



All Wavelengths.

190 nm - 0.1 THz

TOPTICA at the LASER World of Photonics 2017

TOPTICA Photonics will present their innovative lasers at the LASER World of Photonics (hall B2, booth 103). With the latest product releases, TOPTICA is able to offer a complete laser wavelength coverage from deep-UV (190 nm) to terahertz radiation (0.1 THz, corresponding to 3 mm). These lasers support a multitude of applications in **biophotonics & microscopy, materials & metrology** and **quantum technology**.

Deep-UV wavelengths as small as 190 nm are now accessible with TOPTICA's frequency-converted diode lasers. By providing essential wavelengths like 193 nm, 213 nm or 407 nm in pure cw TEM₀₀-mode quality, the **DLC TA-SHG/FHG pro** is an ideal solution for **testing and inspection** or advanced material processing, e.g. **lithography patterning for holographic applications**. The new lasers provide the necessary power levels that are required for these applications. On top of that, they are much easier to handle at considerably lower operating costs.

Semicon inspection or **Raman applications** at 266 nm are supported by TOPTICA's new **TopWave 266**. This industrial-grade, continuous-wave laser systems provides 150 mW. It stands out with its excellent power stability, low noise and extended lifetime that is realized with a digital control architecture and an optimized, completely sealed doubling cavity.

TOPTICA's product line of tunable diode lasers now covers the full regime between 190 and 3500 nm. With the new **MDL pro**, these lasers become available in a transportable and compact design. It combines up to four tunable diode lasers in one 19-inch module with the same specifications as TOPTICA's **DL pro** and **DFB pro** series. The digital low-noise **DLC pro** controller operates these lasers. Thus, the MDL pro combines excellent laser performance with the unique and easy to use standard electronic sub-racks. Such a transportable solution will advance the development of mobile experiments like optical clocks, quantum computers or sensors.

Experiments that require a reliable reference for optical frequencies like **high-resolution spectroscopy** or **interferometry** take advantage of TOPTICA's low-noise frequency comb **DFC CORE** that provides light at individual wavelengths between 420 and 2200 nm. This system is now available in an integrated 19-inch rack, combined with wavelength extensions, beat units, stabilization electronics, wavelength meters, counters and diode lasers. This allows TOPTICA to provide complete



TOPTICA's TA-SHG pro support lithography patterning for holographic applications.



The TopWave 266 provides 150 mW at 266 nm with extended lifetime.



The MDL pro integrates up to four DL pro or DFB pro laser modules.



TOPTICA now offers complete stabilized laser systems including the low-noise frequency comb DFC CORE.

stabilized laser systems that are compact and transportable. In addition, the system is controlled using only one central software for all integrated modules.

The new multi-laser engine **iChrome CLE** for **biophotonics** provides light at 405, 488, 561 and 640 nm with 20 mW each. It is the cost-effective system of choice for multi-color microscopy applications due to its compact design and economic operation. Since the 561 nm light is generated by a laser diode instead of solid state laser, this system can be directly modulated at high speed (1 MHz) while maintaining complete-off in the dark state. The iChrome CLE is the latest member of TOPTICA's **iChrome** product line which also includes the power-champion **iChrome MLE** (up to 100 mW at four individual laser lines). All iChrome systems have a unified user interface, unique modulation features and COOL^{AC}, TOPTICA's proprietary and fully automated beam alignment algorithm.



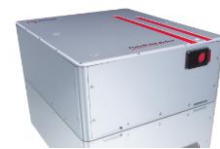
The 4-color laser engine iChrome CLE is cost-effective and ideal for confocal microscopy.

For **multiphoton microscopy**, TOPTICA's new **FemtoFiber ultra** lasers are excellent light sources. These ultrafast lasers provide powerful pulses centered at 780 nm (500 mW average power and below 150 fs pulse duration) or at 1050 nm (5 W average power with an unprecedented short pulse duration of typically 90-100 fs). They are ideal tools for **multiphoton (SHG) microscopy**, **supercontinuum generation**, **material processing**, as well as **OPCPA or amplifier seeding**.



The FemtoFiber ultra systems provide powerful femtosecond laser pulses.

Advanced **material inspection** becomes possible with TOPTICA's recent **FemtoFiber dichro midIR**. This broadband mid-infrared laser (5-15 μm) is ideally suited for **mid-infrared spectroscopy**, as well as **near-field studies**. It provides tunable broadband pulses with more than 400 cm^{-1} bandwidth at 80 MHz repetition rate. The FemtoFiber dichro midIR is a unique tool for the chemical analysis of materials with nanoscale resolution, e.g. in near-field spectroscopy systems.



TOPTICA's FemtoFiber dichro midIR is a broadband mid-infrared laser, emitting light at wavelengths from 5-15 μm .

Contact-free material characterization techniques with unprecedented data rates are now possible thanks to TOPTICA's new **TeraSpeed**. This superfast terahertz sensing platform supports applications like **non-destructive testing**, **plastic inspection** or **process control** with a sampling rate of 100 million data points per second. The TeraSpeed complements TOPTICA's unique portfolio of terahertz systems. The product range also includes the time-domain terahertz platform **TeraFlash**, which achieves an unsurpassed peak dynamic range of 90 dB and a bandwidth of 6 THz. In addition, the frequency-domain terahertz platform **TeraScan** allows for a frequency resolution better than 10 MHz and a dynamic range up to 100 dB.



Non-destructive testing is possible with TOPTICA's time-domain terahertz platform TeraFlash.

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TOPTICA Photonics AG develops, manufactures, services and distributes technology-leading diode and fiber lasers and laser systems for scientific and industrial applications. Sales and service are offered worldwide through TOPTICA Germany and its subsidiaries TOPTICA USA and TOPTICA Japan, as well as all through 11 distributors. A key point of the company philosophy is the close cooperation between development and research to meet our customers' demanding requirements for sophisticated customized system solutions and their subsequent commercialization.