

عنوان مقاله:

Effect of nonionic surfactant additives on the performance of nanofluid in the heat exchanger

محل انتشار:

مجله بین المللی ابعاد نانو، دوره 8، شماره 1 (سال: 1396)

تعداد صفحات اصل مقاله: 13

نویسندگان:

Gajanan P Lakhawat - *Department of Chemical Engineering, Priyadarshini Institute of Engineering and Technology, Nagpur-440 019 (M.S.), India*

Rajendra P Ugwekar - *Department of Chemical Engineering, Laxminarayan Institute of Technology, Nagpur-440 033 (M.S.), India*

Sanvidhan G Suke - *Department of Biotechnology, Priyadarshini Institute of Engineering and Technology, Nagpur-440 019 (M.S.), India*

Vivek M Nanoti - *Department of Physics, Priyadarshini Institute of Engineering and Technology, Nagpur-440 019 (M.S.), India*

خلاصه مقاله:

A nanofluid is mixture of nano sized particles and a base fluid. This paper investigates by using laboratory based double pipe heat exchanger model, the performance of nanofluid containing about ۴۸.۴۶nm particle size nanoparticles (ZnO) without or with addition of nonionic surfactant Rokanol KY (۵۰۰ppm) into the base fluid double distilled water to prepared three different concentrations ۱.۰%, ۲% and ۳% (v/v) of ZnO-water or ZnO-RKY. Effects of temperature and concentration of nanoparticles on viscosity and heat transfer coefficient in heat exchanger are investigated. The experimental results shows that the viscosity of nanofluids increased with increasing concentration of fluid whereas decreased with increasing temperature from ۲۰ to ۶۰°C. However, it has been also observed that heat transfer coefficient increases with the operating temperature and concentration of nanoparticles. The conclusion derived for the study is that overall heat transfer coefficient enhanced with increasing concentration upto ۳% of ZnO-RKY as compared to without surfactant nanofluids.

کلمات کلیدی:

heat exchanger, Heat Transfer Coefficient, nanofluid, Nonionic surfactant, Viscosity

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1483370>

