Scopus

Documents

Tayebi, T., Chamkha, A.J.

Entropy generation analysis due to MHD natural convection flow in a cavity occupied with hybrid nanofluid and equipped with a conducting hollow cylinder

(2019) *Journal of Thermal Analysis and Calorimetry*, . Cited 1 time.

Abstract
The main objective of this numerical investigation was to analyze the entropy generation and natural convection flow under magnetic field in a square enclosure filled with Cu–Al2O3/water hybrid nanofluid. The enclosure is equipped with a conducting hollow cylinder. The free convective flow in the enclosure is created by a horizontal temperature difference between the vertical left hot wall and the right cold wall under the Boussinesq approximation. The dimensionless equations of steady laminar natural convection flow for Newtonian and incompressible mixture are discretized using the finite volume method. The effective thermal conductivity and viscosity of the hybrid nanofluid are calculated using Corcione correlations taking into consideration the Brownian motion of nanoparticles. Numerical solutions were performed for different values of the nanoparticles volumic concentration, Hartmann number, Rayleigh number, radius ratio, and solid–fluid thermal conductivity ratio. The analyzed results show that inserting a hollow conducting cylinder plays an important role in controlling flow characteristic and heat transfer rate as well as irreversibilities within the cavity. © 2019, Akadémiai Kiadó, Budapest, Hungary.

2-s2.0-85070357827
Document Type: Article
Publication Stage: Article in Press
Source: Scopus