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Colloidal study of unsteady magnetohydrodynamic couple stress fluid flow over an isothermal vertical flat plate with entropy heat generation
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Abstract

The present work aims to examine the entropy heat generation analysis for unsteady MHD couple stress fluid flow over a uniformly heated vertical flat plate. The mathematical model of this problem is given by highly time reliant non-linear coupled equations and resolved by an efficient unconditionally stable implicit scheme. The time histories of average values of momentum and heat transport coefficients, entropy and Bejan lines, as well as the steady-state flow variables, discussed for several values of non-dimensional parameters arising in the flow equations. Results specify that time required to attain the time independent flow with respect to the flow field variables get amplified with the augmented values of couple stress parameter. The outcomes also indicate that entropy generation parameter upsurges with rising values of group parameter and Grashof number while the reverse trend is observed for couple stress parameter and magnetic parameter. © 2017 Elsevier B.V.

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