

عنوان مقاله:

Flow field and heat transfer of MgO-Ag/water micropolar hybrid nanofluid in a permeable channel

محل انتشار:

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خلاصه مقاله:

In this study, the least square method is applied to study the laminar flow, heat transfer and microrotation of MgO-Ag/water micropolar hybrid nanofluid in a permeable channel. The bottom wall is hot and coolant fluid is injected into the channel from the top wall. The base fluid in the channel is water and volume fraction of nanoparticle (۵۰% Ag and ۵۰% MgO by volume) is between ۰ and ۰.۰۲. By comparing the results which are obtained from Least Square Method (LSM) with those of obtained from numerical method (fourth order Rung-Kutta method), a good conformity can be seen between them. The effects of different parameters such as Reynolds number, volume fraction of nanoparticles and microrotation factor of nanoparticles on flow field and heat transfer are examined. The results show that by increasing Reynolds number, the temperature of the hybrid nanofluid reduces and the microrotation parameter near the hot wall decreases and near the permeable wall increases. Also, heat transfer increases, especially in high Reynolds numbers and volume fraction of nanoparticles, when the hybrid nanofluid are used instead of common nanofluid.

کلمات کلیدی:

Micropolar hybrid nanofluid, Permeable channel, Least square method, heat transfer

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