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Investigation of cross-diffusion effects on Casson fluid flow in existence of variable fluid properties
(2019) *European Physical Journal: Special Topics*, 228 (1), pp. 35-53. Cited 1 time.

Abstract
A numerical investigation has been carried out for coupled partial differential equations which describe varying fluid properties on unsteady, free convective chemically reacting fluid flow on a moving vertical cone and flat plate. The computations for flow, heat, and mass transport in presence of thermal radiation, viscous dissipation, Soret and Dufour effects are carried out using Crank-Nicolson scheme. The influence of active parameters on transport properties of the fluid is displayed in form of graphs and tables. The results elucidate that the consideration of variable fluid properties has a significant influence on the flow, heat and mass transfer characteristics. Strengthening the Casson fluid parameter tends to decelerate the fluid velocity and escalate the local skin friction. © 2019, EDP Sciences, Springer-Verlag GmbH Germany, part of Springer Nature.

2-s2.0-85066232995
Document Type: Article
Publication Stage: Final
Source: Scopus