



MonoVista Confocal Raman Systems



Deep UV to IR wavelength range · Up to 8 integrated multi-line lasers plus port for large external lasers · Dual beam path for UV and VIS-IR · Motorized laser selection · Auto alignment and calibration · High spectral resolution, i. e. FWHM $< 0.25 \text{ cm}^{-1}$ @ 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 cm^{-1} (@ 532 nm), useful for photo luminescence · Peltier and liquid nitrogen cooled detectors · Upright, inverted, dual and custom 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



Spectroscopy & Imaging GmbH

MonoVista CRS³

Confocal Raman Microscopes

MonoVista CRS³ Raman Microscope Systems from S&I Spectroscopy & Imaging GmbH offer unmatched flexibility combined with easy handling.

Low, medium and highest spectral resolution instruments are available, performing best stray light rejection, needed for low-frequency Raman spectroscopy.

Perfect instruments to be used as a „working horse“ and powerful research tools as well.

Customized systems available, to perfectly fit specific application demands. Extraordinary configurations can be realized.

The systems are based on Olympus Microscopes for upright and inverted setups and offer diffraction limited spatial resolution.

A Software driven XYZ stage enables automated 2D or 3D mapping in point by point or fast scanning mode.

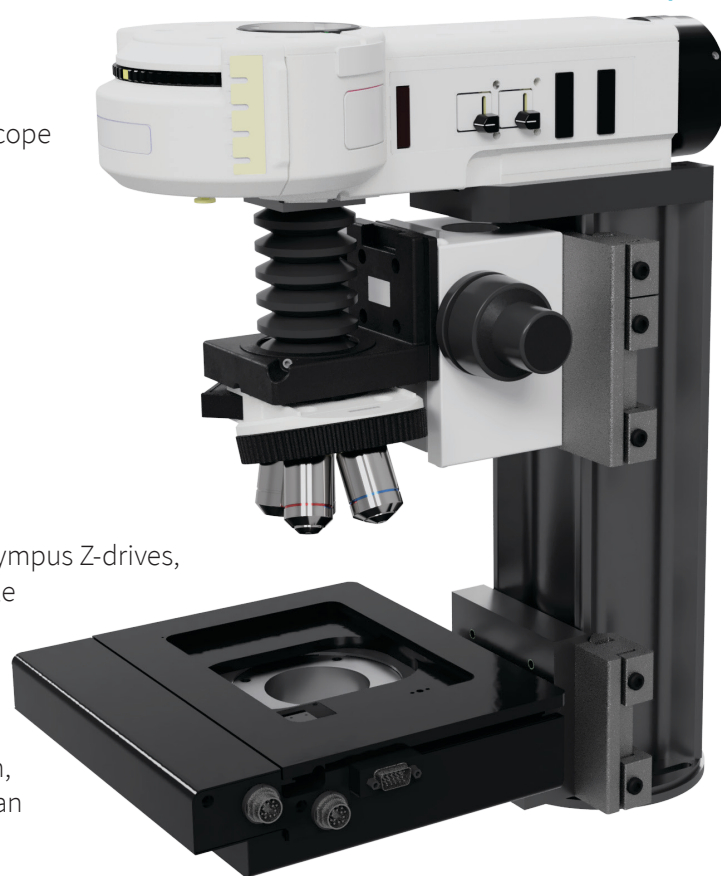
The system is fully integrated, housing all optical components including up to 8 internal or external lasers (depending on laser sizes).

Laser Safety Class I can be enabled optionally.

Microscope Benefits

- Upright Olympus microscopes BX51WI / BX53M
 - Inverted Olympus microscopes IX71 / IX73
 - Dual microscopes, consist of Upright and Inverted Microscope
 - Wide range of UV, VIS and NIR objectives
 - Objectives with long working distance
 - Motorized XYZ stages with resolution < 50 nm
 - Piezo XYZ stages with resolution < 1 nm
 - Heating stages for up to 1500 °C
 - Heating and cooling stage 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
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- S&I can provide custom microscope bodies, relying on Olympus Z-drives, Köhler illumination and objectives, but providing a variable XYZ-Stage mount
 - These variable mounts can be removed or adjusted in height easily and quickly, to create additional working range or a large working area underneath the objectives
 - Custom-made reflected and transmitted light illumination, motorized objective revolvers and white-light switching can also be provided, for fully motorized microscopes

Custom Microscope



A.P.E. Research AFM



Cryostat



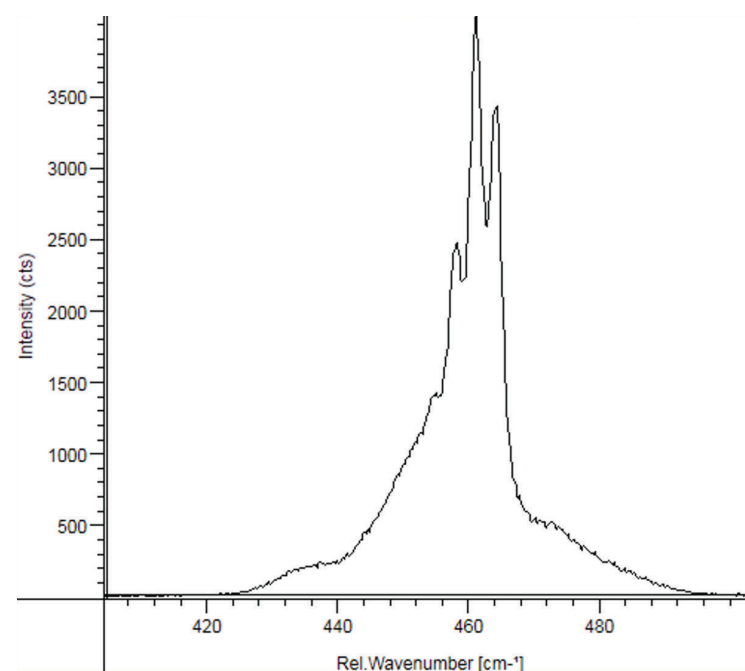
Heating Stage



System Components

- Lasers and filters from deep UV to IR
- Up to 8 integrated multi-line lasers and port for large external lasers. Motorized source selection
- Auto alignment for laser input and Raman signal
- Auto wavelength and intensity calibration
- Dual beam path for UV and VIS-IR
- Ultra Narrow band notch filters (10 cm^{-1}) for 488, 514, 532, 633, 785 and 1064 nm
- Polarization dependent Raman (polarizer/analyzer directions freely selectable by software)
- Temperature control for heating-, cooling stages and cryostats
- Various postprocessing routines
- Fluorescence and background suppression
- Spectral library module
- Various data import and export formats
- Atomic-Force-Microscopy (AFM) Module
- Time-Correlated-Single-Photon-Counting (TCSPC) Module
- C#, LabView and Python scripting possibility

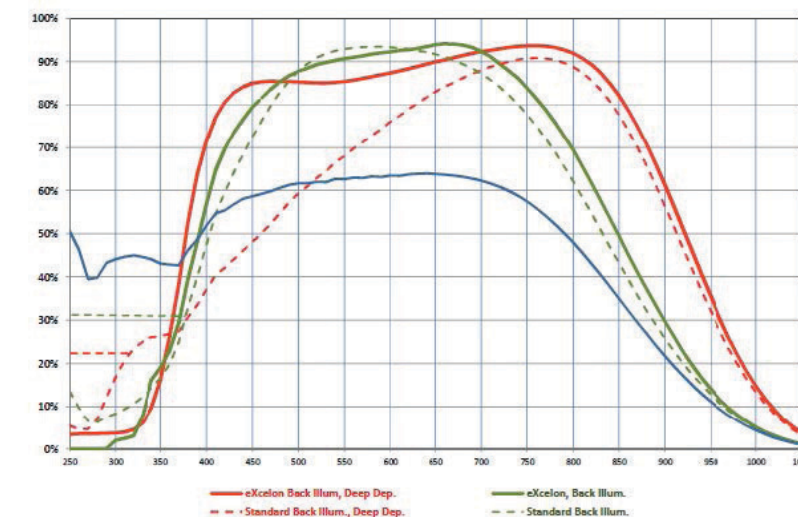
Spectral Resolution on CCL4



Spectrometer Benefits

- Imaging corrected spectrographs with 150, 200, 300, 500 or 750 mm focal length
- Optional dual entrance and dual exit ports
- Interchangeable grating turrets with 3 gratings
- 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
- Wide range of spectroscopy CCDs, peltier or liquid nitrogen cooled, back illuminated or front illuminated, with different formats and pixel sizes
- InGaAs array detectors for NIR and EMCCDs for fastest Raman mapping
- Photon counting PMT systems for special applications

Quantum Efficiency curves of different CCD devices

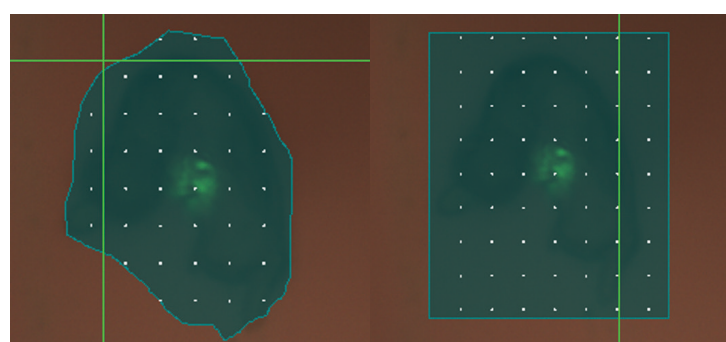


Mapping Features

- Line mapping in X, Y and Z
- XY mapping with autofocus
- XYZ mapping (3D)
- Point by point mapping
- Fast mapping
- Fast mapping with line focus
- Rectangular and Interpolated point to point line selection
- Enhanced mapping analysis and display routines

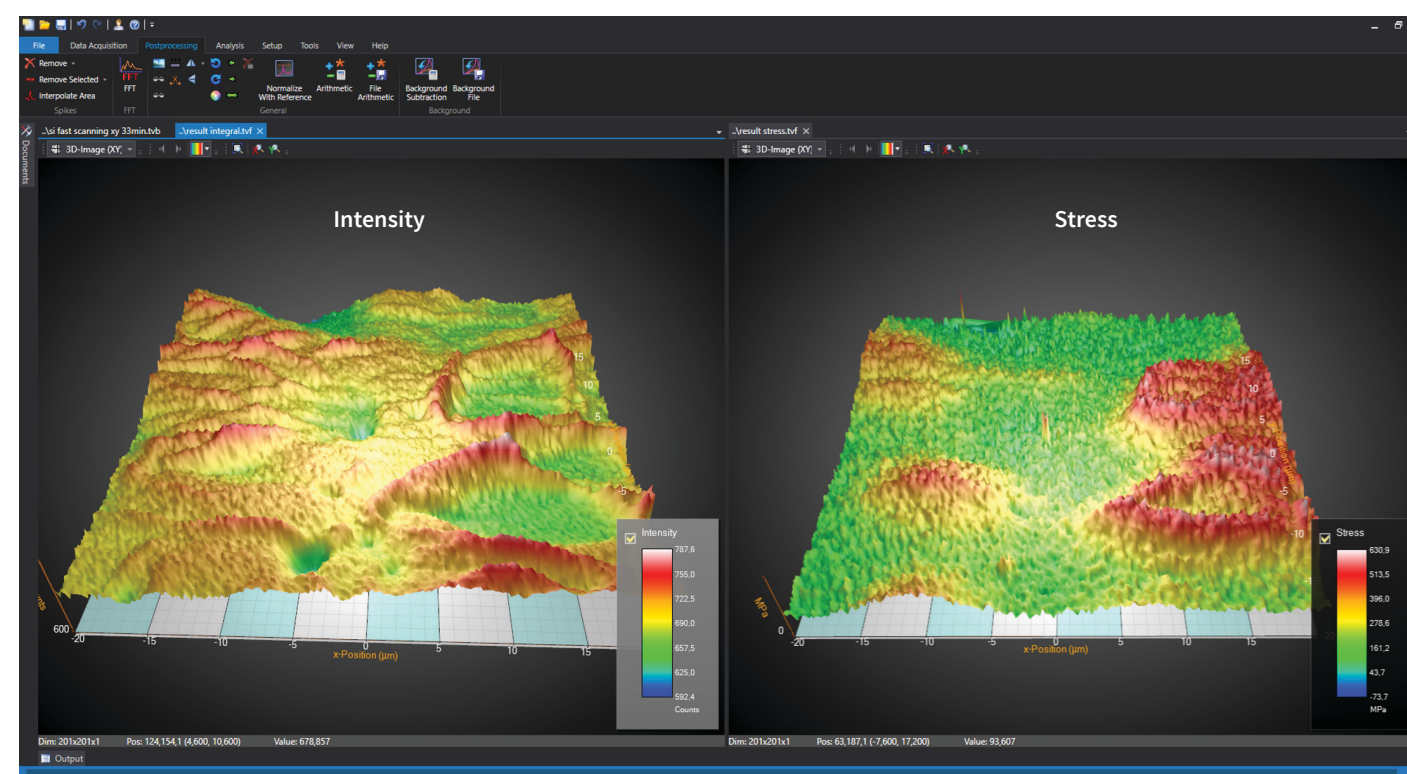


Mapping Area Selection



VistaControl Example Acquisition

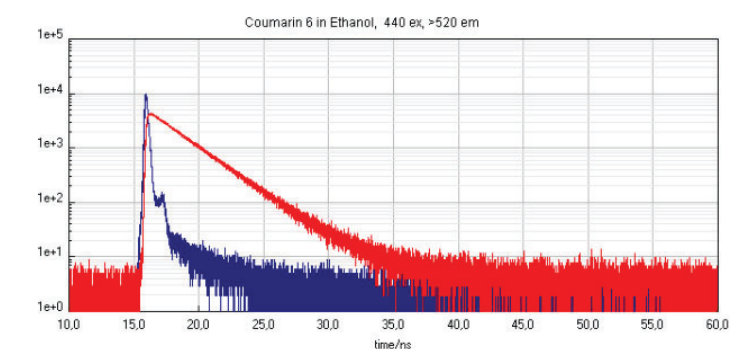
Mapping of silicon sample, with stress analysis



TCSPC

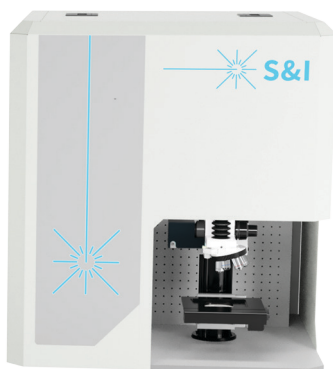
Time-Correlated Single Photon Counting

- Support for PicoQuant and Becker & Hickl TCSPC hardware (controller, laser, detectors)
- Measurement functions for time-resolved measurements, post-processing and analysis of measured spectra
- Requires additional 3rd party hardware from PicoQuant or Becker & Hickl





MonoVista Website



Specification	MonoVista CRS ³ Core	MonoVista CRS ³
Type of System	Confocal Raman/PL Spectroscopy System	
Number of Monochromators	1	
Monochromator focal lengths available	150, 200, 300, 500 mm	300, 500, 750 mm
Number and type of Entrance ports	up to 2 3 mm slit assemblies	
Number and type of Exit ports	up to 2 3 mm slit assemblies or array detector ports	
Housing available	Fully housed Sliding door for microscope cover optionally possible Laser Safety Class I optionally possible	
Microscope system included?	Yes	
Spatial resolution with 100x, NA 1.0 objective, @ 532 nm	< 350 nm XY < 1 µm Z	
Macro-Chamber possible?	Yes (externally)	
Fiber-Coupled microscope or extensions, like probes possible?	Yes	
Typical spectral resolution dispersion/pixel, 20 µm pixel size detector @ 633 nm, on 2400 g/mm grating	0.009 nm / 0.32 cm ⁻¹ with 500 mm spectrograph	0.006 nm / 0.25 cm ⁻¹ with 750 mm spectrograph
max. Laser Lines	4	8
max. Detectors	1 on 150 or 200 mm version 2 on all other versions 4 via optional quick-change mount	2 on all versions 4 via optional quick-change mount
Spectral range	200 - 2200 nm (astigmatism corrected) up to 20 µm optionally possible	
Number of grating turrets	1 Standard up to 3 optionally	
Number of gratings Standard / max	3 / 9 2 on 150 and 200 mm	3 / 9
Excitation laser range	213 nm - 1064 nm	
max. System size in cm (L x W x H)	91 x 79 x 99	131 x 79 x 99
Typical weight incl. detectors and accessories	275 kg	350 kg
Power requirements	2 x 230 V / 16 A	



Contacts