

2019

Effects of thermal radiation on MHD chemically reactive flow past an oscillating vertical porous plate with variable surface conditions and viscous dissipation

Reddy, Prabhakar B.

i-manager Publications

Reddy, B. P., & Muthucumaraswamy, R. (2019). Effects of Thermal Radiation on MHD Chemically Reactive Flow Past an Oscillating Vertical Porous Plate with Variable Surface Conditions and Viscous Dissipation. *i-Manager's Journal on Future Engineering and Technology*, 15(2), 8.

<http://hdl.handle.net/20.500.12661/2840>

Downloaded from UDOM Institutional Repository at The University of Dodoma, an open access institutional repository.

Abstract

Full text is available at <https://doi.org/10.26634/jfet.15.2.15020>

The purpose of this article is to investigate the thermal radiation effects on unsteady hydro-magnetic viscous dissipative fluid flow of an incompressible and electrically-conducting past an oscillating vertical plate in a porous medium with variable surface conditions in the presence of chemical-reaction. The Ritz FEM has been applied to solve the governing equations of the flow. The numerical solutions for the fluid velocity, fluid temperature, and fluid concentration were presented graphically. Numerical results of the skin-friction are presented in tables. It has been found that the fluid temperature decreased in the boundary-layer as the radiation parameter increased whereas it is increased when Eckert number increased. Increase in the Schmidt number and chemical reaction tends to decrease the concentration of fluid. The permeability parameter, Eckert number, and the time tends to accelerate the fluid velocity whereas magnetic field, radiation and chemical reaction tends to decelerate the fluid velocity in case of cooled plate and opposite effect is observed in case of heated plate. These results are in very good agreement with earlier reported studies.