# MHD Stagnation-Point Flow over a Plate

**Authors :** H. Niranjan, S. Sivasankaran

**Abstract :** Heat and mass transfer near a steady stagnation point boundary layer flow of viscous incompressible fluid through porous media investigates along a vertical plate is thoroughly studied under the presence of magneto hydrodynamic (MHD) effects. The fluid flow is steady, laminar, incompressible and in two-dimensional. The nonlinear differential coupled parabolic partial differential equations of continuity, momentum, energy and specie diffusion are converted into the non-similar boundary layer equations using similarity transformation, which are then solved numerically using the Runge-Kutta method along with shooting method. The effects of the conjugate heat transfer parameter, the porous medium parameter, the permeability parameter, the mixed convection parameter, the magnetic parameter, and the thermal radiation on the velocity and temperature profiles as well as on the local skin friction and local heat transfer are presented and analyzed. The validity of the methodology and analysis is checked by comparing the results obtained for some specific cases with those available in the literature. The various parameters on local skin friction, heat and mass transfer rates are presented in tabular form.

**Keywords :** MHD, porous medium, slip, convective boundary condition, stagnation point