

Free Convection in a Darcy Thermally Stratified Porous Medium That Embeds a Vertical Wall of Constant Heat Flux and Concentration

Authors : Maria Neagu

Abstract : This paper presents the heat and mass driven natural convection succession in a Darcy thermally stratified porous medium that embeds a vertical semi-infinite impermeable wall of constant heat flux and concentration. The scale analysis of the system determines the two possible maps of the heat and mass driven natural convection sequence along the wall as a function of the process parameters. These results are verified using the finite differences method applied to the conservation equations.

Keywords : finite difference method, natural convection, porous medium, scale analysis, thermal stratification

Conference Title : ICHTA 2016 : International Conference on Heat Transfer and Applications

Conference Location : London, United Kingdom

Conference Dates : January 18-19, 2016