

Documents

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Mixed Convection in a Ventilated Cavity Filled with a Triangular Porous Layer

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Abstract

Mixed convection in a square cavity having a triangular porous layer and a local heater has been investigated numerically. The governing partial differential equations with corresponding boundary conditions have been solved by the finite difference method using the dimensionless stream function, vorticity and temperature formulation. The effects of the Richardson number ($Ri= 0.01 - 10$), Darcy number ($Da= 10^{-7} - 10^{-1}$), heater length ($\delta= H/ L= 0.2 - 0.4$) and different locations of the porous layer on the streamlines and isotherms as well as the average and local Nusselt numbers at the heater have been analyzed. It has been found that all these key parameters essentially affect the flow and heat transfer patterns. © 2017, Springer Science+Business Media B.V.

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