**Influence of Ethylene Glycol- Water Mixture  
ratio on Al2O3 Nanofluid for Turbulent Flow Heat Transfer Characteristics**

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## ABSTRACT

## In this present study a numerical analysis is developed to study the base fluid mixture ratios influence on heat transfer coefficient and flow characteristics in the turbulent range of Reynolds number employing the eddy diffusivity equation of van Driest. The properties of Aluminum dioxide (AL2O3) nanofluid with spherical particles in base liquid ethylene glycol (EG) -water (W) mixture of 60:40 ratio is employed for a wide range of concentrations of 2% at a bulk temperature of 30 to 70 oC. The influences of concentration and temperature on heat transfer coefficient and friction factor have been determined. A good agreement of the numerical results with the experimental data with the nanofluid property equations are developed. The maximum concentrations for which the heat transfer enhancement can be attained are estimated to be 1.5% and 2.05% at 40 and 70 oC respectively under turbulent flow. Temperature effect and concentration effect on heat transfer coefficients of nanofluids were analyzed and observed that heat transfer coefficient increases with concentration and decreases with temperature

***Keywords:***Aluminum dioxide, ethylene glycol. nanofluids, thermo-physical properties, turbulent flow.