

# MID-INFRARED QUANTUM CASCADE LASER-BASED SYSTEMS

## THE DAYLIGHT DIFFERENCE

Mid-infrared laser light is providing game-changing solutions to molecular spectroscopy, detection and imaging in applications such as: Defense & Security; Life Sciences; Scientific Research; and Industrial Process Control. As a mid-IR technology leader, DRS Daylight Solutions has delivered more ECqCL™ laser systems to more applications world-wide than anyone else. With a highly experienced team—and field-proven, best-in-class product performance—we stand ready to help you with your mid-IR application. Whether you need CW output, pulsed output, fast tuning, broad tuning, linewidths <5 MHz, Watt-level output powers, or low RIN, please ask how our unmatched selection of mid-IR lasers, spanning 3 to > 13  $\mu\text{m}$ , can help you. For more details, please visit [www.daylightsolutions.com](http://www.daylightsolutions.com).

## TUNABLE LASERS



### HEDGEHOG™

#### COMPACT, RAPID-SCAN CW/PULSED MID-IR LASER

Hedgehog is a unique combination of small size, high-quality CW or pulsed output, high power, and high tuning speed (to >5000  $\text{cm}^{-1}/\text{s}$ ). Hedgehog enables rapid acquisition of molecular spectra with high accuracy, repeatability and low SNR. Built on Daylight's proven QCL technology, Hedgehog is Daylight's next-generation tunable laser head. Now available in -UT (> 200  $\text{cm}^{-1}$ ) and -LT (30  $\text{cm}^{-1}$ ) tuning range options, Hedgehog is ideal for lab or OEM use. SideKick™ controller included with systems.



### MIRCAT-QT™

#### RAPID-SCAN, ULTRA-BROADLY TUNABLE CW/PULSED MID-IR LASER

The new MIRcat-QT provides rapid tuning and high-quality light output to help you collect high-SNR spectroscopic data at speed. It offers: CW or pulsed operation; tuning speeds up to 30,000  $\text{cm}^{-1}/\text{s}$ ; tuning ranges to > 950  $\text{cm}^{-1}$ ; RIN as low as -150 dBc/Hz; peak powers up to 1W; average powers up to 0.5W, and wavelength repeatability as low as < 0.1  $\text{cm}^{-1}$ . MIRcat-QT's  $\text{TEM}_{00}$  beam and total beam pointing <2 mrad over the tuning range also enables high-efficiency fiber coupling. A true one-box, fully automated system, MIRcat-QT's flexible, modular design allows users to factory-configure their system for up to four modules, upgrade later, and add a visible aiming beam. A new laser module option also extends wavelength coverage to 13 microns.



### CW-MHF™

#### TUNABLE, NARROW LINEWIDTH MID-IR LASER

Unique to Daylight, the CW-Mode-Hop-Free laser guarantees <5 MHz linewidth, CW output that tunes without mode hops (i.e. tunes phase continuously) to > 30  $\text{cm}^{-1}$ . Ideal for high-resolution (e.g. gas) spectroscopy, the CW-MHF system provides tens to 100+ mW output powers, low RIN, and current- and piezo-modulation capability. SideKick™ controller included with systems.

## HIGH-POWER LASERS



### ARIES™

#### HIGH-POWER, MID-IR LASER

DRS Daylight's years of experience and field-proven performance in high-power mid-IR lasers come together in the Aries product. These fixed-wavelength, high-power mid-IR CW/pulsed lasers feature a sealed, maintenance-free design, broadband output, a choice of center wavelength, and average power options up to 2 W. Aries provides air-cooled CW or pulsed operation and current (amplitude) modulation. They are CDRH compliant and carry CE marking. All Aries systems come with a SideKick™ laser controller, an umbilical cable, and a GUI and SDK to give you everything you need for productivity out of the box.

## MID-IR LASER-BASED INSTRUMENTS



### CHEMDETECT ANALYZER™

#### RAPID-SCAN MOLECULAR ANALYZER

It's time to reconsider Mid-IR for high-sensitivity liquid analysis. Unlike traditional FT-IR based instruments, which are limited to short path length (< 10 μm) ATR measurements, ChemDetect™ Liquid Analyzer leverages high-brightness quantum cascade laser technology. This allows ChemDetect to operate in the more preferred direct transmission measurement mode at long path lengths (>100 μm) for both aqueous and solvent-based solutions. The ChemDetect is a compact, intelligent and easy-to-use infrared spectrometer specifically designed for detection of low-concentration (ppm) analytes in standard HPLC liquid columns. The longer path length, combined with broad source tunability and a proprietary balanced detection architecture enables unprecedented sensitivity, selectivity, and speed for measurement of mixtures and separated flows.



### SPERO®-QT/-LT

#### CHEMICAL IMAGING IR MICROSCOPE

The all-new Spero microscope is the second-generation platform in this new class of instruments and represents yet another breakthrough in IR spectroscopy, with high-performance, label-free chemical imaging. The Spero system has the wide-field, high-resolution attributes of its predecessor but with the capability to produce twice the data in one-tenth of the time, while achieving unprecedented signal-to-noise ratios. The Spero stage can image up to 3 microscope slides, and its larger sample compartment makes the Spero more compatible with microfluidic devices and accessories.