

## Documents

Rashad, A.M., Mansour, M.A., Armaghani, T., Chamkha, A.J.

**MHD mixed convection and entropy generation of nanofluid in a lid-driven U-shaped cavity with internal heat and partial slip**  
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### Abstract

This contribution simulates the impact of partial slip on entropy generation due to magnetohydrodynamic, mixed convection of nanofluids in a lid-driven U-shaped cavity with discrete heating. The influence of the partial slip effect is proposed along the lid-driven vertical walls. A uniform heat flux source on the bottom wall is proposed; meanwhile, the two portions of the outer-upper horizontal walls are cooled isothermally. The remainder cavity walls are taken adiabatic. The governing equations are solved using the finite volume approach, and the outcomes are successfully validated against previous studies. Simulation results are presented and discussed for several cases with the impacts of the governing parameters on the heat transfer rate. Inspection of the results in mixed convective and entropy generation environments demonstrate that the average Nusselt number increases with the increase in the volume fraction of nanoparticles at  $AR = 0.1$ . For all values of  $D$  (heat source location), the Nusselt number increases by crossing the heat source and reaches its maximum value at the end of the source. Also, for all values of the aspect ratio, addition of nanoparticles into the base fluid leads to a loss in the thermal performance. Moreover, for all states of movement, addition of nanoparticles into the base fluid leads to an increase in the entropy. © 2019 Author(s).

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