Special Issue

Advanced Machining Technologies for High-Performance Materials

Message from the Guest Editors

The development and application of high-performance materials, including advanced alloys, composites, ceramics, and superalloys, present significant challenges to conventional machining processes due to their enhanced strength, hardness, and thermal resistance. To meet the requirements of industries such as aerospace, automotive, biomedical, and energy sectors, innovative technologies are required to enhance efficiency, accuracy, and surface integrity whilst minimising tool wear and energy consumption.

The objective of this Special Issue is to highlight original research and review articles that present recent advancements in machining technologies for high-performance materials. Topics include, but are not limited to, novel machining techniques (e.g., ultrasonically assisted machining, laser-assisted machining, cryogenic machining), tool design and materials, process optimisation through modelling and simulation, smart control systems, and sustainability in machining operations. Contributions that integrate artificial intelligence, machine learning, and digital twin approaches to enhance machining performance are also welcomed.

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Deadline for manuscript submissions

20 February 2026

Applied Sciences

an Open Access Journal by MDPI

Impact Factor 2.5
CiteScore 5.5

mdpi.com/si/250248

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Message from the Editor-in-Chief

As the world of science becomes ever more specialized, researchers may lose themselves in the deep forest of the ever increasing number of subfields being created. This open access journal Applied Sciences has been started to link these subfields, so researchers can cut through the forest and see the surrounding, or quite distant fields and subfields to help develop his/her own research even further with the aid of this multi-dimensional network.

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