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| Title | Anisotropic slip magneto-bioconvection flow from a rotating cone to a nanofluid with Stefan blowing effects. | | |
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| Abstract |  |
| A mathematical model for two dimensional steady laminar natural convective anisotropic slip boundary layer flows from a rotating vertical cone embedded in ethylene glycol bionanofluid is presented. The influence of Stefan blowing is also taken into account. Four different non-particles namely Copper (Cu), Alumina (Al2O3), Copper Oxide (Cuo), Titanium Oxide (TiO2) are explored. Suitable similarity transformations are used to convert the governing equations into non-linear ordinary differential equations. These are then solved numerically, with appropriate boundary conditions, utilizing an implicit finite difference method (the **BVP5C** code in MATLAB). During computation Sc, Lb, Le and Lb are presented as unity, whilst Pr is taken as 151. The effects of the governing parameters on the dimensionless velocities, temperature, nanoparticle volume fraction, density of motile microorganisms as well as on the local skin friction, local Nusselt, Sherwood number and motile micro-organism number density are thoroughly examined via tables and graphs. It is found that the skin friction factor increases with tangential slip, magnetic field and Schmidt number whilst it decreases with blowing parameter and spin parameters. It is further observed that both the friction and heat transfer rates are highest for copper nanoparticles and lowest for TiO2nanoparticles. Validation of the BVP5C numerical solutions with published results for several special cases of the general model is included. The study is relevant to electro-conductive bio-nano-materials processing. | |