Study of thermophysical properties of nanoparticles enhancend phase change materials

Mojtaba Mehrannia 1, Mohammad Ghalambaz^{2,*}

^{1,2} Department of Mechanical Engineering, Dezful Branch, Islamic Azad University, Dezful, Iran

Received: June 2017, Revised: July 2017, Accept: November 2017

Abstract

This paper present, Based on the experimental results, two new non-dimensional parameters, namely thermal conductivity (Nc) and dynamic viscosity (Nv) are introduced. These new non-dimensional parameters indicate the enhancement of thermal conductivity and dynamic viscosity of nanofluids by utilizing nanoparticles, and they facilitates the general survey of convective enhancement of nanofluids. Using the presented non-dimensional parameters, the effect of working temperature of nanofluid, type of base fluid, size and type of nanoparticles have been studied on the heat transfer enhancement of nanofluids. The results show that utilizing nanofluid can lead to deterioration or enhancement of heat transfer. On the other hand, Decrease of the size of nanoparticles can lead to enhancement of heat transfer.

*Corresponding author: m.ghalambaz@gmail.com

Keywords: Thermal conductivity, Dynamic viscosity, Nanoparticles, Nanofluids.

Please cite this article as:

M. Mehrannia, M. Ghalambaz, Study of thermophysical properties of nanoparticles enhancend phase change materials, Journal of Energy Conversion, 2(3-4)(2011)27-34 [In Persian]