TRUMPF Scientific Lasers: Optical Parametric Amplifier

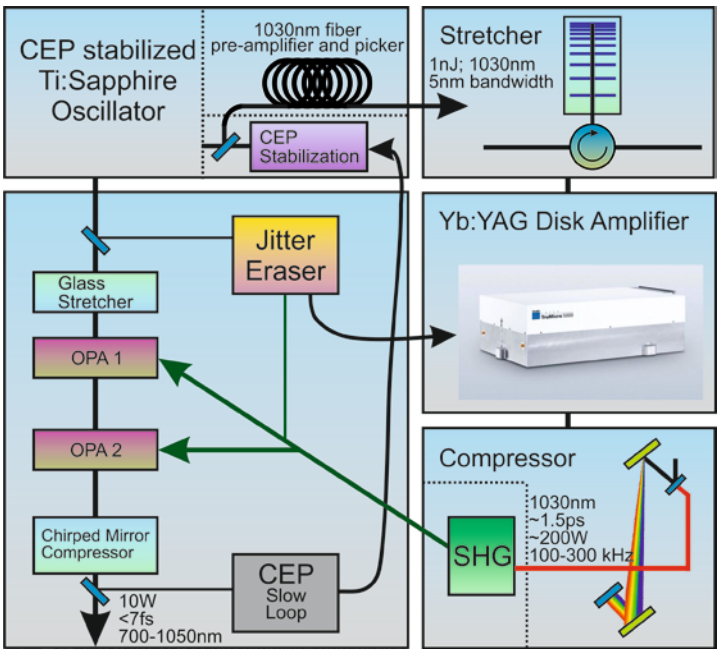
Machine Tools/Power Tools

Laser Technology/Electronics

TRUMPF Scientific Lasers: Optical parametric amplifier.

Powerful pumps.

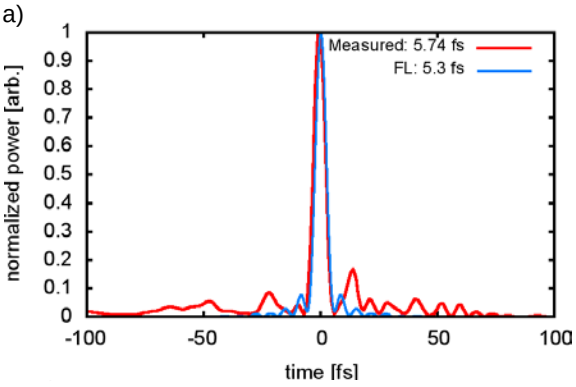
The lasers of the SDL series deliver pulses of 1 picosecond duration with up to 200 millijoule pulse energy – the highest pulse energy rate available today. The product portfolio covers the repetition range from 1 kilohertz to 1 megahertz. The flexible design of the SDL series allows for the customization of systems according to user requirements. Models with pulse energy up to the 2 joule level are available upon request. These lasers are the ideal pump lasers for parametric amplification stages for high-power few-cycle femtosecond pulse generation.



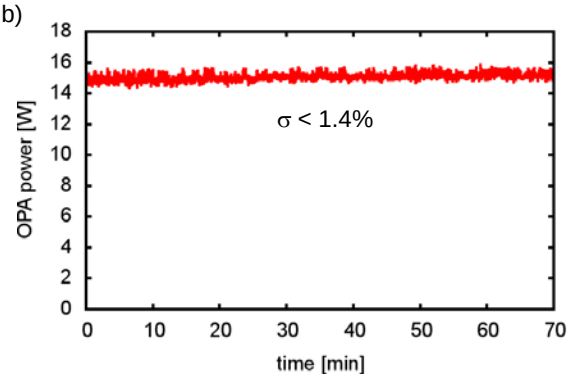
Few-cycle output.

TRUMPF Scientific Lasers offers parametric amplification stages with efficiencies beyond 25%. In combination with our SDL pump sources they constitute an integrated system, delivering sub-10 femtosecond pulses with millijoule energy. For effective synchronization between pump and seed laser, advanced electronic and optical synchronization units are available.

a)



b)



(a) Temporal profile of the compressed pulse, measured with a SPIDER (b) Long-term stability of OPA output power; deviation is below 1.4%

	Pump laser
Wavelength	1030 nm, 515 nm
Repetition Rate	100 - 300 kHz
Max. average laser power	> 200 W (1030 nm) > 130 W (515 nm)
Max. pulse energy	> 2 mJ (100 kHz, 1030nm)
Pulse duration	< 1.5 ps (1030 nm) < 1.2 ps (515 nm)
Beam quality M^2	< 1.2

	OPA
Wavelength	700 - 1100 nm
Repetition Rate	100 - 300 kHz
Max. average laser power	> 15 W (compressed)
Max. pulse energy	150 µJ
Pulse duration	Fourier limit: < 5.5 fs compressed: < 6 fs
Residual timing jitter	< 10 fs

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