عنوان مقاله:

Effect of Exponentially Variable Viscosity and Permeability on Blasius Flow of Carreau Nano Fluid over an Electromagnetic Plate through a Porous Medium

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خلاصه مقاله:

The present investigation draws scholars attention to the effect of exponential variable viscosity modeled by Vogel and variable permeability on stagnation point flow of Carreau Nanofluid over an electromagnetic plate through a porous medium. Brownian motion and thermophoretic diffusion mechanism are taken into consideration. An efficient fourth-order RK method along with shooting technique are implemented to obtain the required solution of the non-dimensional modeled equations. The contribution of the present study is that augmented electromagnetic field strength due to the suitable arrangement of the plate and that of porosity parameter yield an accelerated motion while that of viscosity parameter produces retarded motion of shear-thickening fluid, contrary to shear-thinning fluid. At the same time, it discusses the inclusion of porous matrix which controls the thermal as well as concentration boundary layers, while enhanced Brownian motion exhibits diametrically opposite trend for them in response to shear-thickening fluid.

کلمات کلیدی:

Vogel's viscosity model, Variable Permeability, Blasius flow, Carreau Nanofluid, Electromagnetic plate

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