Abstract

In the paper, an analysis is performed to study the effect of temperature dependent viscosity and thermal conductivity of unsteady viscous incompressible boundary layer micropolar fluid flow under mixed convection. The flow past is to be studied over a stretching sheet in presence of viscous dissipation. In the process of study, partial differential equations governing the flow have been transformed into ordinary differential equations in dimensionless form using similarity transformation and solved numerically by using Runge-Kutta shooting method. The effects of various important parameters of the problem concerned like viscosity, thermal conductivity, micro-rotation, unsteadyness of the fluid on velocity and temperature within the boundary layers are obtained. The results are represented graphically. The skin friction, Nusselt numbers are also computed, analysed and given in tabular form.

References

Effects of Variable Viscosity and Thermal Conductivity of Unsteady Micropolar Fluid under Mixed Convection in Presence of Uniform Magnetic Field on Stretching Surface


Index Terms

Computer Science

Applied Mathematics

Keywords

Micropolar Fluid, Boundary Layer, Unsteady flow, Mixed convection, Stretching sheet.