عنوان مقاله:

Investigation of natural convective nanofluid inside a cavity with considering diffusion aspects of nanoparticles in multiphase model

محل انتشار:

دومین همایش بین المللی افق های نوین در علوم پایه و فنی و مهندسی (سال: 1398)

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خلاصه مقاله:

Due to complexities and difficulties, and also the probability of sedimentation, the number of experimental studies in natural convection with the presence of nanoparticles is narrowed.The diffusion processes aspect of nanofluid is investigated here with a new approach applied in the mixture model of multiphase flows. This results of this method is compared with laminar natural convective flow inside a cavity (with heating of two walls on the side) using ANSYS FLUENT 17.0 with the presence of alumina (Al2O3) and zinc oxide (ZnO) nanofluids. The new slip mechanism includes the main forces such as virtual mass, pressure gradient, lift and buoyancy, as well as centrifugal, Van der Waals attraction and electrical double-layer repulsion forces. A good agreement was found between experimentl measurements and CFD analysis. The comparison proved the ability of the proposed method on finding the .concentration distribution of nanoparticles in the cavity

کلمات کلیدی:

Cavity, laminar natural convection, CFD, slip mechanism