عنوان مقاله:

Theoretical study of natural convection characteristics of non-Newtonian based nanofluids

محل انتشار:

چهارمین کنفرانس ملی تحقیقات کاربردی در مهندسی برق،مکانیک،کامپیوتر و فناوری اطلاعات (سال: 1397)

تعداد صفحات اصل مقاله: 15

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خلاصه مقاله:

In the present study for the first time a theoretical method is developed to investigate heat transfer characteristics of power-law non-Newtonian based nanofluids natural convection in a rectangular enclosure with differentially heated vertical sidewalls and adiabatic horizontal walls. Two of most commonly used models the H-C, and the Brinkman model are chosen to predict thermal conductivity and consistency index of power-law based nanofluids, respectively. The results show that Nusselt number decreases by increasing heat capacity and shape factor of nanoparticles, but the heat transfer coefficient of a nanofluids is enhanced by all parameters with respect to the volume fraction. The effects of high thermal conductivity nanoparticles are not much different and the enhancement of heat transfer caused by adding nanoparticles increases in base fluids by more shear-tinning behavior.

کلمات کلیدی:

Non-Newtonian based nanofluids, natural convection, power-law base fluid, shear-tinning base fluid, nanoparticles effect

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