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| Title | Magnetohydrodynamic bio-nano-convective slip flow with Stefan blowing effects over a rotating disc. | | |
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| Abstract |  |
| Microfluidic-related technologies and micro-electromechanical systems–based microfluidic devices have received applications  in science and engineering fields. This article is the study of a mathematical model of steady forced convective flow  past a rotating disc immersed in water-based nanofluid with microorganisms. The boundary layer flow of a viscous nanofluid  is studied with multiple slip conditions and Stefan blowing effects under the magnetic field influence. The microscopic  nanoparticles move randomly and have the characteristics of thermophoresis, and it is being considered that the  change in volume fraction of the nanofluid does not affect the thermo-physical properties. The governing equations are  nonlinear partial differential equations. At first, the nonlinear partial differential equations are converted to system of  nonlinear ordinary differential equations using suitable similarity transformations and then solved numerically. The influence  of relevant parameters on velocities, temperature, concentration and motile microorganism density is illustrated  and explained thoroughly. This investigation indicated that suction provides a better medium to enhance the transfer  rate of heat, mass and microorganisms compared to blowing. This analysis has a wide range engineering application such  as electromagnetic micro pumps and nanomechanics. | |