

# Heat Transfer in a trapezoidal micro-channel with laminar fluid flow

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## Synopsis

A laminar flow was simulated through a trapezoidal micro-channel of specified dimensions with a semi-circular and rectangular cross-section using OpenFOAM v2012. With the consideration of a constant wall heat flux from the walls of the channel the heat transfer characteristics were studied assuming a fluid of Prandtl number 6.13 flowing through the channel. The variation in the Nusselt number with respect to the Reynolds number was observed for both the geometries along with a comparison of wall temperatures and centerline (or axis) temperatures. Comparison of the Nusselt numbers of the trapezoidal geometry with a straight channel gives us an estimate of the effectiveness of heat transfer enhancement due to the modified geometry. The reference [1] (*Laminar Flow and Heat transfer in a periodic trapezoidal channel with semi-circular cross-section, Paul .E Geyer et al.*) around which this Migration Project revolves, uses Ansys CFX 13 for the simulations.