Abstract

Mohamed Abd El Fatah Mohamed Teamah

m a. teamahw. m. el-maghlany "numerical simulation of double-diffusive convective flow in differentially heated rectangular enclosure with insulated moving lid on top" international journal of thermal sciences 49 no. 9, (2010) 1625-1638

the present study is concerned with the mixed convection in a rectangular lid-driven cavity under therncombined buoyancy effects of thermalmass diffusion. double-diffusive convective flow in a rectangularrnenclosure with moving upper surface is studied numerically. both upperlower surfaces are beingrninsulatedimpermeable. constant different temperaturesconcentration are imposed along thernvertical walls of the enclosure, steady state laminar regime is considered. the transport equations forrncontinuity, momentum, energyspices transfer are solved. the numerical results are reported for therneffect of richardson number, lewis number,buoyancy ratio on the iso-contours of stream line,rntemperature,concentration. in addition, the predicted results for both localaverage nusselt andrnsherwood numbers are presenteddiscussed for various parametric conditions. this study was donernfor 0.1 le 50prandtl number pr ¼ 0.7. through out the study the grashof numberaspect ratiornare kept constant at 1042 respectively 10 n 10, while richardson number has been variedrnfrom 0.01 to 10 to simulate forced convection dominated flow, mixed convectionnatural convectionrndominated flow.