

عنوان مقاله:

Effect of Variable Thermal Conductivity and the Inclined Magnetic Field on MHD Plane Poiseuille Flow in a Porous Channel with Non-Uniform Plate Temperature

محل انتشار:

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خلاصه مقاله:

The aim of this paper is to investigate the effect of the variable thermal conductivity and the inclined uniform magnetic field on the plane Poiseuille flow of viscous incompressible electrically conducting fluid between two porous plates Joule heating in the presence of a constant pressure gradient through non-uniform plate temperature. It is assumed that the fluid injection occurs at lower plate and fluid suction occurs at upper plate. The governing equations of momentum and energy are transformed into coupled and nonlinear ordinary differential equations using similarity transformation and then solved numerically using finite difference technique. Numerical values for the velocity and temperature have been iterated by Gauss Seidal iteration method in Matlab programming to a suitable number so that the convergent solutions of velocity and temperature are considered to be achieved. Numerical results for the dimensionless velocity and the temperature profiles for different governing parameters such as the Hartmann Number (M) angle of inclination of magnetic field (α), suction Reynolds number (Re) Prandtl Number (Pr), Eckert number (Ec) and variable thermal conductivity (ϵ) have been discussed in detail and presented through graphs

کلمات کلیدی:

MHD Poiseuille-flow, Thermal conductivity, inclined uniform magnetic field, Finite difference method

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