

Documents

Reddy, P.S., Chamkha, A.J.

Heat and mass transfer characteristics of Al₂O₃-water and Ag-water nanofluid through porous media over a vertical cone with heat generation/absorption (2017) *Journal of Porous Media*, 20 (1), pp. 1-17. Cited 13 times.

Abstract

In this article, we have presented a numerical solution to the MHD heat and mass transfer flow of a nanofluid through porous media over a vertical cone with heat generation/absorption, thermal radiation, and chemical reaction. Though we have different varieties of nanofluids, we have considered Al₂O₃-water and Ag-water based nanofluids (with volume fraction 1% and 4%) in this problem. The transformed conservation equations for the nanofluid are solved numerically subject to the boundary conditions using an efficient, extensively validated, variational finite element analysis. The numerical code is validated with previous studies. The influence of important nondimensional parameters, namely, nanoparticle volume fraction (ϕ), Prandtl number (Pr), magnetic parameter (M), mixed convection (Ra), buoyancy ratio (Nr), and space-dependent (A), temperature-dependent (B), thermal radiation (R), and chemical reaction (Cr) on velocity, temperature, and nanoparticle concentration fields as well as the skin-friction coefficient, Nusselt number, and Sherwood number are examined in detail and the results are shown graphically and in tabular form to illustrate the physical importance of the problem. © 2017 by Begell House, Inc.

2-s2.0-85014356073

Document Type: Article

Publication Stage: Final

Source: Scopus