عنوان مقاله:

CFD Investigation of Al2O3/Water Nanofluid Heat Transfer Performance and Flow Characteristic in a Tube with Different Cross-sections

محل انتشار:

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خلاصه مقاله:

The purpose of this article is the numerical study of heat transfer performance and flow characteristic of Al2O3 nanofluids in a copper tube with Circular, triangular, square cross-sections and and also the helical tube. The adding nano-particle and shape of cross sections have a significant effect on the thermal and hydraulic performance of the heat exchanger. Working fluids in this study is water based nanofluid and Al2O3 nanoparticles. In this study, turbulent flow was studied. To solve the problem and extract the required data, 3-D simulation has been performed for the micro-channel using ANSYS FLUENT 16.2 software. From the obtained results it is observed that the addition of Al2O3 particles to the base fluid increases the heat transfer and pressure drop. The results also show that helical tube have the best performance among the three geometries examined, and the worst performance is related to triangular cross section tube.

کلمات کلیدی:

Convection Heat Transfer, micro-channel, heat ex-changer, Nano-fluids, slurry MEPCM

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