

OPCPA

Optical Parametric Chirped Pulse Amplification Systems

FEATURE OVERVIEW

- Customizable light sources for applications requiring the shortest pulses and extreme peak and average powers
- Wavelengths from 800 nm to 3 μm (Mid-IR extensions available)
- Peak powers up to > 5 TW
- Pulse duration down to 6.5 fs
- Repetition rates: 100 Hz to 200 kHz
- CEP stability < 250 mrad even in multi-TW peak power systems

Optical parametric chirped pulse amplification 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 that are 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.



OPCPA | HR

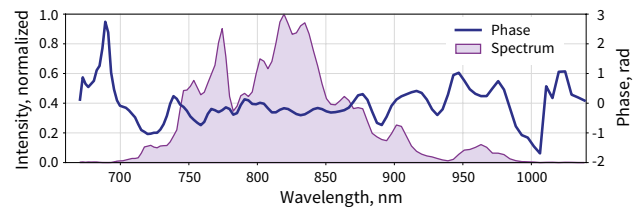
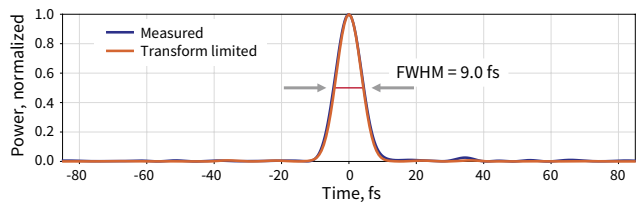
Pumped by InnoSlab or Thin-Disk Lasers, Optionally Seeded by ORPHEUS-OPCPA

InnoSlab and thin-disk lasers based on Yb:YAG are the state-of-the-art high average power lasers of today. These lasers lend themselves extremely well to pumping OPCPA systems, and LIGHT CONVERSION is happy to offer OPCPA solutions designed to work with these lasers. Available either bundled with state-of-the-art multi-100 W lasers or as standalone modules designed to work with your laser.

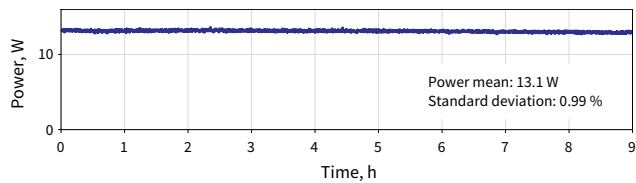
- Wavelength(s), pulse durations and energy are customizable – contact sales@lightcon.com for more details.
- A single pump laser can be combined with more than one OPCPA option in either switchable or split-energy operation.

CONFIGURATIONS EXAMPLES

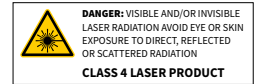
Wavelength	800 nm	1.6 μm	2 μm	3 μm	
Pulse duration	< 9 fs	< 35 fs	< 25 fs	< 35 fs	
	Repetition rate	Pulse energy / Output power			
HR-20	20 kHz	0.8 mJ / 16 W	1.6 mJ / 32 W	1.3 mJ / 26 W	0.8 mJ / 16 W
HR-200	200 kHz	110 μJ / 22 W	270 μJ / 54 W	200 μJ / 40 W	130 μJ / 26 W



OPCPA-HR output pulse measurement

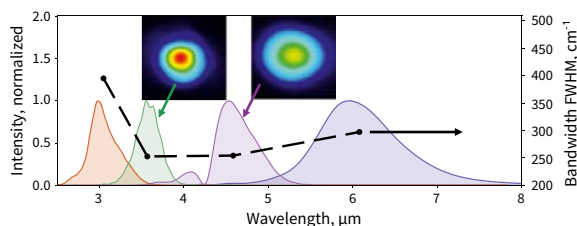


9-hour measurement of a 100 kHz, 800 nm OPCPA-HR power.
Standard deviation: < 1 %

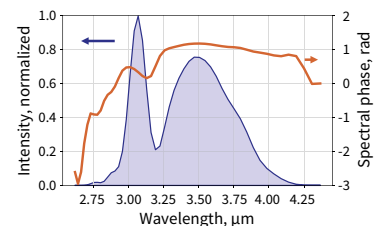
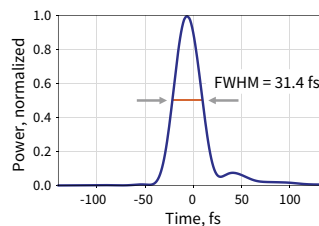


Mid-Infrared Wavelength Extensions for OPCPA For ORPHEUS-OPCPA and OPCPA-HR

2 μm models of ORPHEUS-OPCPA and OPCPA-HR can be equipped with an extra module for efficiently generating tunable broadband MIR pulses. Contact sales@lightcon.com for more details.



Example spectra measured from ORPHEUS-OPCPA DFG module



ORPHEUS-OPCPA DFG output spectrum and pulse at 3.4 μm