

TOPTICA presents “All Wavelengths” at Photonics West

TOPTICA Photonics will present their latest innovations at Photonics West in Moscone Center, San Francisco from January 30th to February 1st.

This year, TOPTICA’s booth location moved to North Hall, booth #4645. Dedicated laser solutions for biophotonics will be presented at the BiOS exhibition on 27th and 28th January, booth 8508.

With their broad product portfolio, TOPTICA offers **All Wavelengths!** Complete coverage from deep-UV (190 nm) to terahertz radiation (0.1 THz, corresponding to 3 mm). These lasers support a multitude of applications in microscopy, materials metrology and quantum technology.

The multi-laser engine **iChrome CLE** for **biophotonics** provides 405, 488, 561 and 640 nm with 20 mW at the end of the fiber. The CLE is a cost-effective system for multi-color microscopy applications due to its compact design and economic operation. Even the 561 nm light is generated by a laser diode instead of a solid-state laser, allowing this system to be directly modulated at high speed (1 MHz) while maintaining complete-off, i.e. zero photons, in the dark state. The iChrome CLE is the latest member of TOPTICA’s **iChrome** product line which also includes the powerful **iChrome MLE** (up to 100 mW and four 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 guaranteeing consistent power out of the fiber.



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

For **multiphoton microscopy**, TOPTICA’s **FemtoFiber ultra** femtosecond fiber lasers are excellent tools. These ultrafast lasers provide powerful pulses centered at 780 nm (500 mW average power and below 150 fs pulse duration), at 1050 nm (5 W average power with an unprecedented short pulse duration of typically 90-100 fs), as well as 1560 nm (up to 2 W power and 200 fs pulse duration). They are ideal light sources 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 like** near-field spectroscopy is possible with the **FemtoFiber dichro midIR**. This tunable, 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.



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

Semicon inspection or **Raman applications** at 266 nm are enabled by TOPTICA's **TopWave 266**. This industrial-grade, continuous-wave laser system provides 300 mW. It stands out with excellent power stability, low noise and extended lifetime with a digital control architecture and an optimized, completely sealed doubling cavity.



The TopWave 266 provides 300 mW at 266 nm with excellent lifetime >10,000 h.

Contact-free material characterization with unprecedented data rates is now possible thanks to TOPTICA's **TeraSpeed**. This superfast terahertz-sensing platform enables 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, which also includes **TeraFlash**, a time-domain terahertz platform. **TeraFlash** has an unsurpassed peak dynamic range of 90 dB and a bandwidth of 6 THz. If a frequency-domain terahertz platform is required, TOPTICA's **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.

TOPTICA frequency converted systems provide deep-UV wavelengths as short as 190 nm. By providing essential wavelengths like 193 nm, 213 nm, 257 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 lasers provide more than enough power for each application. On top of that, they are much easier to handle at considerably lower operating costs.



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

TOPTICA's established product line of tunable diode lasers now covers the full regime between 190 and 3500 nm. With the new **MDL pro**, these lasers are available in a transportable and compact design. It combines four tunable diode lasers in one 19-inch module with the same specifications as TOPTICA's well known **DL pro** and **DFB pro** series. The digital low-noise **DLC pro** controller is at the heart of the newest platform of these tunable diode lasers. 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.



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

Experiments that require a reliable reference for optical frequencies like **high-resolution spectroscopy** or **interferometry** take advantage of TOPTICA's low-noise frequency comb. The **DFC CORE** 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 stabilized laser systems that are compact and transportable. In addition, the system is controlled using only one central software for all integrated modules.



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

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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.