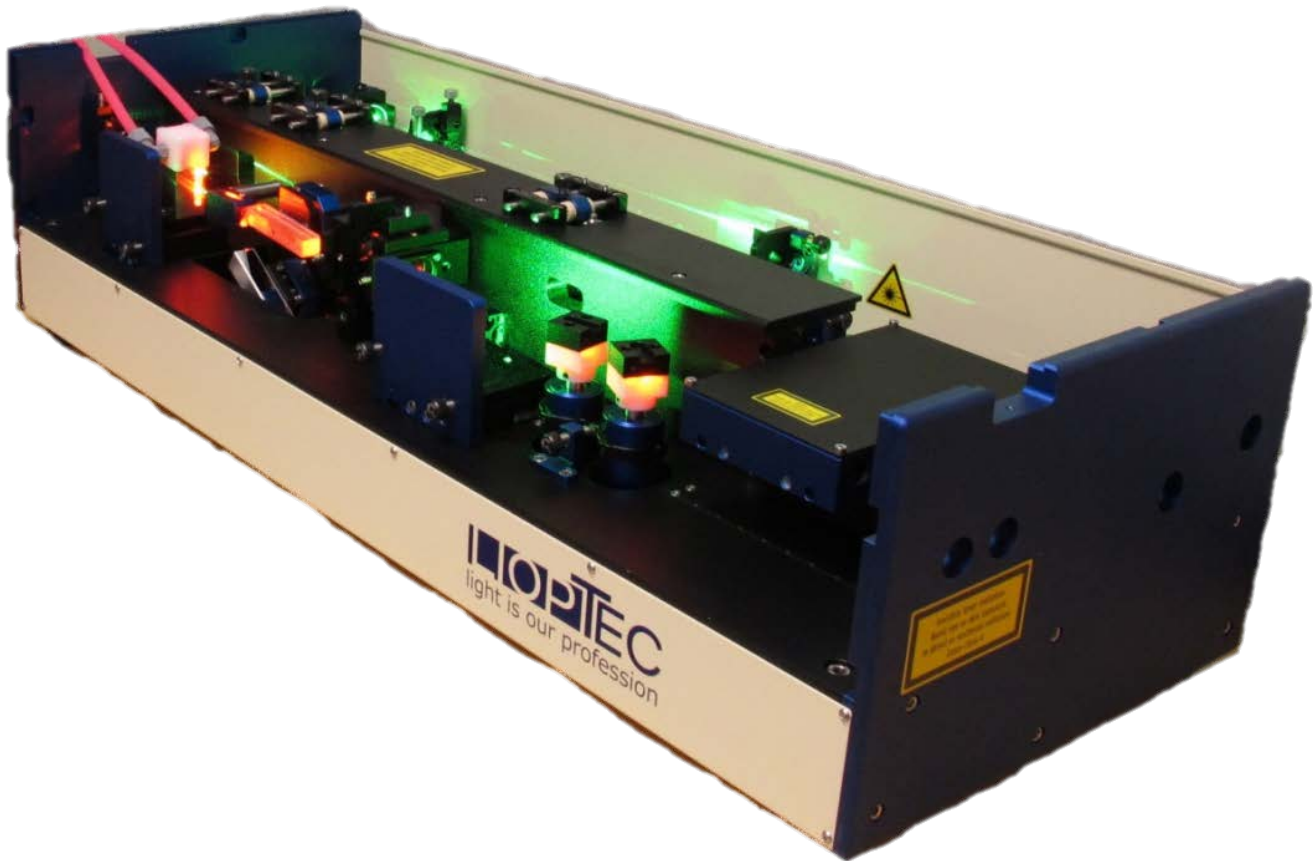


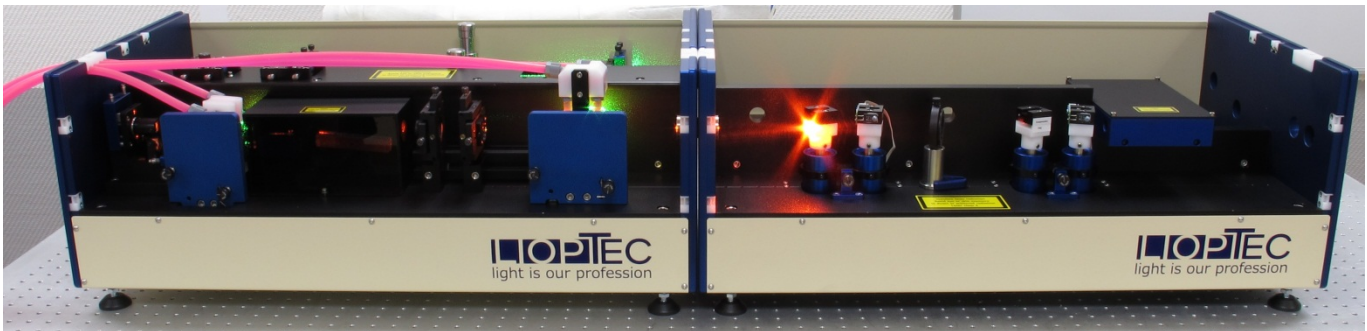
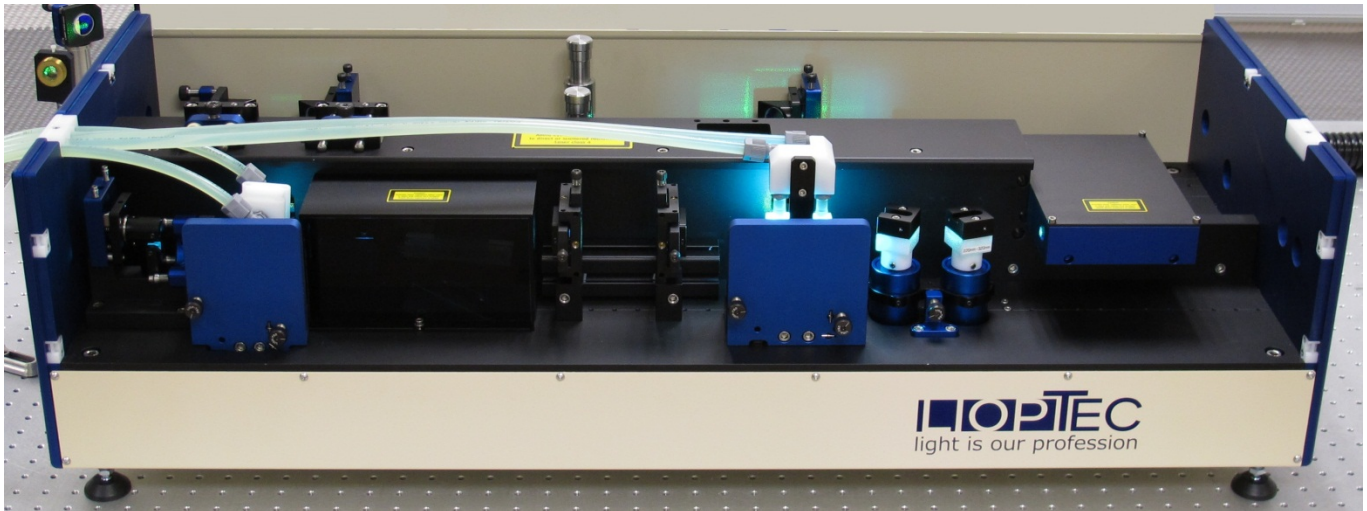
LiopStar & LiopStar-E

even more than light



Features

- wide spectral range 197 nm – 5000 nm
- extreme narrow bandwidth system down to $0,02\text{cm}^{-1}$
- low ASE <0,5%
- repetition rates up to 250 kHz
- high efficient laser resonator
- Gaussian near beam quality due to Bethune cells
- eroded stainless-steel case for oscillator and amplifier cuvettes for highest stability
- new state-of-the art integrated electronics and user-friendly software
- intelligent PI control for FCU autotracking unit
- temperature stabilized crystals
- USB port
- remote control via TCP / IP protocol
- smallest footprint



Options

frequency conversion units

- internal open loop frequency doubling with look-up-table
- internal open loop frequency tripling and mixing with look-up-table¹
- autotracking² FCU available for second-harmonic generation (SHG), third-harmonic generation (THG)¹, sum- and difference frequency mixing (SFM, DFM)^{1,3}
- intelligent PI-control corrects phase matching deviation of the look-up-table algorithm during wavelength scans and temperature changes
- high scan speed, up to 10 nm/min
- usable for repetition rates from < 1 Hz up to 250 kHz
- temperature control for doubling crystal
internal BBO temperature control can be set up to 70°C

Application:

- laser induced fluorescence: LIF
- combustion and atmospheric studies
- Raman spectroscopy
- photolysis
- light detection and ranging: LIDAR
- coherent antistokes raman spectroscopy: CARS

¹ THG, SFM and DFM operation requires a LiopStar-E with LSEH extension

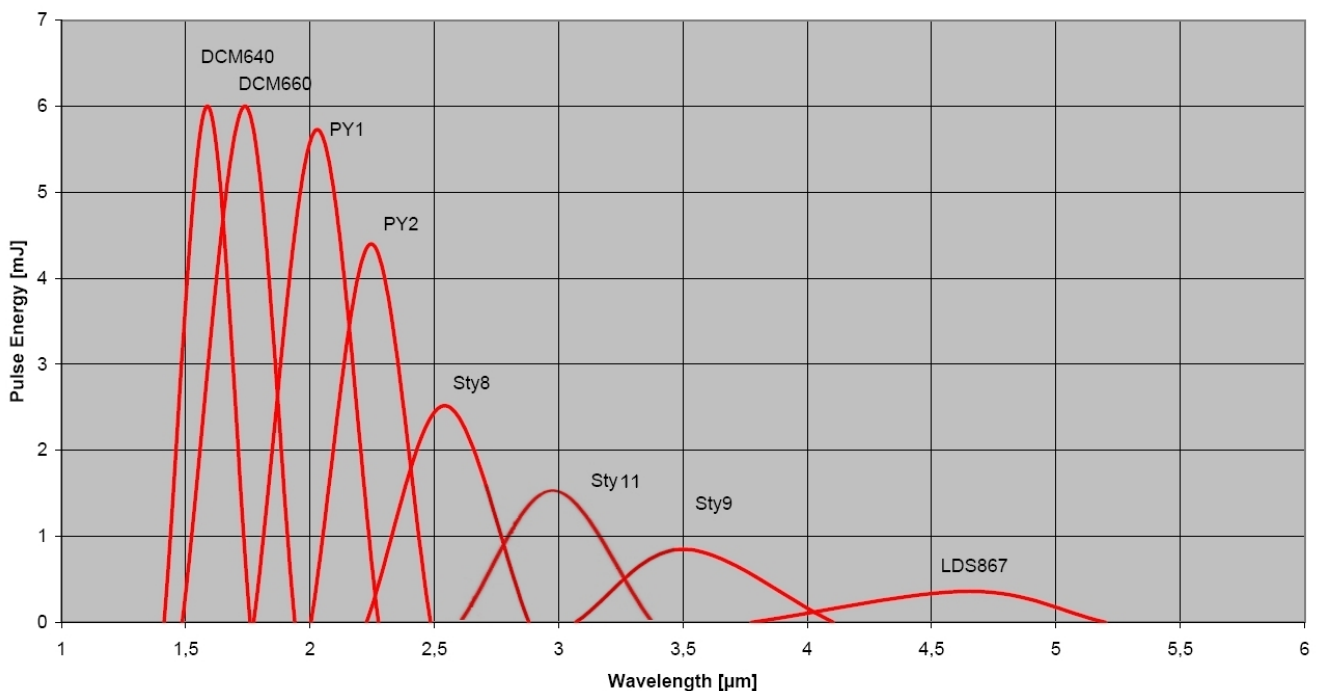
² wavelength separation is required for autotracking operation

³ for narrowband operation a seeder for the Nd:YAG pump laser is recommend

energy output

dye	UV/IR wavelength	pump energy @ 10Hz	dye laser	output energy
SHG 206 nm – 450 nm				
Coumarin 120	220 nm	280 mJ @ 355 nm	LiopStar-VN	> 5 mJ
Coumarin 307	250 nm	280 mJ @ 355 nm	LiopStar-VN	> 5 mJ
Rhodamine 6G	280 nm	400 mJ @ 532 nm	LiopStar-VN	> 25 mJ
DCM	320 nm	400 mJ @ 532 nm	LiopStar-VN	> 25 mJ
THG¹ 197 nm – 212 nm				
Rhodamine B	200 nm	400 mJ @ 532 nm	LiopStar-VN	2 mJ
Rhodamine 101	205 nm	400 mJ @ 532 nm	LiopStar-VN	4 mJ
DCM	210 nm	400 mJ @ 532 nm	LiopStar-VN	4 mJ
DFM^{1,3} 1.4 μm – 5.0 μm				
DCM	1.6 μm	400 mJ @ 532 nm	LiopStar-E-VN	6 mJ
Pyridine1	2.0 μm	400 mJ @ 532 nm	LiopStar-E-VN	5.5 mJ
Styryl 9	3.4 μm	400 mJ @ 532 nm	LiopStar-E-VN	800 μJ
LDS 867	4.7 μm	400 mJ @ 532 nm	LiopStar-E-VN	100 μJ

IR tuning range LiopStar-E-VN with LSEH extension pumped with 400mJ @ 532nm



linewidth specifications		LiopStar / LiopStar-E	
	Grating	tuning range	linewidth
LiopStar	1800 l/mm, 60 mm	355 nm – 900 nm	< 0.1 cm ⁻¹ @ 620 nm
LiopStar	2400 l/mm, 60 mm	355 nm – 740 nm	< 0.08 cm ⁻¹ @ 570 nm
LiopStar-N	1800 l/mm, 90 mm	355 nm – 900 nm	< 0.06 cm ⁻¹ @ 620 nm
LiopStar-N	2400 l/mm, 90 mm	355 nm – 740 nm	< 0.06 cm ⁻¹ @ 570 nm
LiopStar-N	3000 l/mm, 90 mm	355 nm – 610 nm	< 0.05 cm ⁻¹ @ 560 nm
LiopStar-VN	double 1800 l/mm, 90 mm	355 nm – 900 nm	< 0.05 cm ⁻¹ @ 620 nm
LiopStar-VN	double 2400 l/mm, 90 mm	355 nm – 710 nm	< 0.04 cm ⁻¹ @ 570 nm
LiopStar-VN	double 3000 l/mm, 90 mm	355 nm – 580 nm	< 0.03 cm ⁻¹ @ 570 nm
beam specifications		LiopStar / LiopStar-E	
conversion efficiency: Nd:YAG pumped 355 nm	20% @ 405 nm 14% @ 460 nm	Exalite 404 Coumarin 47	
conversion efficiency: Nd:YAG pumped 532 nm	25% @ 630 nm 28% @ 565 nm	DCM Rhodamine 6G	
wavelength reproducibility	< 0.005 nm		
absolute accuracy	< 0.01 nm		
scan linearity	< 0.002 nm		
wavelength stability	< 0.001 nm/°C		
divergence	0.5 mrad		
polarisation	> 98 %	vertical	
ASE-background	< 0.5 %		
dimensions		LiopStar / LiopStar-E	
LiopStar	1040 mm x 400 mm x 300 mm ± 10 mm, 80 kg		
LiopStar-E	750 mm x 400 mm x 300 mm ± 10 mm, 60 kg		
LSEH-Extension	750 mm x 400 mm x 300 mm ± 10 mm, 30 kg		
beam input height	180 mm ± 10 mm		
beam output height	200 mm ± 10 mm		
requirements		LiopStar / LiopStar-E	
pump laser pulse power	10 mJ ... 1000 mJ (high power option), s-pol		
voltage	110 V 6A / 220 V 3 A, 50/60 Hz, single phase		
computer	Windows, one free USB port		



specifications are subject to change without notice