

RADIATION AND CHEMICAL REACTION EFFECTS ON MHD NATURAL CONVECTION FLOW PAST A MOVING VERTICAL PLATE EMBEDDED IN A POROUS MEDIUM WITH HEAT SOURCE AND CONVECTIVE SURFACE BOUNDARY CONDITION

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ABSTRACT

This paper focuses attention to study the effects of heat and mass transfer characteristics on steady MHD free convective flow of a viscous incompressible electrically conducting and radiating fluid past a moving vertical plate embedded in a porous medium in the presence of the heat source and chemical reaction with convective surface boundary condition. The hot fluid is in contact on the left surface of the plate, while the stream of cold fluid flows along the right surface. Using the similarity transformations, the governing equations are transformed into nonlinear ordinary differential equations, and then solved by Runge-Kutta method along with shooting technique. The velocity, temperature and concentration as well as the numerical values of skin friction coefficient, Nusselt number, plate surface temperature and Sherwood number for various material parameters are discussed and represented through graphs and tables. The present results are compared with the available literature, and found to be in good agreement.

KEYWORDS: Heat And Mass Transfer, Free Convection, Internal Heat Generation, Heat Source, MHD, Porous Medium, Radiation, Chemical Reaction, Convective Boundary Condition, Shooting Method