**Experimental investigation on properties of hybrid nanofluids (TiO2 and ZnO) in water–ethylene glycol mixture**

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**ABSTRACT**

This paper presents an experimental investigation on properties and stability of hybrid nanofluids (TiO2 and ZnO) in water-ethylene glycol mixture. The nanofluids are important in heat enhanced due to its inherent operative performance. The performance of hybrid nanofluids in mixture based fluids is not explored vigorously yet. The properties of TiO2 and ZnO nanoparticle dispersed in mixture of water and ethyelene glycol (EG) were considered in this study. The outcome of base fluid proportion (water: EG) to hybrid nanofluids was investigated. Hybrid nanofluids with different volume concentration up to 0.1-1.5% were prepared with 21nm particle size of TiO2 and 10-30nm ZnO nanoparticle. The nanoparticle were suspended in various ratio of TiO2 : ZnO including 70:30, 80:20 and 90:10 by volume percent. The measurements of viscosity were performed using Brookfield LVDV III Ultra Rheometer for hybrid nanofluid temperature of 50 to 70 oC, while the measurements of thermal conductivity were performed using KD2 PRO thermal conductivity. Viscosity and thermal conductivity of hybrid nanofluids were perceived to impact by hybrid nanofluids concentration, temperature and water-ethelene glycol as base fluid strongly.

Keywords: Hybrid nanofluids; thermal conductivity; temperature; ethylene glycol; titanium oxide; zinc oxide.