

## Heat Transfer Studies on CNT Nanofluids in a Turbulent Flow Heat Exchanger

**Authors :** W. Rashmi, M. Khalid, O. Seiksan, R. Saidur, A. F. Ismail

**Abstract :** Nanofluids have received much more attention since its discovery. They are believed to be promising coolants in heat transfer applications due to their enhanced thermal conductivity and heat transfer characteristics. In this study, the enhancement in heat transfer of CNT-nanofluids under turbulent flow conditions is investigated experimentally. Carbon nanotube (CNTs) concentration was varied between 0.051-0.085 wt%. The nanofluid suspension was stabilized by gum arabic (GA) through a process of homogenisation and sonication. The flow rates of cold fluid (water) is varied from 1.7-3 L/min and flow rates of the hot fluid is varied between 2-3.5 L/min. Thermal conductivity, density and viscosity of the nanofluids were also measured as a function of temperature and CNT concentration. The experimental results are validated with theoretical correlations for turbulent flow available in the literature. Results showed an enhancement in heat transfer range between 9-67% as a function of temperature and CNT concentration.

**Keywords :** nanofluids, carbon nanotubes (CNT), heat transfer enhancement, heat transfer

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