



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 modes¹
- 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 optics²
- 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

PARAMETER	IR IMAGING MODE	
	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)

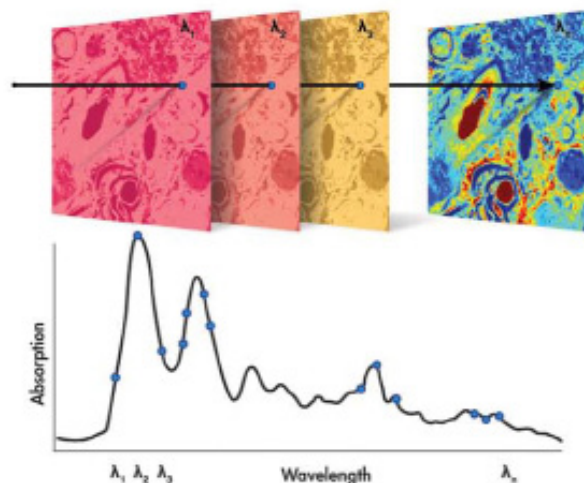
STAGE

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

UPGRADE OPTIONS

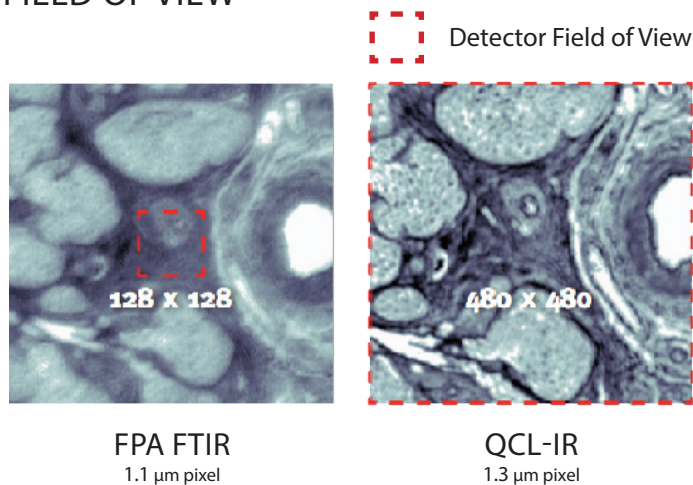
Add Extended Wavelength Coverage to 1900-950 cm⁻¹
Add Blue Shifted Range to 2225-2000 cm⁻¹ and 1800-1200 cm⁻¹

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



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



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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

Note: Dry gas purge recommended. Please contact us for installation recommendations.