Special Issue

Enhancing the Thermal Properties of Lightweight Composite Materials

Message from the Guest Editors

Lightweight composite materials have been widely used in fields such as aerospace, new energy vehicles, and electronic packaging due to their low density and high specific strength characteristics. The enhancement of thermal performance of lightweight composite materials is currently a research hotspot in the field of materials science, aiming to break through the application bottleneck of traditional materials in high temperature or rapid heat transfer scenarios. Specifically, the optimization of its thermal performance needs to focus on three dimensions: system integration of thermal insulation performance, thermal conductivity, and thermal management capability. The collaborative optimization of multi-level thermal performance will provide precise and controllable thermal protection solutions for extreme environmental equipment, promoting the development of intelligent and adaptive thermal management systems. Keywords: Lightweight composite materials; thermal insulation; thermal conductivity; thermal management; collaborative optimization

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