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| Title | [Magnetohydrodynamic bio‐nanoconvective Naiver slip flow of micropolar fluid in a stretchable horizontal channel](https://scholar.google.com/scholar?oi=bibs&cluster=7192067457940963566&btnI=1&hl=en) | | |
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| Published Journal Name | Heat Transfer—Asian Research | | |
| Type of Publication | Journal | | |
| Volume | 48 | Issue | 8 |
| Publisher | [Wiley Online Library](https://onlinelibrary.wiley.com/) | | |
| Publication Date | 2019 | | |
| ISSN | 15231496, 10992871 | | |
| DOI | doi.org/10.1002/htj.21560 | | |
| URL | <https://doi.org/10.1002/htj.21560> | | |
| Other Related Info. |  | | |
|  | | | |

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| Abstract |  |
| The purpose of this paper is to formulate and analyze a nano-bio transport model for magnetohydrodynamic convective flow, heat, and mass diffusion of micropolar fluid containing gyrotactic microorganisms through a horizontal channel. Both the walls are considered to be stretched, and the Navier slip boundary condition is taken into account. The governing bio-nano transport partial differential equations are rendered to ordinary differential equations using similarity variables. The resulting normalized self-similar boundary value problem is solved computationally with the Matlab bvp4c function. The effect of the controlling parameters on the nondimensional velocity, temperature, nanoparticle concentration, and motile microorganism density functions, and their gradients at the wall are visualized graphically and in a tabular form and expounded at length. Validation with a previous simpler model is included. All physical quantities, except the local Nusselt number, increases with an increase in the velocity slip and magnetic parameters. The present problem finds applications in industries related to pharmaceutical, nanofluidic devices, microbial enhanced oil recovery, modeling oil, and gas-bearing sedimentary basins. | |