عنوان مقاله:

Numerical study of heat transfer in oscillating nanofluid flow through a channel filled with metal foam

محل انتشار:

سومین کنفرانس بین المللی رویکردهای نوین در نگهداشت انرژی (سال: 1392)

تعداد صفحات اصل مقاله: 11

نویسندگان:

Sedigheh Golmakani, - *MSc, Chemical Engineering Department, University of Sistan and Baluchestan*,

Davod Mohebbi-Kalhori - *Assistant Professor of Chemical and Biomediacla Engineering, Chemical Engineering Department, University of Sistan and Baluchestan*,

خلاصه مقاله:

In this paper, a high-efficient heat transfer system has been analyzed in order to increase the heat transfer rate in a channel filled with metal foam. An oscillatory nanofluid has been used and modeled using the computational fluid dynamics. The flow field and heat transfer rate were modeled using Darcy-Brinkman-Forchheimermodel with corresponding energy equations. The model used for the nanofluid incorporates only the effect of the volume fraction parameter. The water and solid copper particles in the nanofluid has been used. To verify the developed mathematical model, a comparison was used between the model's results and literature data. The distribution of surface temperature on heated plate and local Nusselt number were calculated. Obtained results indicate that the heat transfer rate enhanced by increasing the volume frac/on of the par/cles in a range of 10 to 10. In addi/on, the e2ect of amplitude and frequency of oscilla/ng 3ow on the heat transfer rate in the porous channel were analyzed. The results of numerical analysis showed that with increasing the amplitude and decreasing the frequency of the oscillating nanofluid the heat transfer rate increases.

کلمات کلیدی:

Oscillating nanofluid flow, heat transfer, metal foam