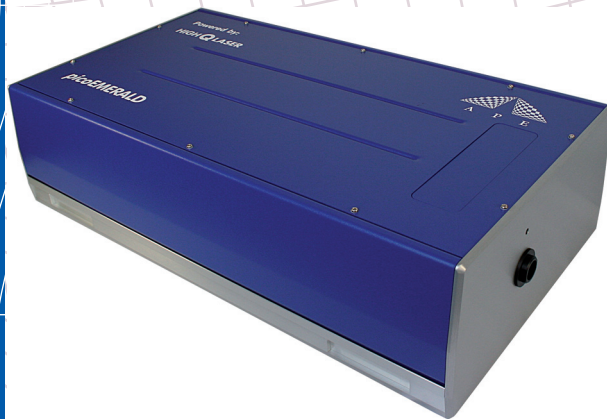


picoEMERALD



The **picoEmerald** was especially designed for the needs in CARS- and coherent RAMAN microscopy.

It comprises a high power (10W) picosecond oscillator, a frequency doubling to 532 nm and a synchronously pumped OPO in a single housing. The optical modules were optimized by finite element analyses and mechanical stability algorithms (misalignment stability optimization) to exhibit maximum passive stability. In addition an active cavity control is maximizing continuously the efficiency of the high power picosecond oscillator and the OPO. The **picoEmerald** supplies three fully automated temporally and spatially overlapping ultrafast pulse trains: 1064 nm out of the laser oscillator, the OPO Signal and the OPO Idler. Vibrational excitation modes have a typical bandwidth of $\sim 10 \text{ cm}^{-1}$ thus requiring ps excitation for best spectroscopic resolution. This system delivers 7 ps at 1064 nm and 5-6 ps from the OPO to match this requirement. Independent power adjustments of the 1064 nm beam and the OPO Signal and Idler, sensors for the spatial and temporal overlap and a high resolution spectrometer are included. 1064 nm pulses and OPO Idler pulses can be independently combined with the OPO Signal or blocked.

Optionally an amplitude modulation of the 1064 nm beam up to 10MHz is available for use with Stimulated RAMAN Scattering (SRS) or heterodyne CARS microscopy to suppress the nonresonant background.

Fully remote-controlled and hands-free

Two-Colour Output

Perfect Pulse Synchronization

Constant power control

Picosecond pulses for best resolution

Ultrafast Pulse Diagnostics

Wavelength Conversion

Pulse Management

Acousto-optics

Your Partner in Ultrafast

picoEMERALD

SPECIFICATIONS

Tuning ranges:

Signal	720 ... 990 nm ¹⁾
Idler	1150 ... 2030 nm

$\Delta\nu$ Signal - Idler	1350 ... 9000 cm ⁻¹
$\Delta\nu$ Signal - 1064 nm	700 ... 4500 cm ⁻¹

Output power:

Signal (@750 - 990 nm)	600 mW
Idler (@1150 - 1350 nm)	500 mW
1064 nm	750 mW

Repetition rate	80 MHz
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Pulse length 1064 nm (typical)	7 ps
Pulse length OPO (typical)	5 - 6 ps
Spectral bandwidth (Signal, typical)	0.3 - 0.4 nm
Time bandwidth product (Signal, Idler, typical)	0.6

Beam diameter	1.2 mm
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Divergency	1 mrad
M ² (OPO Signal, Idler and 1064 nm)	< 1.2

Ellipticity	< 10%
Pointing stability	< 100 μ rad / 100nm

Noise	< 0.5 % RMS @ 300 Hz – 1MHz
Polarisation	100 : 1, horizontal

Common beam exit is selectable for OPO Signal and 1064 nm or OPO Signal and Idler with overlap in space and time.

Interface	USB / RS 232
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DIMENSIONS (W*L*H in mm ³)	860 x 470 x 225
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1) For Signal only or Signal + 1064 output the filter used is limiting the Signal range from 780 to 990 nm.

Distributors
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APE follows a policy of continued product improvement. Therefore, specifications are subject to change without notice.