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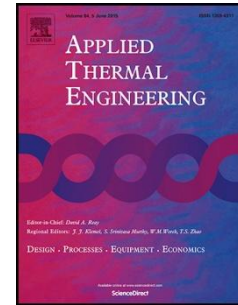
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# Numerical study on performances of mini-channel heat sinks with non-uniform inlets

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## Highlights

- > We propose nonuniform mini baffles before the inlet of minichannel heat sinks.
- > A numerical simulation by CFD is presented.
- > Baffles improve the flow and thermal performances of the minichannel heat sinks.

## Abstract

The performance of mini-channel heat sinks can be affected greatly by working fluid flow distribution. In order to improve the flow distribution and heat transfer performance in mini-channels, the use of nonuniform mini baffles in the heat sinks was proposed in this study. The fluid and thermal performances of four mini-channel heat sinks with/without the baffles are numerically analyzed using the finite-volume method in CFD code FLUENT. The simulation comparisons show that the improvements in the flow maldistribution of heat sinks can be achieved through the nonuniform baffles, and resulting in the better uniformity of the temperature distribution. Furthermore, it is found that using the nonuniform baffles can cause a 9.9-13.1% reduction in the total thermal resistance of mini-channel heat sinks under the

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