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Nanofluid flow in complex geometries—A review

(2019) *Journal of Nanofluids*, 8 (5), pp. 893-916. Cited 2 times.

Abstract

Nanofluid is envisioned to describe a fluid, in which nanometer-sized particles are suspended, in convectonal heat transfer of basic fluids. Convectonal heat transfer fluids, including oil, water and ethylene glycol mixture, are poor heat transfer fluids, since the thermal conductivity of these fluids plays important role on the heat transfer coefficient between the heat transfer medium and the heat transfer surface. Therefore, numerous methods are proposed to improve the thermal conductivity of these fluids by suspending nano/micro-sized particle materials in liquids. Recently, several numerical studies on the modeling of convection heat transfer in nanofluids are published. In this paper, we present various successful studies in three basic complex geometries, i.e., microchannels, heat exchangers, and solar energy collectors. We have made a variety of contributions by providing the various numerical and experimental techniques followed and then discussing them. © 2019 by American Scientific Publishers All rights reserved.

2-s2.0-85058794994

Document Type: Review

Publication Stage: Final

Source: Scopus