Scopus

Documents

Chamkha, A.J., Rashad, A.M., Mansour, M.A., Armaghani, T., Ghalambaz, M.

Effects of heat sink and source and entropy generation on MHD mixed convection of a Cu-water nanofluid in a lid-driven square porous enclosure with partial slip

(2017) *Physics of Fluids*, 29 (5), art. no. 052001, . Cited 48 times.

Abstract
In this work, the effects of the presence of a heat sink and a heat source and their lengths and locations and the entropy generation on MHD mixed convection flow and heat transfer in a porous enclosure filled with a Cu-water nanofluid in the presence of partial slip effect are investigated numerically. Both the lid driven vertical walls of the cavity are thermally insulated and are moving with constant and equal speeds in their own plane and the effect of partial slip is imposed on these walls. A segment of the bottom wall is considered as a heat source meanwhile a heat sink is placed on the upper wall of cavity. There are heated and cold parts placed on the bottom and upper walls, respectively, while the remaining parts are thermally insulated. Entropy generation and local heat transfer according to different values of the governing parameters are presented in detail. It is found that the addition of nanoparticles decreases the convective heat transfer inside the porous cavity at all ranges of the heat sink and source lengths. The results for the effects of the magnetic field show that the average Nusselt number decreases considerably upon the enhancement of the Hartmann number. Also, adding nanoparticles to a pure fluid leads to increasing the entropy generation for all values of D for λl=-λr= 1.

2-s2.0-85019005246
Document Type: Article
Publication Stage: Final
Source: Scopus