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Numerical Modeling of Surface and Volumetric Cooling using Optimal T- and Y-shaped Flow Channels SRINIVAS KOSARAJU, Lecturer, School for Engineering of Matter, Transport, and Energy, Arizona State University — The layout of T- and V-shaped flow channel networks on a surface can be optimized for minimum 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, an effort has been made to study the heat transfer characteristics of multiple T- and Y-shaped flow channel configurations using numerical simulations. All configurations are subjected to same input parameters and heat generation constraints. Comparisons are made with similar results published in literature.

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