Heat transfer flow of Maxwell hybrid nanofluids due to pressure gradient into rectangular region

ABSTRACT

In this work, infuence of hybrid nanofuids (Cu and Al2O3) on MHD Maxwell fuid due to pressure gradient are discussed. By introducing dimensionless variables the governing equations with all levied initial and boundary conditions are converted into dimensionless form. Fractional model for Maxwell fuid is established by Caputo time fractional diferential operator. The dimensionless expression for concentration, temperature and velocity are found using Laplace transform. As a result, it is found that fuid properties show dual behavior for small and large time and by increasing volumetric fraction temperature increases and velocity decreases respectively. Further, we compared the Maxwell, Casson and Newtonian fuids and found that Newtonian fuid has greater velocity due to less viscosity. Draw the graphs of temperature and velocity by Mathcad software and discuss the behavior of fow parameters and the efect of fractional parameters.