

Darcy-Brinkman model for ternary dusty nano fluid flow over stretching/shrinking sheet with heat and mass transpiration

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ABSTRACT

In this present research article, examine the impact of Darcy-Brinkman model with magnetic field for two-dimensional fluid flow across stretching/shrinking surface with heat transfer, consider water as a base fluid in which the Copper (*Cu*), Silver (*Ag*) and Titanium dioxide (*TiO₂*) nano particles submerged in preparation of ternary dusty nano fluid, system of governing nonlinear partial differential equations transformed in to ordinary differential equations via suitable similarity conversions, in presence of radiation mass transpiration obtained unique solution for stretching sheet/shrinking sheet, exact solutions are subsequently provided for the resulting the system of equations, examine the contribution of several physical characteristics like magnetic field, Darcy Brinkman model, solution domain, inverse Darcy number explained graphically, development of ternary dusty nanofluids has significantly improved the heat transmission process, many useful applications in engineering, biological and physical sciences, and cleaning engine lubricants, thrust bearing technologies, the findings disclose that the performance of the ternary nano fluid phase heat and mass transpiration is improved compare to dusty phase performance.

Keywords: Radiation; MHD; Ternary nanofluid; Stretching/shrinking sheet; Dusty fluid,