Special Issue

Metals Machining—Analysis of Metal Cutting Processes

Message from the Guest Editor

High-temperature composite materials are typical hard and brittle difficult-to-machine materials. The machining-induced stresses and temperature rise during processing can lead to structural warping, brittle fracture, edge chipping, and other surface defects, accompanied by severe tool wear, unstable machining quality, prolonged processing cycles, and low production efficiency. Therefore, developing machining methods for complex-shaped components that ensure high machining quality (dimensional and geometric accuracy plus surface integrity), high efficiency and low cost is of critical practical significance to meet the requirements of aerospace engines operating under high-temperature, long-service-life conditions. By integrating low-energy ultrasonic vibration for cutting force modulation with high-energy electrical discharge for precise modification of the milling zone, the demanding requirements for high-efficiency, high-quality, and high-performance machining of high-strength, high-hardness, and heat-resistant composite materials can be satisfied.

Guest Editor

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Metallic materials play a vital role in the economic life of modern societies; contributions are sought on fresh developments that enhance our understanding of the fundamental aspects related to the relationships between processing, properties and microstructure – disciplines in the metallurgical field ranging from processing, mechanical behavior, phase transitions and microstructural evolution, nanostructures, as well as unique metallic properties – inspire general and scholarly interest among the scientific community.

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