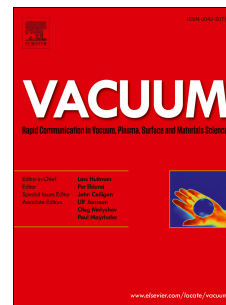


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Influence of copper oxide nanoparticles on the thermophysical properties and performance of flat tube of vehicle cooling system

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Abstract: The main aim of the present work is to study the effect of copper oxide nanofluids on heat transfer and pressure drop performance of flat tube used in vehicle cooling system. The water based copper oxide nanofluids were prepared at different concentrations (0.1–0.5% v/v). The heat transfer and pressure drop performance was experimentally studied at various input parameters, i.e., velocity, fluid inlet temperature and nanofluids concentration. The results showed that Nusselt number increased with increase in nanofluids concentration, nanofluid temperature and Reynolds number. The pressure drop increased with nanofluids concentration and Reynolds number but slightly decreased with increase in nanofluid temperature. The maximum enhancement observed was 20% with 0.5% v/v concentration of copper oxide nanoparticles.

Keywords: Copper oxide nanoparticle, flat tube, heat transfer enhancement, friction factor.

1. Introduction

Recent research has proved that nanofluids are superior fluids than the conventional fluids in various heat transfer applications [1–4]. Nanofluids can be used in heat exchangers and automobile cooling systems due to their better features than micrometer and millimeter sized

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