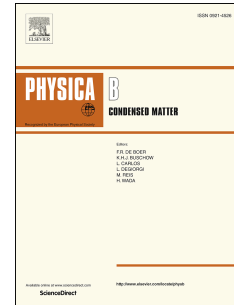


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Modern aspects of nonlinear convection and magnetic field in flow of thixotropic nanofluid over a nonlinear stretching sheet with variable thickness

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Abstract: Main objective of present analysis is to study the magnetohydrodynamic (MHD) nonlinear convective flow of thixotropic nanofluid. Flow is due to nonlinear stretching surface with variable thickness. Nonlinear thermal radiation and heat generation/absorption are utilized in the energy expression. Convective conditions and zero mass flux at sheet are considered. Intention in present analysis is to develop a model for nanomaterial comprising Brownian motion and thermophoresis phenomena. Appropriate transformations are implemented for the conversion of partial differential systems into a sets of ordinary differential equations. The transformed expressions have been scrutinized through homotopic algorithm. Behavior of various sundry variables on velocity, temperature, nanoparticle concentration, skin friction coefficient and local Nusselt number are displayed through graphs. It is concluded that qualitative behaviors of temperature and thermal layer thickness are similar for radiation and temperature ratio variables. Moreover an enhancement in heat generation/absorption show rise to thermal field.

Keywords: Thixotropic nanofluid; nonlinear convection; magnetohydrodynamics (MHD); nonlinear thermal radiation; variable thickness sheet; heat generation/absorption.

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