STEADY MHD MIXED CONVECTION FLOW THROUGH A POROUS MEDIUM IN A MICRO CHANNEL

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Abstract

We studied the fully developed mixed convective heat transfer of a conducting Newtonian fluid through a porous medium in an open ended vertical parallel plate micro channel under the influence of transverse magnetic field with asymmetric wall heating at uniform heat fluxes by taking the velocity slip and temperature jump at the wall into account. The effects of the modified mixed parameter, the Knudsen number Kn, Hartmann number M, The inverse Darcy parameter and the ratio of wall heat flux on the micro channel hydrodynamic and thermal behaviours are determined. The solutions obtained for velocity and temperature field are expressed graphically for various physical parameters. From the figures, it is clear that the velocity increases near the hot wall with increasing mixed convection number while near the cold wall; it decreases with increasing mixed convection number. The temperature increases near the cold wall with increase in Kn, but decreases near the hot wall.