



# Spero-QT®

## ULTRAFAST, 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.

### 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
- Live video-rate IR imaging
- High-sensitivity measurements (< 1 mAU)
- Fast hyperspectral scan speeds (> 7 M spectral points per second)
- Multiple, high-NA, large FOV imaging optics
- 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

### IMAGING MODES

IR Reflection  
IR Transmission  
Visible  
Visible Live  
Mosaic Stitching (IR and Visible)  
Hypercube Collection  
Sparse Hypercube Collection

### SPECIFICATIONS

#### IR IMAGING MODE

| PARAMETER                              | HIGH-RESOLUTION IR (0.7 NA)                                                            | WIDE-FIELD IR (0.3 NA) |
|----------------------------------------|----------------------------------------------------------------------------------------|------------------------|
| Wavelength Range                       | Customizable between 2300 cm <sup>-1</sup> and 800 cm <sup>-1</sup> (4.4 μm - 12.5 μm) |                        |
| Image Cube Acquisition Time            | < 40 s (450 absorbance images collected at 2 cm <sup>-1</sup> spacing)                 |                        |
| 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 Resolution                    | Variable, down to 2 cm <sup>-1</sup>                                                   |                        |
| Minimum Detectable Signal              | < 3 mAU per scan                                                                       |                        |
| Working Distance                       | > 8 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* |
| Stage Travel Y      | > 50 mm* |
| Stage Travel Z      | > 10 mm  |
| Stage Repeatability | < 1 μm   |

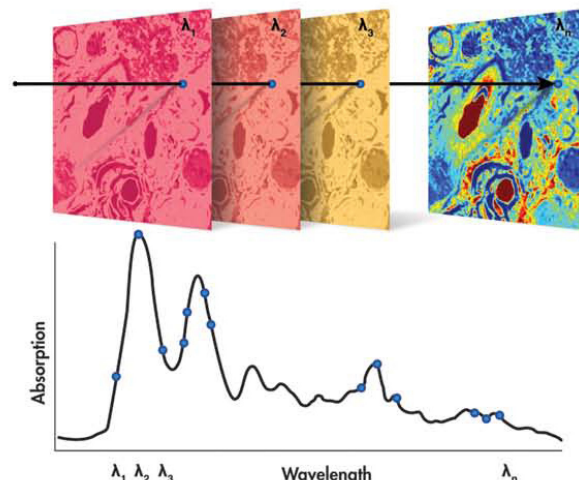
\*Customizable up to 100 mm

### DATA OUTPUT FORMATS

MATLAB®  
ChemVision  
ENVI®

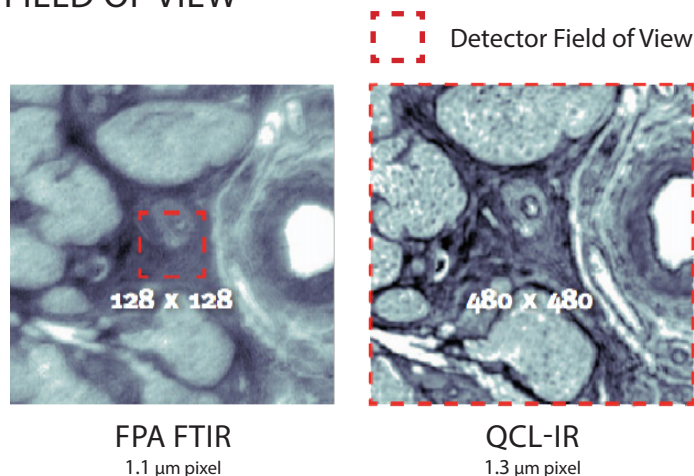
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## HYPERSPECTRAL DATA CUBE



A high-resolution spectrum is collected simultaneously at every image pixel position (230,400 pixels per FOV) in about 35 seconds.

## FIELD OF VIEW



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.