

Documents

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Magneto-Marangoni nano-boundary layer flow of water and ethylene glycol based γ Al₂O₃ nanofluids with non-linear thermal radiation effects
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Abstract

For the first time, a numerical investigation is performed to study the influences of magnetic field on Marangoni boundary layer flow of water and ethylene glycol based γ Al₂O₃ nanofluids over a flat surface in the presence of non-linear thermal radiation. Experimental based thermo-physical properties and an effective Prandtl number model for γ Al₂O₃ nanofluids are considered to analyse the Marangoni convection. To study the magnetic field effects, the electric conductivities of both nanoparticles and base fluids are taking into account. Numerical solutions of resulted equations are obtained using fourth order Runge-Kutta method with shooting technique. The combined effect of magnetic parameter with other involved parameters is discussed on velocity and temperature distributions and the local Nusselt number via graphical illustrations. © 2018 Published by Elsevier Ltd.

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