

Natural Convection in MHD Slip Flow of Alumina Water Nanofluid Over a Flat Plate

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ABSTRACT

Present paper deals with analysis of natural convection in two dimensional magnetohydrodynamic (MHD) slip flow of an incompressible, viscous, electrically conducting and steady alumina-water nanofluid in the presence of transverse magnetic field over a flat plate. The governing equations representing fluid flow are transformed into a set of simultaneous ordinary differential equations by using appropriate similarity transformation. The set of equations thus obtained has been solved numerically with the help of Matlab by using Adaptive Runge-Kutta method with shooting technique. The effects of various parameters *viz.* magnetic parameter, thermal Grash of number, velocity slip parameter, thermal slip parameter on velocity distribution profile, temperature distribution profile, shear stress profile and temperature gradient profile were depicted graphically and analyzed. Significant changes were observed in the heat transfer rate with respect to these parameters.

Key words: Magnetohydrodynamic, Alumina water Nanofluid, Boundary Layer Slip, Volume Fraction, Natural Convection.

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