

Accepted Manuscript

Condensation of laminar film over curved vertical walls using single and two-phase nanofluid models

Mustafa Turkyilmazoglu

PII: S0997-7546(16)30335-1

DOI: <http://dx.doi.org/10.1016/j.euromechflu.2017.04.007>

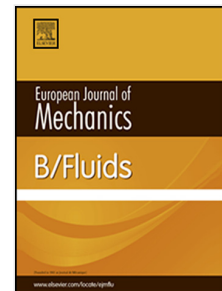
Reference: EJMFLU 3164

To appear in: *European Journal of Mechanics B/Fluids*

Received date: 14 August 2016

Revised date: 11 April 2017

Accepted date: 18 April 2017



Please cite this article as: M. Turkyilmazoglu, Condensation of laminar film over curved vertical walls using single and two-phase nanofluid models, *European Journal of Mechanics B/Fluids* (2017), <http://dx.doi.org/10.1016/j.euromechflu.2017.04.007>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Condensation of laminar film over curved vertical walls using single and two-phase nanofluid models

Mustafa Turkyilmazoglu*

11 April 2017

Abstract

Recently, an analytical solution was derived for the governing equations of condensate laminar film from stationary vapours on curved vertical walls of convex/concave shape [1]. The present research paper develops a theory covering the impacts of different nanofluids and derives further closed-form solutions concerning the hydrodynamic and thermal transport through the condensate film over curved walls when the single phase and two-phase models of nanofluids are taken into account. From both approaches, exact expressions are obtained for the velocity and temperature fields as well as the shear stress, thickness and Nusselt number of the film influenced by the presence of nanoparticles of frequently used nanofluids in the literature. It is found that heat transfer is enhanced, even more in the two-phase model case in the presence of nanoparticles. The concentration of Ag nanoparticles favors the best rate of heat transfer among the considered nanofluids.

Keywords Curved walls, Film condensation, Nanofluids, Heat transfer, Exact solution.

*Corresponding author: Address: Department of Mathematics, Hacettepe University, 06532-Beytepe, Ankara, TURKEY; phone: 009003122977850; fax: 009003122972026; e-mail: turkyilm@hacettepe.edu.tr

Download English Version:

<https://daneshyari.com/en/article/4992271>

Download Persian Version:

<https://daneshyari.com/article/4992271>

[Daneshyari.com](https://daneshyari.com)