

Thermal Conductivity of Nanofluids with a Hot-Wire Technique

M. Khayet^{C, S} and J. M. Ortiz de Zárate

Department of Applied Physics I, Faculty of Physics, University Complutense of Madrid, Madrid, Spain

Recently, a large enhancement of the thermal conductivity of nanofluids when compared to their base liquids (up to 40 % or even higher) has been reported. In the present study, the thermal conductivity of various nanofluids have been measured by the multicurrent hot-wire technique. Water and ethylene glycol were used as host liquids. Silica (SiO₂) and copper oxide (CuO) nanopowder dispersions were prepared at different concentrations up to about 5 % (w/w). As was expected, enhancements of the thermal conductivity of both the water-based nanofluids and the ethylene glycol-based nanofluids were observed. This increase was moderate (up to 6 %) but compared well with other previously reported data.