

Abstract

Mohamed Abd El Fatah Mohamed Teamah

numerical simulation for double diffusive mixed convection with aidingopposing flow in vertical tubes"

the present study is concerned with the mixed convection in a vertical tube under the combined buoyancy effects of thermal mass diffusion. double-diffusive convective flow in a vertical tube with upward/downward flow is studied numerically. the flow laminar under steady state condition are considered .the transport equations for continuity, momentum, energy/mass transfer are solved. the numerical procedure adopted in this analysis yields consistent performance over a wide range of parameters, richardson number, ri , ($10^{-2} \leq ri \leq 10$) aspect ratio, ar , $2.5 \leq ar \leq 20$ buoyancy ratio, n , ($-10 < n < 10$) (lewis number , le , ($0.1 \leq le \leq 100$)). the numerical results are reported for the effect of the parameters on the iso-contours of temperature, concentration. in addition, the predicted results for both local/average nusselt/asherwood numbers are presented/discussed for various parametric conditions. this study was done for constant grashof number, $gr=105$ prandtl number, $pr=0.71$.