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A Review of the Relation between Thermofludic Properties of the Fluid in Micro Channel Based Cooling Solutions and the Shape of Microchannel

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Abstract : The shape of microchannels in microchannel heat sinks can have a significant impact on both heat transfer and fluid flow properties. Heat Transfer, pressure drop, and Some effects of microchannel shape on these properties. The shape of microchannels can affect the heat transfer performance of microchannel heat sinks. Channels with rectangular or square cross-sections typically have higher heat transfer coefficients compared to circular channels. This is because rectangular or square channels have a larger wetted perimeter per unit cross-sectional area, which enhances the heat transfer from the fluid to the channel walls. The shape of microchannels can also affect the pressure drop across the heat sink. Channels with a rectangular cross-section usually have higher pressure drop than circular channels. This is because the corners of rectangular channels create additional flow resistance, which leads to a higher pressure drop. Overall, the shape of microchannels in microchannel heat sinks can have a significant impact on the heat transfer and fluid flow properties of the heat sink. The optimal shape of microchannels depends on the specific application and the desired balance between heat transfer performance and pressure drop.

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