Effects of inclination angle onnatural convection in cubic enclosure filledwith Copper–water nanofluid

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Abstract

Effects of inclination angle on natural laminar and transient convection in a cubic enclosure filled with Cu-nanofluid,are analyzed numerically. The angle of inclination is usedas a control parameter for flow and heat transfer. It was varied from 00 to900. Theverticalwallsareactiveandthosehorizontalareadiabatic. The enclosure is filled by a Newtonian and incompressible fluid.

Calculations were performed for Grashof number ($103 \leq Gr \leq 106$) and volume fraction of nanoparticles ($0 \leq \Phi \leq 0.1$). The finite volume method is utilized and the SIMPLER algorithm is used for handling the pressure-velocity coupling.

We compare results resulting from the latter with other similar results existing in the literature, and validate the model.

Keywords: Nanofluids, Heat Transfer, Natural Convection,FluidMechanic,transient, Closed enclosures.