عنوان مقاله:

Similarity Solution for Unsteady MHD Flow Near a Stagnation Point of a Three-Dimensional Porous Body with Heat and Mass Transfer, Heat Generation/Absorption and Chemical Reaction

محل انتشار:

دوماهنامه مکانیک سیالات کاربردی, دوره 4, شماره 2 (سال: 1391)

تعداد صفحات اصل مقاله: 8

نویسندگان:

A. J. Chamkha - *Manufacturing Engineering Department, The Public Authority for Applied Education and Training, Shuweikh ۷۰۶۵۴, Kuwait*

S. E. Ahmed - *Department of Mathematics, South Valley University, Qena, Egypt*

خلاصه مقاله:

The problem of unsteady mixed convection heat and mass transfer near the stagnation point of a three-dimensional porous body in the presence of magnetic field, chemical reaction and heat source or sink is analyzed. An efficient, iterative, tri-diagonal implicit finite difference method is used to solve the transformed similarity equations in the boundary layer. Three cases were considered, namely, accelerating flow, decelerating flow and the steady-state case. The obtained results are presented in graphical and tabulated forms to illustrate the influence of the different physical parameters such as the magnetic field parameter, transpiration parameter, unsteadiness parameter, ratio of velocity gradients at the edge of the boundary layer parameter, heat generation/absorption parameter and the chemical reaction parameter on the velocity components in the x-and y- directions, temperature and concentration distributions, as well as the skin-friction coefficients and Nusselt and Sherwood numbers.

کلمات کلیدی:

Mixed convection, Three dimensional flow, Heat source/sink, Stagnation point