## Abstract

Numerical and experimental investigation is carried out to study the laminar heat transfer and [fluid flow characteristics](https://www.sciencedirect.com/topics/engineering/fluid-flow-characteristic) in an [equilateral triangular duct](https://www.sciencedirect.com/topics/engineering/equilateral-triangular-duct) using combined [vortex generator](https://www.sciencedirect.com/topics/engineering/vortex-generator) and [nanofluids](https://www.sciencedirect.com/topics/engineering/nanofluid%22%20%5Co%20%22Learn%20more%20about%20nanofluids%20from%20ScienceDirect%27s%20AI-generated%20Topic%20Pages). Two different types of [nanoparticles](https://www.sciencedirect.com/topics/engineering/nanoparticle) “namely Al2O3 and SiO2” suspended in distilled water with two particles concentrations are successfully prepared and experimentally tested. Both numerical and experimental results show a good enhancement in heat transfer by using vortex generator with base fluid. A significant [heat transfer enhancement](https://www.sciencedirect.com/topics/engineering/heat-transfer-enhancement-for-application) is observed by using compound vortex generators and nanofluids accomplished with a moderate increase in the pressure drop. High gradient in wall temperatures is monitored when the water is replaced by nanofluid particularly at [higher volume fraction](https://www.sciencedirect.com/topics/engineering/high-volume-fraction). A small deviation has been seen between the present numerical and experimental results.

## Graphical abstract

