

Review of improvements on heat transfer using nanofluids via corrugated facing step

ABSTRACT

Nanofluids are considered to offer significant advantages as thermodynamic fluids because of their admirable properties on thermal conduction, thermal convection, boiling heat transfer and stability. This paper presents numerous researches focusing on the improvement of heat transfer via facing step and corrugated channels using nanofluids and without it. Exploration on the convective heat transfer was done through numerical modeling. It was reported that experimental studies were carried out in corrugated and facing step channels through the application of nanofluids and conventional fluids for heat transfer enhancement. The turbulent and laminar flows along corrugated and facing step channels have been presented. The numerical and experimental findings in maximizing the heat transfer rate are in accord. Comparisons between thermal conductivity measurement methods were done. Innovative design of corrugated facing step channel is being proposed. The heat transfer enhancements reach 60% by using facing step channel under laminar flow with nanofluid. The dimensions of new channel such as height and width of the baffle, the height of the step, shape and height of corrugated are needed to compare that might to provide the ideal rate of heat transfer.

Keyword: Nanofluid; Thermal conductivity; Enhancement; Corrugated; Facing step