT, TiO2 Nanoparticles, Decoration, Thermal Conductivity