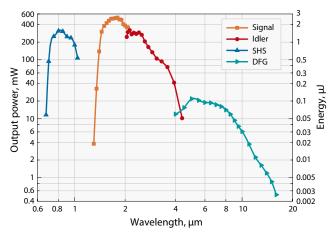


ORPHEUS-GIVE Collinear Mid-IR Optical Parametric Amplifier



FEATURES

- Signal and idler tuning from 1350 nm to 4500 nm
- Tuning range extendable to 16000 nm
- Twice the output in mid-IR compared to standard ORPHEUS
- Built on well-known TOPAS OPA basis
- Repetition rate up to 1 MHz
- Adaptable to different pump pulse energy and pulse duration
- Full computer control via USB port and dedicated software



Typical tuning curve of ORPHEUS-ONE. Pump: Pharos-6W, 200 kHz, 260 fs

OUTPUT OF OPTIONAL MID-IR CONVERTER

	DFG2
Tuning range	4500–16000 nm
Pulse energy conversion efficiency	>0.3 % @ 10000 nm
Pulse bandwidth	100 – 160 cm ⁻¹ @ 5000 – 10000 nm
Pulse energy stability	<3 % rms @ 5000 nm <4 % rms @ 10000 nm
Pulse duration	<300 fs @ 5000 – 10000 nm



ORPHEUS-ONE is a collinear optical parametric amplifier of white-light continuum pumped by femtosecond Ytterbium based laser amplifiers and focused on mid infrared wavelengths generation in two stages.

In comparison to standard ORPHEUS + DFG configuration, the ORPHEUS-ONE provides higher conversion efficiency into the infrared range. Furthermore, ORPHEUS-ONE integrates the two stages into a single housing, which minimizes the footprint of the system and increases the long term stability.

The extended range 4500 – 16000 nm is accessed by mixing the signal and idler of the second stage in a mid-IR crystal. The scheme used in ORPHEUS-ONE can generate >150 cm⁻¹ when OPA is configured for broad-bandwidth amplification.

SPECIFICATIONS¹⁾

	ORPHEUS-ONE OPA
Required pump laser	PHAROS, PHAROS-SP or CARBIDE laser
Tuning range	1350 nm – 2060 nm (signal) and 2060 nm – 4500 nm (idler)
Integrated second harmonic (515 nm) generation efficiency	~10 – 25 %, this beam is not accessible without special modification
Conversion efficiency at peak of tuning curve, second stage signal and idler combined	>14 %, when pump energy is 30 µJ – 400 µJ ²⁾
Pulse energy stability	<2 % rms @ 1450 – 4000 nm
Pulse bandwidth	100 – 250 cm ⁻¹ @ 1450 – 2000 nm
Pulse duration	200 – 250 fs, pumped by PHAROS 120 – 190 fs, pumped by PHAROS-SP
Time-bandwidth product	< 1.0 @ 1450 – 2000 nm

 $^{\scriptscriptstyle 1\!\!0}$ Conversion efficiency specified as the percentage of input power to ORPHEUS-ONE .

 $^{\it 2)}$ High energy version ORPHEUS-ONE-HE available for pump energies up to 2 mJ.