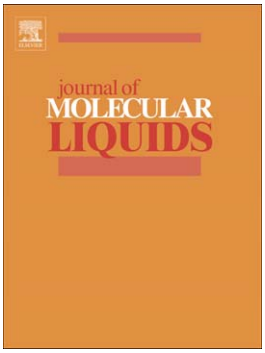


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# Radiative and Joule heating effects in the MHD flow of a micropolar fluid with partial slip and convective boundary condition

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**Abstract:** We have discussed the flow of micropolar fluid past a permeable stretching sheet in attendance of joule heating, thermal radiation, partial slip and magneto hydrodynamic (MHD) with convective boundary conditions. Appropriate transformations are used to convert the boundary layer equations into nonlinear ordinary differential equations. Solution of this system is obtained for velocity, temperature and micro-rotation profiles. Graphical illustrations are added to discuss the effect of evolving parameters against above mentioned distributions. Tabulated values of local Nusselt number are also added and discussed accordingly. It is studied that velocity and micro-rotation profiles decrease with an increase in value of slip parameter. However, increase in temperature distribution is seen with gradual mounting values of thermal radiation parameter.

Keywords*:* Micropolar fluid; partial slip; Joule heating; Thermal radiation; Convective boundary condition.

## 1 Introduction

The study of micropolar fluids is a popular topic of recent research. One can found many interesting facts about these fluids which are not found in Newtonian fluids while analyzing numerous physical problems. Eringen [1, 2] pioneering work in micropolar fluids opens the gates of new era in non Newtonian fluids diversity. Different forms of non-Newtonian fluids can be observed in daily life like polymers, liquid crystals, exotic liquids, and animal blood

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