

# Entropy Scrutinization of Magnetized-Hyperbolic Tangent Nanofluid in the Microchannel Stuffed by Porous Media

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**Abstract:** The article's intent is to study the flow conduct of hyperbolic tangent nanofluid in microchannel situated horizontally. The impact of viscous dissipation and magnetic field is recorded. The suction- injection is promoted at the walls of the microchannel. Two imperative slip mechanisms like Brownian motion and thermophoresis is accounted for the study. Entropy scrutiny is carried out for system effectiveness. To simplify the non-linear equations certain non-dimensional variables are used. The obtained mathematical formulations are solved using an efficient problem-solving operation namely Runge-Kutta Fehlberg 4-5<sup>th</sup> order method. The parameters attained are studied using graphical illustrations. The findings of this article comprehend that enlarging Weissenberg number, flow field declines at the bottom wall and levitates at the top wall and the material power law parameter magnifies the velocity distribution. Entropy generated is maximum at top wall and minimum at the bottom wall for the Brownian motion parameter but the reverse manner is attained for thermophoresis parameter.

**Keywords:** Hyperbolic tangent fluid; Brownian motion; thermophoresis; Darcy number; convective boundary conditions.