Special Issue

Ultrafast Laser Micro- and Nanoprocessing

Message from the Guest Editor

Ultrafast laser-based manufacturing and materials processing has attracted substantial interest in recent decades. The ultrashort duration and extremely high peak laser intensity of ultrafast laser pulses allow for localized laser heating/ablation and a reduced heat-affected zone, making it a promising tool for high precision micro- and nanoscale materials processing. In addition, the unique characteristics of ultrafast laser pulses result in novel laser–matter interaction processes, heralding a new era of fundamental study into the underlying mechanisms. Compared to longer laser pulses, the mechanisms of laser absorption, carrier dynamics, heat transfer, phase shift, and material removal are fundamentally unique yet poorly understood. Therefore, we are announcing this Special Issue to provide a platform to showcase research papers, communications, and review articles focused on nano- and microscale ultrafast laser materials processing. **Keywords**:

- ultrafast lasers, materials processing
- nano- and microscale
- laser–matter interaction, laser ablation/machining
- surface texturing, beam/pulse shaping
- two/multi-photon polymerization/reduction
- numerical modeling

Guest Editor

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