Dispersion and activation energy of convective heat transfer flow via a wavy surface with variable characteristics and heat sources: A numerical study

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Abstract

We have explored the result of the activation energy, thermal conductivity, and variable viscosity, A vertical wavy surface is passed by heat sources during convective heat transfer. Coupled equations controlling the flow, the nonlinear, mass, and heat transferring an electrically conducting viscous fluid via a vertically wavy surface have been solved with the Runge-Kutta-Shooting approach. (f', f) the velocities, (φ)concentration and (ϑ)temperature, Sherwood and Nusselt number were discussed for several variations of Ds, Dc, E1, δ, Rd, β, ϑr, A1, B1, a, ξ. It has been seen that axial velocity increases with rising values of Ds, Dc, E1, Nr and reduces with thermal radiation (Rd), and thermal conductivity (β). Nusselt number (Nu) reduces with temperature dispersion (Ds), variable viscosity(ϑr), thermal conductivity (β) and enhances with solutal dispersion (Dc), radiation (Rd). Space/temperature dependent heat sources (A1, B1).

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