

Nanofluid Heat Transfer Augmentation in a Double Pipe Heat Exchanger

In this study, the heat transfer coefficient and pressure drop in a tube under turbulent flow condition are studied numerically. The Reynolds number range and nanoparticles concentration are in the range of (5000-30000) and 1% to 4% respectively. The governing equations have solved by the finite volume method adopting ANSYS software for simulation. The boundary conditions include the inlet velocity, outlet pressure and constant inlet temperature with adopting SIMPLE algorithm. The results demonstrate that the AL₂O₃/Water nanofluid can enhance thermal properties of base fluid to 20%, additionally; the heat transfer rate of nanofluid compared to the water is higher but friction factor slightly higher than that of pure water.