عنوان مقاله:

Investigation on the effects of different heat source positions and boundary conditions on the nusselt number of a heat source placed in a cavity filled with nanofluid

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خلاصه مقاله:

This work is focused on the numerical study of mixed convection cooling of a heat source placed in a square cavity filled with water-Cu nanofluid. The top wall of the enclosure is sliding from left to right at a constant speed while the other walls are stationary. Three numbers of walls are with adiabatic boundary condition while the other wall is at constant cold temperature. Four different cases have been investigated based on two different positions for the heat source and two different positions for the cold wall. In all four cases, the effects of different Richardson numbers (.0.6, 6 and 6..) and different solid volume fraction of nanofluid (. <φ< .0.1) have been investigated. It has been observed that using cold wall at the top of the cavity increases nusselt number for all cases. Also it has been observed that placing the heat source at the bottom wall of the cavity increases nusselt number in high Richardson numbers but placing heat source at the left wall of the cavity increases nusselt number in low Richardson numbers. It also observed that nusselt number is an increasing function of solid volume fraction and decreasing function of Richardson number. Finally the flow streamlines, isotherm lines distribution and nusselt number for all cases have been reported.

کلمات کلیدی:
mixed convection, cavity, nanofluid, heat source

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