

NUMERICAL INVESTIGATION OF CuO-WATER NANOFLUID IN DIFFERENT GEOMETRY CROSS-SECTION

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SUMMARY: In this paper, developing laminar forced convection flow of a nanofluid in a number of geometry is investigated numerically. The steady state of a three dimensional flow under uniform heat flux boundary condition on the wall is considered. The study is carried out for water with CuO nanoparticles. Single-phase approach is employed to evaluate the developing laminar forced convection flow, taking temperature variable thermo physical properties into account. The velocity and temperature profiles are presented in the fully developed region. The axial development of temperature and convective heat transfer coefficient at the outer wall is shown and discussed. The effect of the presence of the nanoparticles in different geometries such as circle, rectangle and triangle is considered via its effects on the thermo-physical properties of the nanofluids.