

OPCPA

Optical Parametric Chirped-Pulse Amplification Systems

FEATURES OVERVIEW

- Customizable light source for applications requiring the shortest pulses and extreme peak and average powers
- 800 nm – 3 μm wavelengths, extendable to mid-IR
- Up to 5 TW peak power
- Down to 6.5 fs pulse duration
- 100 Hz – 200 kHz repetition rate
- < 250 mrad CEP stability

Optical parametric chirped-pulse amplification (OPCPA) is the only currently available laser technology simultaneously providing high peak and average power, as well as few-cycle pulse duration required by the most demanding scientific applications.

LIGHT CONVERSION's answer to these demands is a portfolio of cutting-edge OPCPA products based on years of experience in developing and manufacturing optical parametric amplifiers and femtosecond lasers.

OPCPA system delivering 5.5 TW peak power (6.6 fs, 36 mJ) pulses.

Built for ELI-ALPS in collaboration with Ekspla.



High Energy OPCPA Systems

Pumped by Picosecond Nd:YAG Lasers, Seeded by ORPHEUS-OPCPA

Applications like high-energy attosecond pulse generation, generation of high harmonics from solid targets, and laser electron acceleration all benefit from few-cycle pulse durations and excellent pulse contrast while requiring multi-millijoule pulse energy. Our most powerful high energy OPCPA systems are scalable to multi-TW peak powers at kHz repetition rates while maintaining few-cycle pulse durations. They will fit the most demanding requirements while providing stability and reliability unprecedented for systems of this scale.

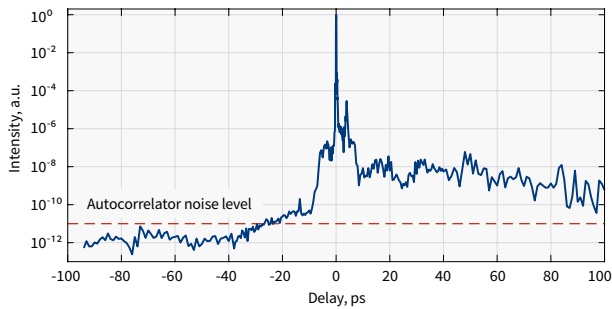
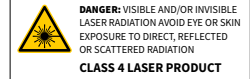


SYLOS launched in ELI-ALPS facility

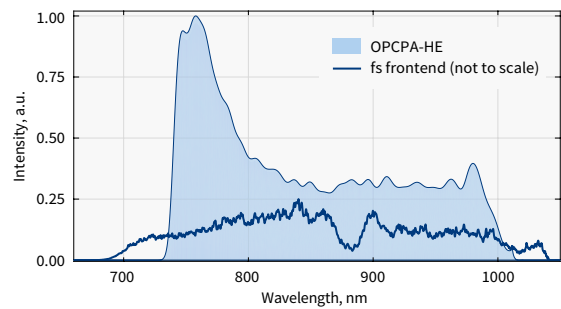
CONFIGURATIONS

Wavelength	800 nm	1.6 μm	2 μm	
Pulse duration	< 9 fs	< 50 fs	< 30 fs	
	Repetition rate		Pulse energy / Output power	
HE-100 ¹⁾	100 Hz	50 mJ	100 mJ	50 mJ
HE-1000 ²⁾	1 kHz	50 mJ / 50 W	100 mJ / 100 W	50 mJ / 50 W

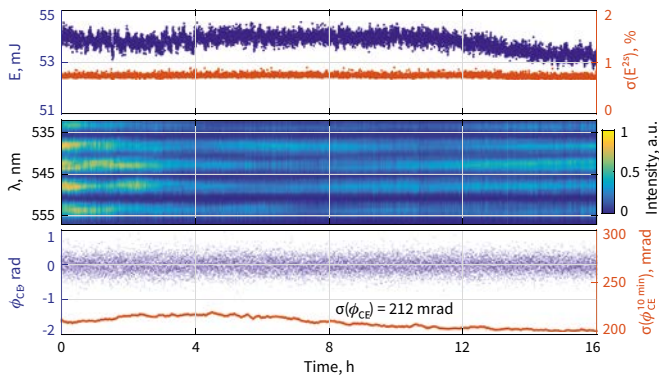
¹⁾ Cost- and size-effective highly-stable multi-TW source.
²⁾ Cutting-edge combination of peak and average power.



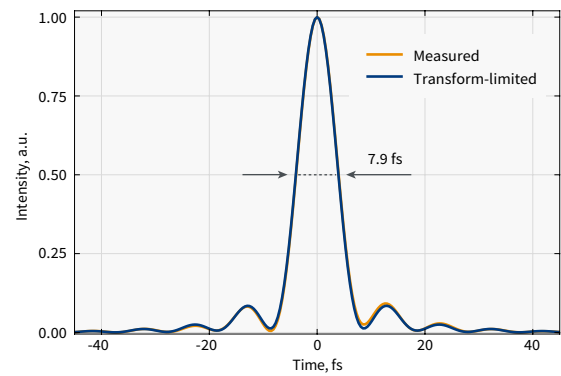
High-dynamic-range third order autocorrelation measurement of an OPCPA-HE system



OPCPA-HE output spectrum



OPCPA-HE pulse energy, f-2f interferogram and CEP stability measured over 16 h



Temporal profile of OPCPA-HE output pulses measured with a self-referenced spectral interferometry device