

### Thermal conductivity measurement of nanofluids with suspended nano-sized particles in heat transfer

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Nanofluids, which are used as a heat transfer fluid involving suspension of nanoparticles, were prepared by chemical reduction method. The properties of nanofluids were investigated by transmission electron microscopy, infrared analysis, and stability measurement. To measure fluid thermal conductivity, we used the transient hot-wire method. In this approach, a platinum wire is suspended symmetrically in a liquid within a vertical cylindrical container. The platinum wire is coated with a thin electrical insulation layer to avoid problems associated with measuring electrically conducting fluids. Briefly, the technique works by measuring the temperature/time response of the wire to an abrupt electrical pulse. Calibration experiments were performed for ethylene glycol and water in the temperature range of 290 to 310K. The thermal conductivities of nanofluids were improved over 15% than pure fluid.