

High Power Ultrafast Thin Disk Laser for Driving Strong-field Terahertz Light Source

Description:

The development of state-of-the-art laser systems continues to open up unforeseen avenues both in fundamental research and industrial applications. A stunning example is the immense progress achieved in ultrafast laser driven sources of few-cycle THz pulses which become widespread laboratory tools. This has enabled THz time-domain spectroscopy (THz-TDS) to emerge as a powerful technique for time-resolved studies of the dynamics of many fundamental constituents of matter. Nevertheless, many fields suffer from a persistent lack of table-top THz sources combining high field strength and high repetition rate. For achieving table-top strong-field THz sources, the key feature is to leverage existing THz generation techniques to higher efficiency by driving THz generation with a high-power ultrafast thin-disk oscillator, and further apply this source in physical chemistry, to gain understanding of the role of water as “the solvent of life”.

The current **Advance Module** will include a brief introduction to the state of the art thin-disk laser technique and the application on table-top strong-field THz source, as well as a hands-on session about high power ultrafast TDL laser design, building, characterization and basics about THz characterization.