Special Issue

Applications Based on Symmetry in Additive Manufacturing

Message from the Guest Editors

- Additive Manufacturing (AM) has revolutionized modern production, enabling the creation of complex geometries with precision, customization, and material efficiency. By building components layer-by-layer, AM unlocks design possibilities unattainable through traditional methods—from lightweight aerospace parts to patient-specific medical implants. However, the full potential of AM lies in its integration with symmetry principles and advanced computational strategies. Symmetry is not merely an esthetic consideration; it is a foundational tool for optimizing performance. For instance, symmetry-driven hierarchical lattices use geometric repetition across scales to enhance energy absorption, while bio-inspired asymmetric–symmetric hybrids mimic natural systems like beetle exoskeletons to improve fatigue resistance. Similarly, spatiotemporal symmetry in multi-material AM enables precise control over catalytic reactors, and topology optimization leverages symmetry to balance strength with minimal material use...

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Message from the Editor-in-Chief

Symmetry is ultimately the most important concept in natural sciences. It is not surprising then that very basic and fundamental research achievements are related to symmetry. For instance, the Nobel Prize in Physics 1979 (Glashow, Salam, Weinberg) was received for a unified symmetry description of electromagnetic and weak interactions, while the Nobel Prize in Physics 2008 (Nambu, Kobayashi, Maskawa) was received for the discovery of the mechanism of spontaneous breaking of symmetry, including CP symmetry. Our journal is named *Symmetry* and it manifests its fundamental role in nature.

Editor-in-Chief

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