DRS DAYLIGHT SOLUTIONS

Spero-QT®

Spero®QT | LT

RAPID, WIDE-FIELD MID-IR MICROSCOPY

The Spero-QT® remains the highest-performance and most versatile infrared microscopy platform available. Powered by Daylight's award winning quantum cascade laser (QCL) technology, the small desktop sized instrument uses a proprietary wide-field, low-noise imaging architecture to enable real-time spectroscopic analysis for a range of Pharmaceutical, Materials and Life Sciences applications. The Spero-QT is equipped with a high-precision automated sample stage which accommodates as many as three standard microscope slides. Finally, a large sample compartment area makes the Spero-QT compatible with a variety of microfluidic devices and accessories.

Our latest model, Spero-LT, has been economically configured to get the most out of your research for a lower cost. With all of the same high-performance specifications in speed and resolution as the Spero-QT, this is a great solution for tight budgets.

INSTANTANEOUS RESULTS IN LIVE MODE
Produces hyperspectral data cubes in seconds and also supports live discrete-frequency imaging, eliminating standard, time-consuming workflow steps to acquire data.

HIGHLIGHTS

- Reflection AND transmission modes[1]
- Live real-time IR imaging
- High-sensitivity measurements (< 1 mAU)
- Fast hyperspectral scan speeds (> 7 M spectral points per second)
- Multiple, high-NA, large FOV imaging optics[2]
- Large, flexible sample compartment
- Easy-to-use ChemVision™ software included
- Multiple output file formats available
- Chemometrics packages available
- No cryogenic cooling needed
- Small footprint

INFRARED MICROSCOPY WILL NEVER BE THE SAME

APPLICATIONS

- Tissue analysis
- Live cell imaging
- Liquid and microfluidic analysis
- Chemical reaction monitoring
- Polymer science
- Plasmonics and metamaterials
- Materials inspection
- Tablet API mapping
- Protein analysis
- Forensics

SPECIFICATIONS

CONFIGURATIONS

IMAGING MODES	SPERO-QT 340	SPERO-LT 340
IR Reflection	✓	
IR Transmission	✓	✓
Visible	✓	
Mosaic Stitching	✓	✓
Hypercube Collection	✓	✓
High Resolution IR Objective (0.7 NA)	✓	
Wide-Field IR Objective (0.3 NA)	✓	✓

SPECIFICATIONS — IR IMAGING MODE

PARAMETER	HIGH-RESOLUTION IR (0.7 NA)[1]	WIDE-FIELD IR (0.3 NA)
Wavelength Range	Standard Configuration: 1800 cm^{-1} to 950 cm^{-1} Other wavelength range options available between 2300 cm^{-1} and 800 cm^{-1} - Please inquire.	
Image Cube Acquisition Time	950-1800 cm^{-1}, 2 cm^{-1} steps (426 steps) in less than 45 seconds	
Camera Array Size	480 x 480	480 x 480
Image Pixel Size	1.3 µm (0.7 NA)	4.3 µm (0.3 NA)
Diffraction-Limited Spatial Resolution	< 5 µm @ λ = 5.5 µm	< 12 µm @ λ = 5.5 µm
Numerical Aperture	0.7	0.3
Spectral Step Size	Variable, down to 2 cm^{-1}	
Noise Performance	< 1 mAU per scan[4]	
Working Distance	> 5 mm	> 25 mm
Field of View (FOV)	650 µm x 650 µm (0.7 NA)	2 mm x 2 mm (0.3 NA)

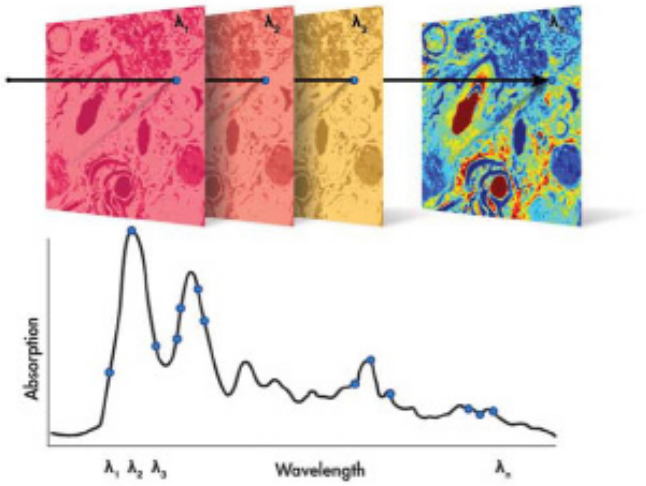
STAGE

Stage Travel X	> 75 mm[3]
Stage Travel Y	> 50 mm[3]
Stage Travel Z	> 10 mm
Stage Repeatability	< 1 µm (X,Y)

UPGRADE OPTIONS

Add Extended Wavelength Coverage to 1900-950 cm^{-1}
Add Blue Shifted Range to 2225-2000 cm^{-1} and 1800-1200 cm^{-1}

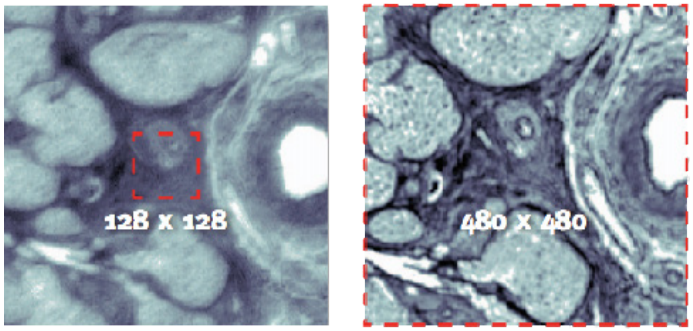
HYPERSPECTRAL DATA CUBE



A high-resolution spectrum is collected simultaneously at every image pixel position (230,400 pixels per FOV) in less than 45 seconds.

FIELD OF VIEW

Detector Field of View



FPA FTIR
1.1 µm pixel

QCL-IR
1.3 µm pixel

With a 128x128 FPA FTIR, it would require 16 fields of view to cover an area similar to a single field of view of the Spero-QT.

INVISIBLE LASER RADIATION
AVOID EXPOSURE TO THE BEAM
CLASS 3B LASER PRODUCT

CE

COMPLIES WITH 21 CFR 1040.10 AND 1040.11 EXCEPT FOR DEVIATIONS PURSUANT TO LASER NOTICE NO. 50, DATED JUNE 24, 2007. COMPLIES WITH IEC 60825-01

[1] *Reflection mode not included in standard configuration of Spero-LT.*
[2] *High-Resolution IR Objective and visible objective not included in standard configuration of Spero-LT.*
[3] *Customizable up to 100 mm*
[4] *As measured per standard Spero acceptance test protocol; Decadic Absorbance Value*
Note: Dry gas purge recommended. Please contact us for installation recommendations.

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REV 15-2022