Special Issue

Recent Advances in Ultrafast Laser Precise Manufacturing

Message from the Guest Editor

Ultrafast laser technology, such as femtosecond lasers and picosecond lasers, has quickly become a flexible tool for processing brittle and hard materials and complex microcomponents, which are widely used in and developed for medical, aerospace, semiconductor applications and so on. However, the ultrafast laser processing of these materials is still a challenge.

This Special Issue is focused on the common challenges and current status of the ultrafast laser precise manufacturing of brittle and hard materials, such as nickel-based superalloys, thermal barrier ceramics, diamond, silicon dioxide, and silicon carbide composites. An in situ pump detection system can be used to analyze the evolution of laser-induced plasma and the absorption process of ultrafast laser energy. Based on time-dependent density functional theory, molecular dynamics theory, and continuum theory, theoretical models of ultrafast laser machining could be established to carry out dynamic simulations of ultrafast laser processing. Artificial intelligence technologies have assisted ultrafast laser processing in improving manufacturing efficiency and quality.

Guest Editor

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Deadline for manuscript submissions

20 September 2025

Materials

an Open Access Journal by MDPI

Impact Factor 3.2
CiteScore 6.4
Indexed in PubMed

mdpi.com/si/226656

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Materials (ISSN 1996-1944) was launched in 2008. The journal covers twenty-five comprehensive topics: biomaterials, energy materials, advanced composites, advanced materials characterization, porous materials, manufacturing processes and systems, advanced nanomaterials and nanotechnology, smart materials, thin films and interfaces, catalytic materials, carbon materials, materials chemistry, materials physics, optics and photonics, corrosion, construction and building materials, materials simulation and design, electronic materials, advanced and functional ceramics and glasses, metals and alloys, soft matter, polymeric materials, quantum materials, mechanics of materials, green materials, general. *Materials* provides a unique opportunity to contribute high quality articles and to take advantage of its large readership.

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