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Effects of wavy wall amplitudes on mixed convection heat transfer in a ventilated wavy cavity filled by copper-water Nanofluid containing a central circular cold body

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Abstract

In this work, a two dimensional numerical simulation has been performed on nanofluid flow and heat transfer inside a ventilated wavy cavity having circular cooler. The ventilated cavity is filled by a Cu-water nanofluid. Finite volume method was used to solve in the presented model. Simulation is carried out for a range of the Richardson numbers from 0.1 to 100, volume fraction of nanoparticles from 0% to 5% and wave amplitude ranging from 0 to 0.15. It is observed that the amplitude of the wavy wall has a significance effect on the heat transfer rate. The result also shows that lessening Richardson number leads to increase the mean Nusselt number for different amplitudes of wavy wall. © 2019 by American Scientific Publishers All rights reserved.

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