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EDITORIAL
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Editorial: Advanced Technology in Thermal Management of Battery/Electronic Components

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Editorial on the Research Topic

Advanced Technology in Thermal Management of Battery/Electronic Components

Due to the high heat dissipation of battery/electronic components, performance of batteries and electronic components is severely constrained, and *Advanced Technology in Thermal Management of Battery/Electronic Components* is becoming more significant and has attracted more and more attention. At present, batteries and electronic components are highly integrated, and the heat dissipation area is limited. The low thermal conductivity traditional cooling medium (air, ethylene glycol, water, etc.) and smooth surface can no longer meet the requirements of high heat dissipation.

For the heat transfer medium, due to the high thermal conductivity and large Brownian force of nanofluids, their heat transfer ability is much higher than that of ordinary fluids (air, ethylene glycol, water, etc.), nanofluids can be used instead of traditional cooling medium to cool the batteries and electronic components.

For heat sink or heat exchange surfaces, heat pipes, microchannels, microstructures, bionic structures, porous medium, and modified surfaces show excellent cooling performance compared with smooth surfaces. Hence, the above enhanced surface can be used instead of a smooth surface to improve the heat dissipation of batteries and electronic components.

This Research Topic aims to develop advanced technology and reveal the mechanism of heat dissipation of battery/electronic components, and it covers a wide range of topics, including: (1) nanofluids; (2) microchannel technology; (3) microstructure technology; (4) bionic structure technology; (5) porous medium technology; (6) modified surface technology; (7) nano-film technology; (8) heat pipe technology; and (9) the lattice Boltzmann model. This Research Topic has attracted the attention and contributions of authors from all over the world. There are currently 3380 total views for all papers in this Research Topic. The paper with the top total views is Khetib et al. with 1141 total views, followed by Liu et al. with 983 total views, Khetib et al. with 962 total views, and Li et al. with 294 total views.

In this Research Topic, Liu et al.used heat pipes to improve the heat transfer between the hot side and cold side in a thermoelectric power generator. Results showed that heat pipes showed excellent thermal performance. Results of this paper provided significant guidance for designing a novel prototype of a thermoelectric power generator.

Khetib et al. investigated the effects of two-phase and single-phase modes on the thermal performance of nanofluids in a heat sink with wave microchannels. Results indicated that two-phase mode had fewer errors compared to the single model. Results of this paper provided significant guidance for choosing the two-phase model when simulating a high value of volume fraction nanofluids.

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Khetib et al. simulated the effects of nanoparticle size on the cooling performance of a microchannel heat sink. Results presented that a smaller size nanoparticle is conducive to heat transfer. Results of this paper provided insight for designing a novel microchannel heat sink to cool electron components.

Li et al. (2021) investigated the influence of entropy production on the efficiency of a tubular turbine. It was found that the size of the high-entropy production area has a strong correlation with the level of association between the guide vane opening and blade opening. Results of this paper had certain significance for the cause of entropy production and the evaluation of energy quality.

In summary, the results of these papers in this Research Topic revealed the enhanced heat transfer characteristics of heat pipes and the enhanced heat transfer mechanism of nanofluids in microchannels, providing certain guidance for the application of nanofluids, microchannels, and heat pipes in the field of cooling of batteries/electronic components. And it will also promote scholars around the world to focus on and study the thermal management of batteries and electronic components.

AUTHOR CONTRIBUTIONS

CQ wrote the Editorials and XW checked it and provided some data analysis. All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

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