

# MonoVista CRS+

## Raman Microscopes



### **MonoVista CRS+ Benefits**

- Deep UV to NIR wavelength range
- Up to 4 integrated multi-line lasers plus port for large external lasers
- Dual beam path for UV and VIS/NIR
- Motorized Laser selection
- Auto Alignment and calibration
- High spectral resolution, i.e. FWHM <math>< 0.2 \text{ cm}^{-1}</math> @ 633 nm
- Low frequency range down to  $\pm 10 \text{ cm}^{-1}$  with Ultra Narrow band notch filters
- High frequency range up to  $9.000 \text{ cm}^{-1}$  (@ 532nm), useful for photo luminescence
- Peltier and liquid nitrogen cooled detectors
- Upright, inverted and dual microscopes
- Stepper motor and piezo driven XYZ stages
- Fast Raman Mapping
- Heating/ cooling stages and Helium temperature Cryostats
- Combined Raman and AFM
- Motorized polarization optics

# MonoVista CRS+

## Raman Microscopes

The Raman Microscope Systems from Spectroscopy & Imaging GmbH offer new unmatched flexibility combined with easy handling.

We offer solutions with medium and highest spectral resolution instruments performing best stray light rejection, needed for low-frequency Raman spectroscopy.

The perfect instrument to be used as "working horse" and powerful research tool as well.

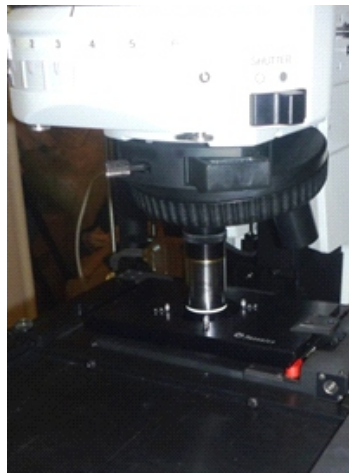
MonoVista CRS+ Raman Microscope systems from S&I are based on the Olympus microscopes BX51WI and IX71 for upright and inverted setups.

The confocal Raman microscope offers a spatial resolution in the micron scale.

A software driven XYZ stage enables automated 3D mapping.

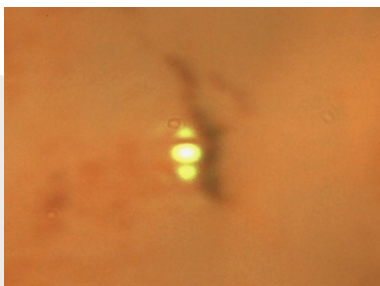


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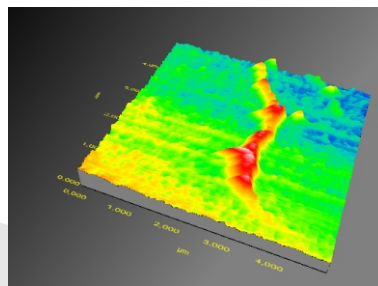


### Microscope Benefits

- Upright Olympus Microscopes BX51WI
- Inverted Olympus Microscope IX71
- Dual Microscope, consist of Upright and Inverted Microscope
- Wide range of UV, VIS and NIR objectives
- Objectives with long working distance
- Motorized XYZ stages with resolution of less than 50 nm
- Piezo XYZ stages with resolution of less than < 1nm
- Heating stages for up to 1500 °C
- Heating and cooling stages for - 196°C to 600°C
- Helium temperature Cryostats
- Combined Raman and AFM with Nanonics and JPK Instruments AFM systems
- Laser safety class I option

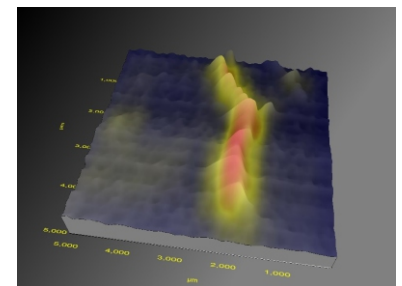


Microscope Image



Carbon Nanotube Sample

AFM Image



AFM plus Raman Image

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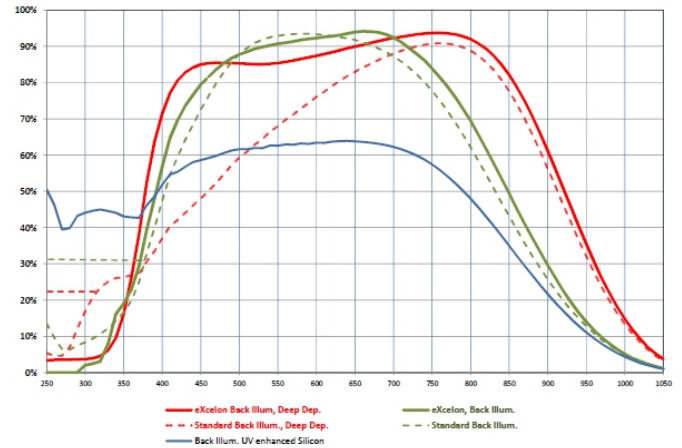
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## Raman Microscopes

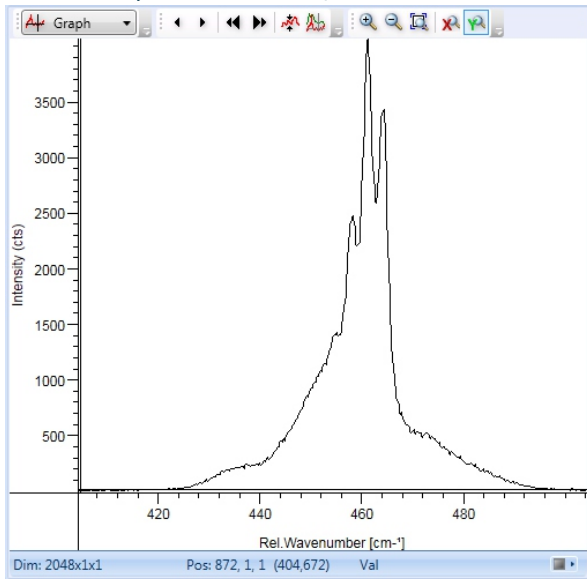
### Wide Range of Spectroscopy Detectors

- Peltier and liquid nitrogen cooled detectors
- CCD Detectors with different formats and pixel sizes
- InGaAs Array detectors
- EMCCDs for fastest Raman mapping
- Back Illuminated eXcelon CCD detectors with lowest etaloning
- Photon Counting PMT systems

### Quantum Efficiency curves of different CCD devices



Spectral Resolution, shown on CCL4



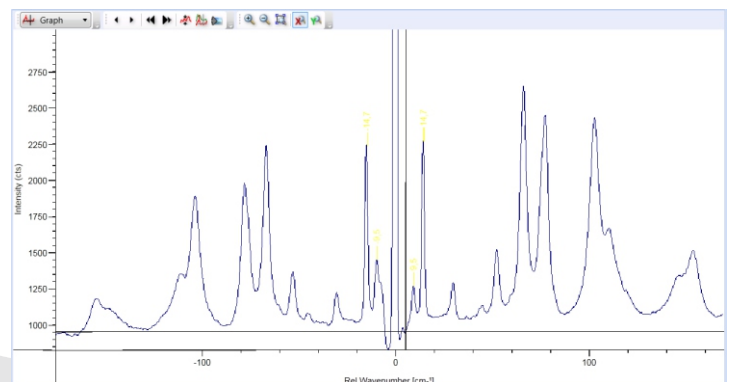
### Imaging corrected Spectrographs

- Spectrographs with 500 and 750 mm focal length
- Image corrected optics provide superior imaging quality for multi-track applications
- Dual entrance and dual exit ports
- Interchangeable Grating Turrets with 3 gratings per turret
- Motorized Slits with 0 to 3 mm width
- Optional Silver or gold coated mirrors
- Choice of more than 100 gratings available for the best spectral range, throughput and dispersion
- Stepping motor scanning system with microprocessor control provides superior precision and repeatability of wavelength positioning

### Laser and Filters

- Deep UV to NIR wavelength range
- Up to 4 integrated multi-line lasers and port for large external lasers
- Dual beam path for UV and VIS/NIR
- Motorized Laser selection
- Auto Alignment and calibration
- Edge filter from UV to NIR
- Ultra Narrow band notch filters for 488, 514, 532, 633, 785 and 1064 nm

Stokes/Anti-Stokes spectrum from L-Cystine, Taken with Ultra Narrow Band Notch Filters



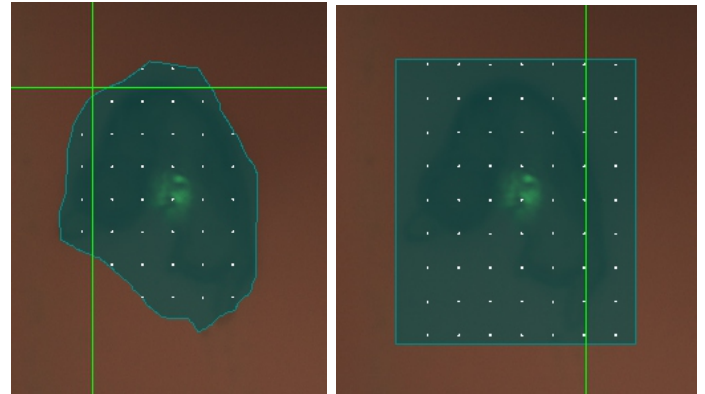
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## Raman Microscopes

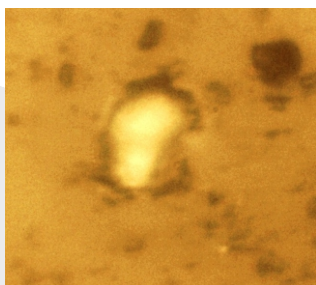
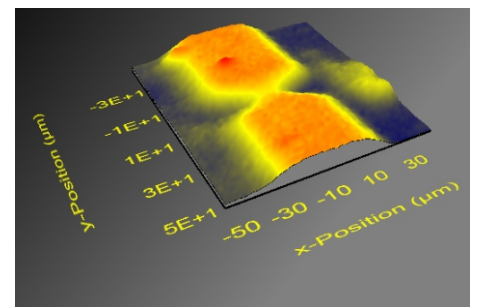
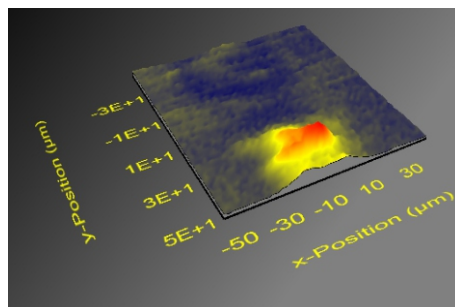
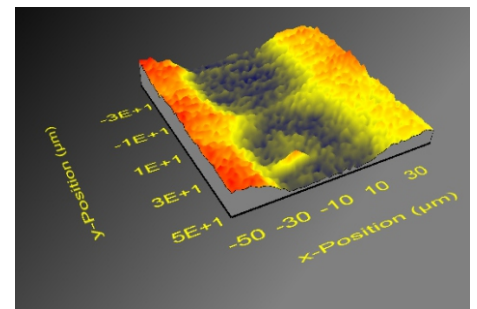
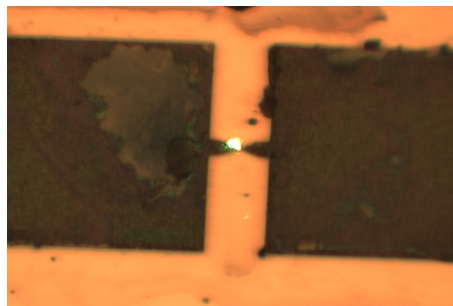
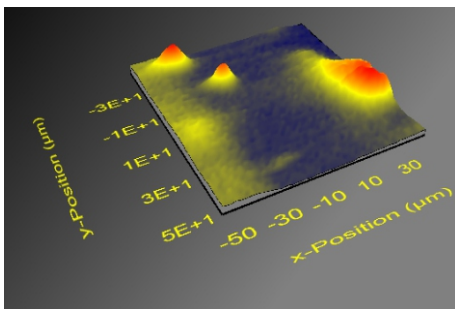
### Mapping features like:

- Line mapping in X, Y and Z
- XY mapping with autofocus
- XYZ mapping
- Point by point mapping
- Fast mapping
- Fast mapping with line focus
- Rectangular and free hand mapping area selections
- Enhanced mapping analysis and display routines

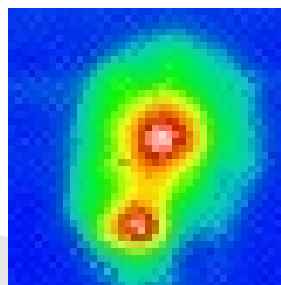
### Mapping Area Selection



### 3D Raman Images from different Components on one Sample

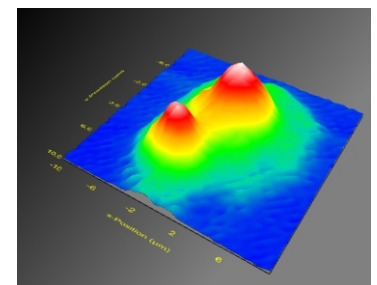


Microscope Image



Images from an Enclosure

2D Raman Image



3D Raman Image

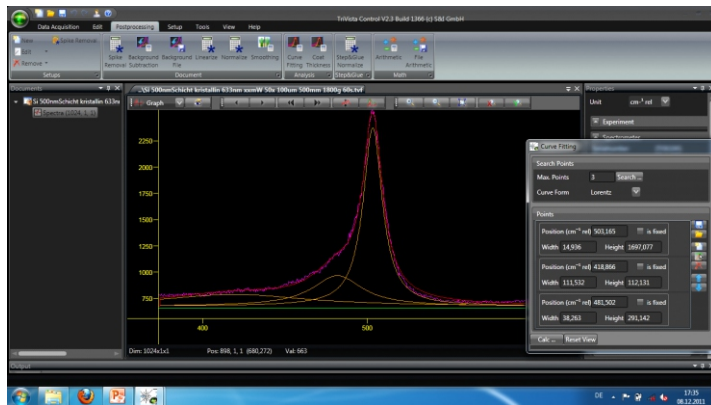
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## Raman Microscopes

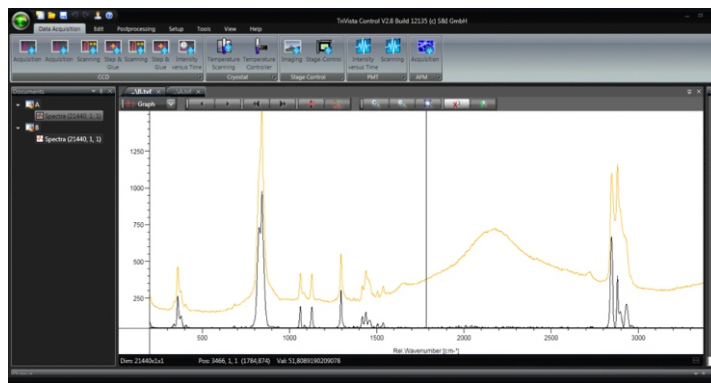
### Software Features

- Auto alignment for laser input and Raman signal
- Wavelength and intensity calibration
- Temperature control for heating-, cooling stages and cryostats
- Raman mapping with auto focus
- Step by step and fast Raman mapping
- Various Postprocessing routines
- Fluorescence and background suppression
- Spectra library module
- Various data import and export formats
- AFM control

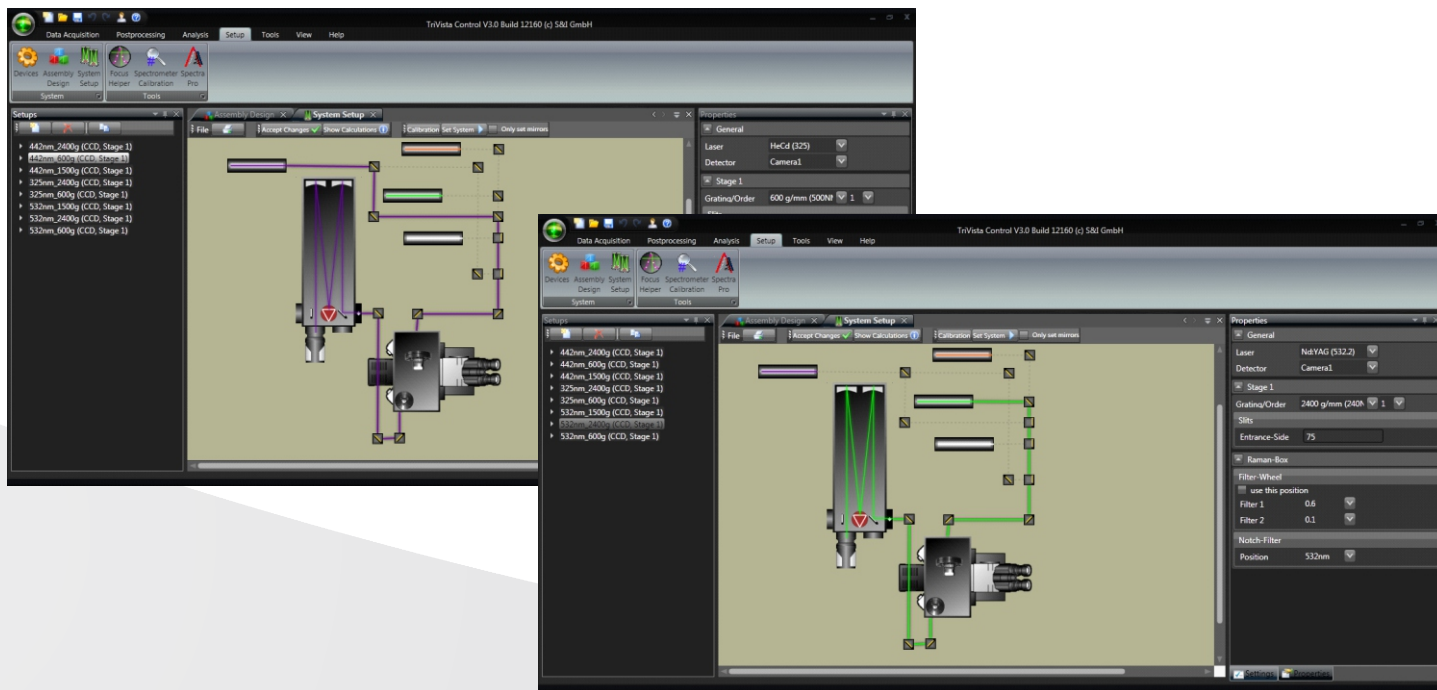
### Curve Fit and Deconvolution



### Fluorescence and Background rejection



### Hardware Setups and Laser Selection



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