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Numerical Modeling of Surface and Volumetric Cooling using Optimal T- and Y-shaped Flow Channels SRINIVAS KOSARAJU, Northern Arizona University — The T- and Y-shaped flow channels can be optimized for reduced pressure drop and pumping power. The results of the optimization are in the form of geometric parameters such as length and diameter ratios of the stem and branch sections. While these flow channels are optimized for minimum pressure drop, they can also be used for surface and volumetric cooling applications such as heat exchangers, air conditioning and electronics cooling. In this paper, we studied the heat transfer characteristics of multiple T- and Y-shaped flow channel configurations using numerical simulations. All configurations are subjected to same pumping power and heat generation constraints and their heat transfer performance is studied.

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