

Effects of radiation, joule heating and viscous dissipation on MHD Marangoni convection over a flat surface with suction and injection

ABSTRACT

In this paper, we studied the effects of thermal radiation, Joule heating and viscous dissipation on magnetohydrodynamics (MHD) Marangoni convection boundary layer over a flat surface. We also investigated the influence of suction and injection on the boundary layer. Numerical results were obtained using the shooting method along with the Runge-Kutta-Fehlberg method. The influences of the interest parameters on the reduced velocity along the interface, velocity profiles as well as the reduced heat transfer at the interface and temperature profiles were presented in tables and figures. From the results, we discovered that thermal radiation, magnetic parameter, Joule heating, viscous dissipation and suction parameter can reduce the velocity and heat transfer at the interface.

Keyword: Boundary layer; Convection; Flat surface.