# Numerical Study For MHD Stagnation-Point Flow Of A Micropolar Nanofluid Towards A Stretching Sheet

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**ABSTRACT**

In this paper, we investigated the magnetohydrodynamic (MHD) stagnation-point flow of micropolar nanofluid over a stretching sheet. A uniform magnetic field is applied normal to the flow. Nonlinear micropolar nanofluid problem in the presence of the strong concentration of microelements is modeled and then solved by numerical techniques. A parametric study of the involved parameters in the presence of spin gradient viscosity is conducted, and representative set of numerical results is illustrated in the graphical and tabular forms. The complete formulation of the Keller-box method for the considered flow problem is given, and a comparison of the obtained results is performed with the previous published results. The comparison shows that our present results have an excellent match with the previous results in a limiting case. We found that the non-dimensional temperature and its associated thermal boundary layer thickness are enhanced when we use the larger values of thermophoresis and Brownian motion parameter. The non-dimensional concentration is higher for larger thermophoresis parameter but smaller for higher Brownian motion parameter. It is also observed that the smaller values of Lewis number correspond to higher non-dimensional concentration and its associated boundary layer thickness.

**KEYWORDS**: Micropolar nanofluid MHD Stagnation-point flow Stretching sheet

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