**109f The Thermal Conductivity of Nanofluids Containing Al2o3 Nanoparticles**

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Suspensions of nanoparticles in liquids (nanofluids) have been proposed for enhancing the performance of available heat transfer fluids. Such nanofluids exhibit significant increases in thermal conductivity compared with the base fluids or with the same base fluids containing larger particles. However, published data on thermal conductivity enhancement often show considerable discrepancies, possibly due to a failure to characterize the system properly. This work attempts to resolve some of this disagreement by measuring the thermal conductivity and density of several well-characterized nanofluids consisting of alumina nanoparticles suspended in each of the following base fluids: deionized water, ethylene glycol, and hexane. The particle size of the alumina nanoparticles was characterized via transmission electron microscopy and dynamic light scattering. In some cases, surfactants were employed to enhance the stability of the system.The thermal conductivity was measured with a liquid metal transient hot wire method over a temperature range of 298 K to 425 K and the results compared with several models for the thermal conductivity of heterogeneous systems.