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Free Convection Flow of Nanofluid through an Exponentially Accelerated Vertical Plate with Variable Viscosity in the Presence of Radiation and Chemical Reaction

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Abstract

Free convection flow of nano fluid through an exponentially accelerated porous plate with variable viscosity in the presence of radiation and chemical reaction has been discussed in this paper. Here we have considered variable viscosity in the effects of radiation and chemical reaction in both the cases. The governing equations are transformed into non-dimensional form by the as usual mathematical technique of transformation. Then the obtained non-dimensional nonlinear partial differential equations are solved by using explicit finite difference technique. Also, the numerical results has been calculated by computer programming language COMPAQ VISUAL FORTRAN 6.6a. Then the numerical solutions for velocity, temperature and concentration profiles are obtained graphically for various dimensionless parameters and discussed after stability test by using graphics software tecplot-9. The skin friction coefficient, Nusselt number and Sherwood number are also investigated by tabular form.

Keywords

Nanofluid, free convection, MHD, porous medium.