

Documents

Nayak, M.K., Shaw, S., Chamkha, A.J.

3D MHD Free Convective Stretched Flow of a Radiative Nanofluid Inspired by Variable Magnetic Field

(2019) *Arabian Journal for Science and Engineering*, 44 (2), pp. 1269-1282.

Abstract

This paper carries on investigation to study the effects of variable magnetic field and thermal radiation on free convective flow of an electrically conducting incompressible nanofluid over an exponential stretching sheet. The model implemented in the present study significantly enriches the thermal conductivity and hence more heat transfer capability of nanofluids. The transformed governing equations have been solved numerically using fourth-order Runge–Kutta method along with shooting technique. The influence of variable magnetic field and thermal radiation associated with thermal buoyancy on the dimensionless velocity, temperature, skin friction and Nusselt number have been analyzed. The obtained numerical results in the present study are validated and found to be in excellent agreement with some previous results seen in the literature. The present study contributes to the result that augmented Hartmann number belittles the fluid flow and enhances the fluid temperature and the related thermal boundary layer thickness. © 2018, King Fahd University of Petroleum & Minerals.

2-s2.0-85059932758

Document Type: Article

Publication Stage: Final

Source: Scopus