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| Title | Magnetohydrodynamic bio-nano-convective slip flow with Stefan blowing effects over a rotating disc. | | |
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| Published Journal Name | *Journal of Nanomaterials, Nanoengineering and Nanosystems* | | |
| Type of Publication | Journal | | |
| Volume | 234, | Issue | 3-4 |
| Publisher | SAGE | | |
| Publication Date | 2020/7 | | |
| ISSN | 2397-7914 | | |
| DOI | [https://doi.org/10.1177/2397791419881580](https://doi.org/10.1177%2F2397791419881580) | | |
| URL | https://journals.sagepub.com/doi/abs/10.1177/2397791419881580 | | |
| Other Related Info. |  | | |
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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. | |