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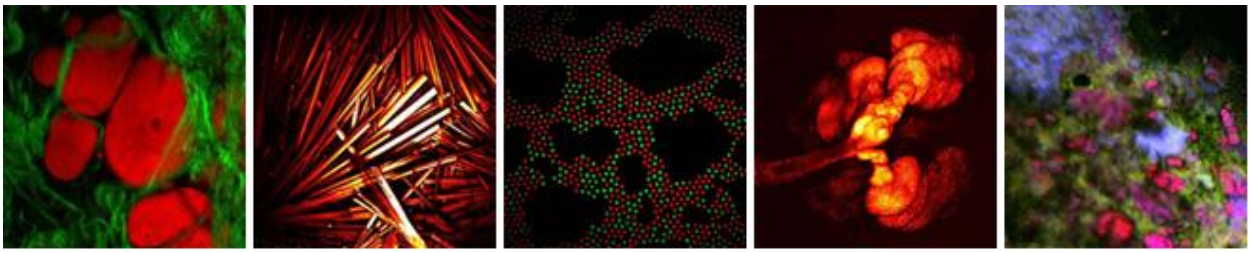
polarization solutions

Pulse Shaping

Overview: By modulating the phase and/or amplitude of spectral component of broadband femtosecond lasers it is possible to generate arbitrarily shaped ultrafast optical waveforms. Applications for this technology include optical communications, biomedical optical imaging, high power laser amplifiers, quantum control, and laser-electron beam interactions. The typical implementation utilizes a grating to spatially separate spectral components of a femtosecond laser onto an SLM. The SLM can simultaneously introduce a phase bias and diffraction grating to control the phase and amplitude of each spectral component. The reflected light from the SLM is recombined to form an ultra-short pulse. Shaped pulses can be used to tune excitation in CARS microscopes, for spectroscopy, for machining and laser marking, nonlinear microscopy, and communications.



Critical requirements: This market requires phase stability, and resolution such that a single SLM can modulate the phase and amplitude of spectral components. 2D SLMs are ideal if the lateral resolution is sufficiently high for the range of wavelengths being modulated. The columns of the SLM are then utilized as diffraction gratings to superimpose amplitude modulation on the phase bias.

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