عنوان مقاله:

Thermal Conductivity of Cu and Al-Water Nanofluids

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خلاصه مقاله:

Nanofluids are suspensions of nanoparticles in the base fluids; a new challenge for thermal sciences provided by nanotechnology. In this paper, the tested fluids are prepared by dispersing Al and Cu intowater at three different concentrations of 500, 1000 and 2000 ppm. Thermal conductivities of these fluidsare measured experimentally by thermal property analyzer i.e. KD2 Pro using KS-1 sensor needle as this needle is preferred for low viscosity fluids. Experimental results show that thermal conductivity of nanofluids are higher than the base fluid and thermal conductivity of Cu/water nanofluid is more thanAl/water nanofluid, because the thermal conductivity of Cu is higher in comparison to Al. In addition, acomparison is made between the experimental results of thermal conductivity and the results calculated using models presented for predicting them. Results showed that classic models failed to predict nanofluids thermal conductivity, but novel models that consider the effects of temperature provide more acceptable results, meanwhile 9% difference is found between experimental results and Xei model for Cu/water nanofluid.

کلمات کلیدی:

Thermal Conductivity,Metal Nanofluid,KD2 Pro,Theoretical Models

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