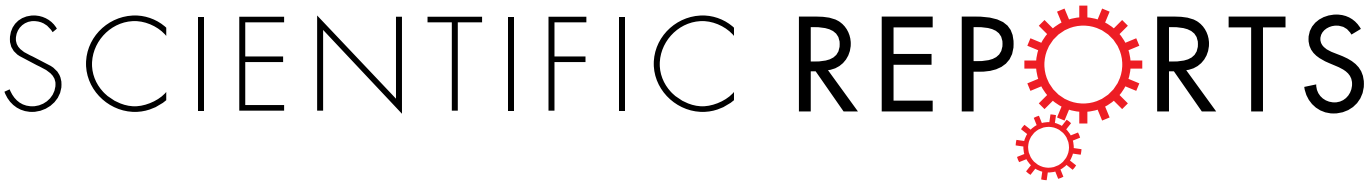

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Heat transfer enhancement in free convection flow of CNTs Maxwell nanofluids with four different types of molecular liquids

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This article investigates heat transfer enhancement in free convection flow of Maxwell nanofluids with carbon nanotubes (CNTs) over a vertically static plate with constant wall temperature. Two kinds of CNTs i.e. single walls carbon nanotubes (SWCNTs) and multiple walls carbon nanotubes (MWCNTs) are suspended in four different types of base liquids (Kerosene oil, Engine oil, water and ethylene glycol). Kerosene oil-based nanofluids are given a special consideration due to their higher thermal conductivities, unique properties and applications. The problem is modelled in terms of PDE's with initial and boundary conditions. Some relevant non-dimensional variables are inserted in order to transmute the governing problem into dimensionless form. The resulting problem is solved via Laplace transform technique and exact solutions for velocity, shear stress and temperature are acquired. These solutions are significantly controlled by the variations of parameters including the relaxation time, Prandtl number, Grashof number and nanoparticles volume fraction. Velocity and temperature increases with elevation in Grashof number while Shear stress minimizes with increasing Maxwell parameter. A comparison between SWCNTs and MWCNTs in each case is made. Moreover, a graph showing the comparison amongst four different types of nanofluids for both CNTs is also plotted.

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