

## Special Issue

# Ultrafast Laser: From Fundamentals to Applications

### Message from the Guest Editor

Following the inventions of chirped pulse amplification (CPA) and optical parametric chirped pulse amplification (OPCPA), ultrashort lasers developed rapidly over the past few decades. Recently, femtosecond lasers with a peak power up to 10 PW have also been proposed and constructed worldwide. These super-intense ultrafast lasers can provide many unprecedented opportunities for research on laser–matter interactions in relativistic and even ultra-relativistic regimes. In such cutting-edge applications, the spatiotemporal characteristics and stability of ultrafast lasers becomes crucial. High temporal contrast is required to prevent the destructive effect of pre-plasma on targets induced by pre-pulses. Short pulse duration and good focusing quality are required for the enhancement of effective peak intensity with reduced pulse energy and reduced facility cost. Stable beam pointing and precise focal spot positioning are also needed for its long-term reliable operation and efficient applications.

### Guest Editor

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