

Unsteady Heat and Mass Transfer in MHD Flow of Nanofluids over Stretching Sheet with a Non Uniform Heat Source/Sink

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Abstract : In this paper, the problem of heat and mass transfer in unsteady MHD boundary-layer flow of nanofluids over stretching sheet with a non uniform heat source/sink is considered. The unsteadiness in the flow and temperature is caused by the time-dependent stretching velocity and surface temperature. The unsteady boundary layer equations are transformed to a system of non-linear ordinary differential equations and solved numerically using Keller box method. The velocity, temperature, and concentration profiles were obtained and utilized to compute the skin-friction coefficient, local Nusselt number, and local Sherwood number for different values of the governing parameters viz. solid volume fraction parameter, unsteadiness parameter, magnetic field parameter, Schmidt number, space-dependent and temperature-dependent parameters for heat source/sink. A comparison of the numerical results of the present study with previously published data revealed an excellent agreement

Keywords : unsteady, heat and mass transfer, manetohydrodynamics, nanofluid, non-uniform heat source/sink, stretching sheet

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