

S&I

TriVista Systems



Deep UV to IR wavelength range · Dual beam path for UV and VIS-IR · Variable bandpass tuneable filter · Subtractive and additive dispersion · Bypass to use the last stage only · Auto Alignment and calibration · High spectral resolution, i. e. FWHM $< 0.1 \text{ cm}^{-1}$ @ 633 nm · Low frequency range down to less than 5 cm^{-1} without additional filters · High frequency range up to 9.000 cm^{-1} (@ 532 nm), 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



S&I

Spectroscopy & Imaging GmbH

TriVista CRS³

Confocal Raman Microscopes

TriVista CRS³ Raman Microscope Systems from S&I 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.

TriVista CRS Raman Microscope Systems from S&I are based on the Olympus microscopes BX43, BX53, BX51WI and IX73 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.

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



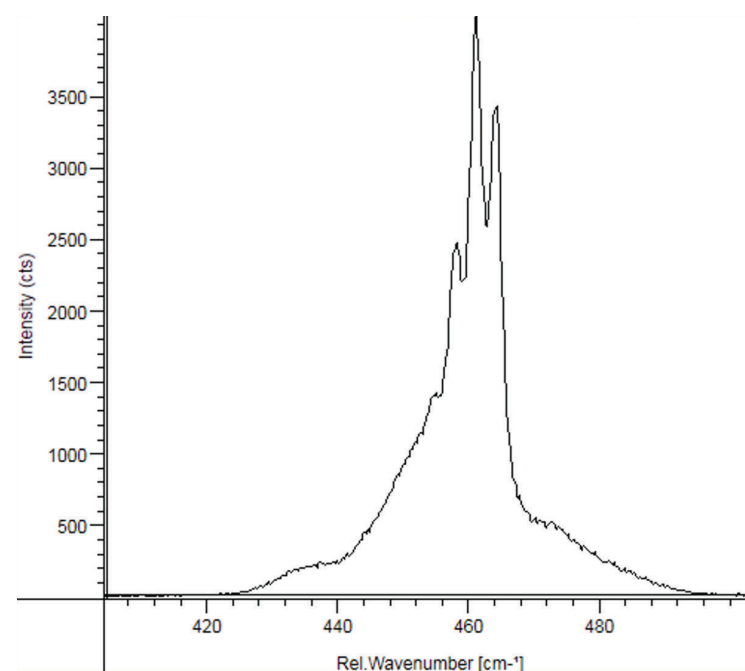
Heating Stage



System Components

- Lasers and filters from deep UV to IR
- Up to 14 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
- 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

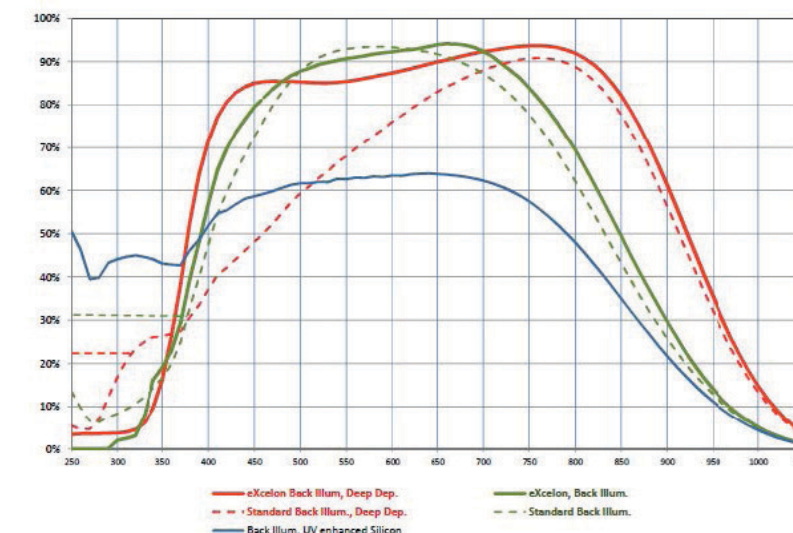
Spectral Resolution on CCL4



Spectrometer Benefits

- Triple Imaging corrected Monochromator/ Spectrographs with different focal lengths
 - TR 555 with 3 x 500 mm
 - TR 557 with 2 x 500 mm plus 750 mm
 - TR 777 with 3 x 750 mm
- Additive and Subtractive Dispersion
- 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

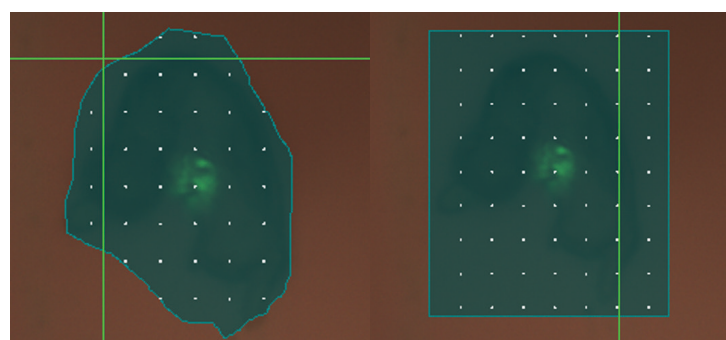


Mapping Features

- 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

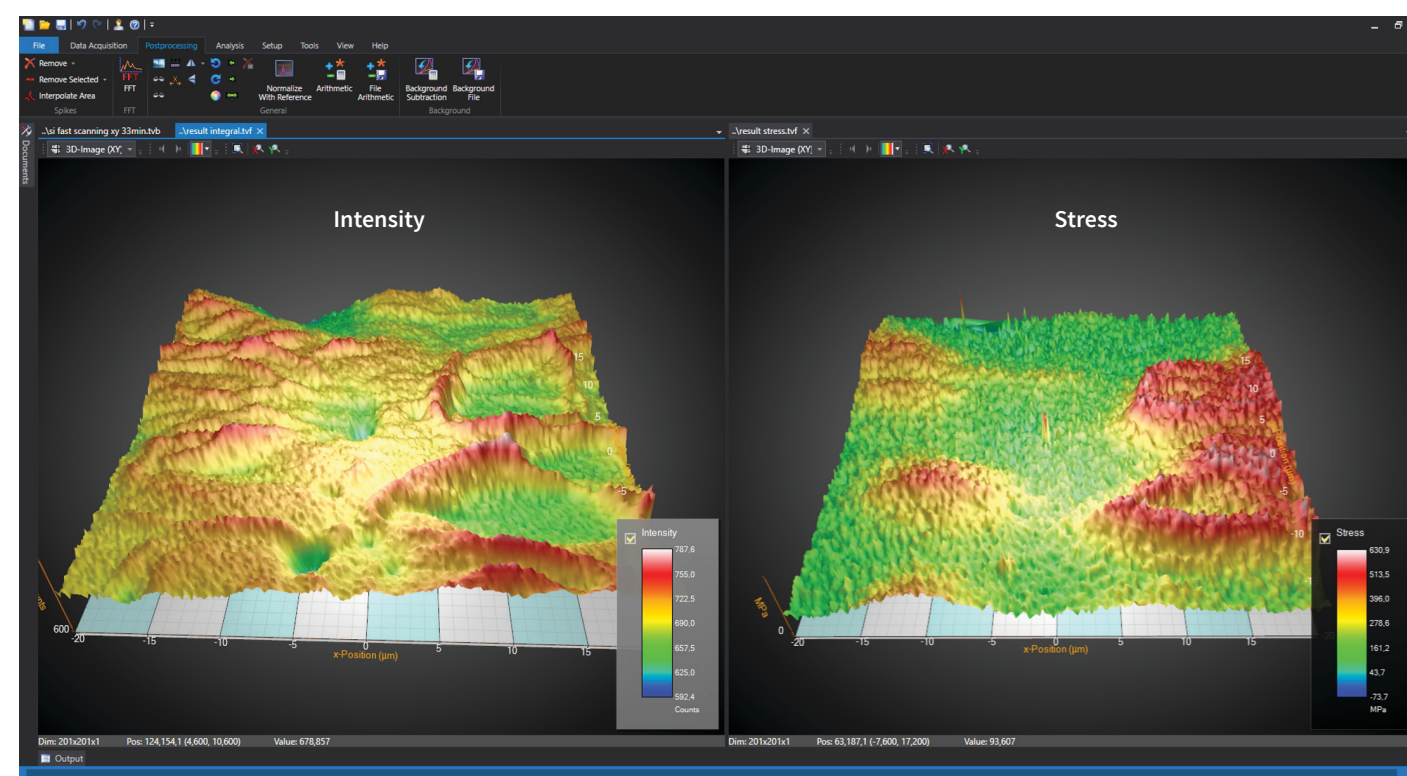


Mapping Area Selection



VistaControl Example Acquisition

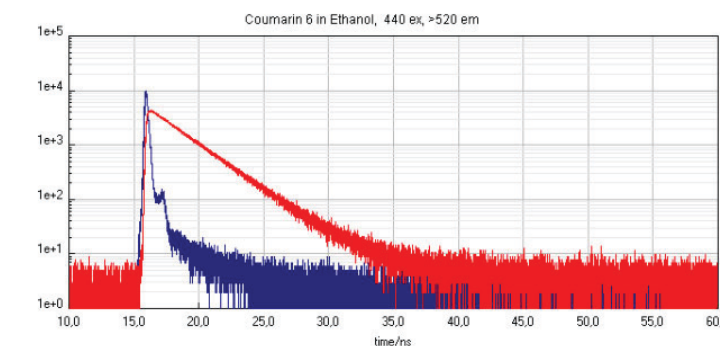
Mapping of silicon sample, with stress analysis



TCSPC

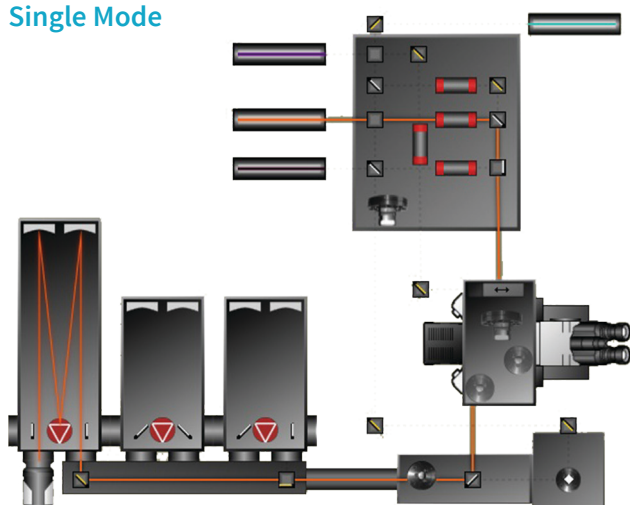
Time-Correlated Single Photon Counting

- 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

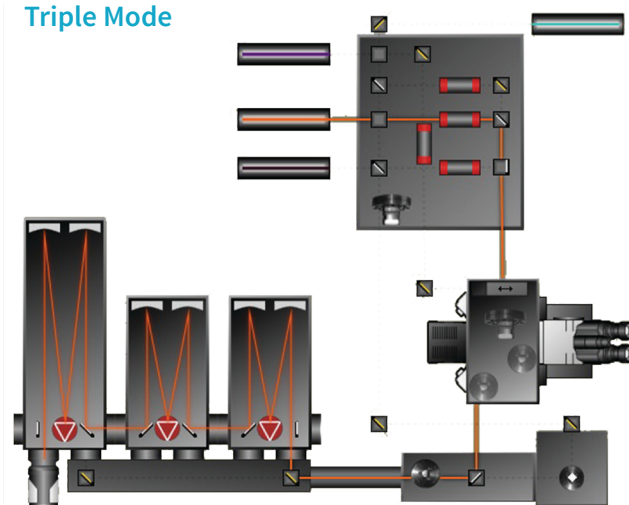


Example Configuration

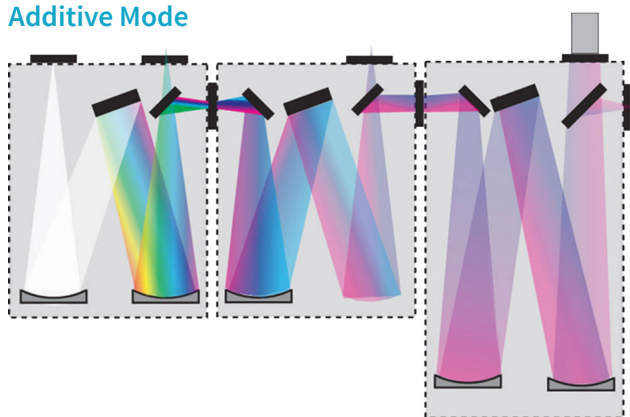
Single Mode



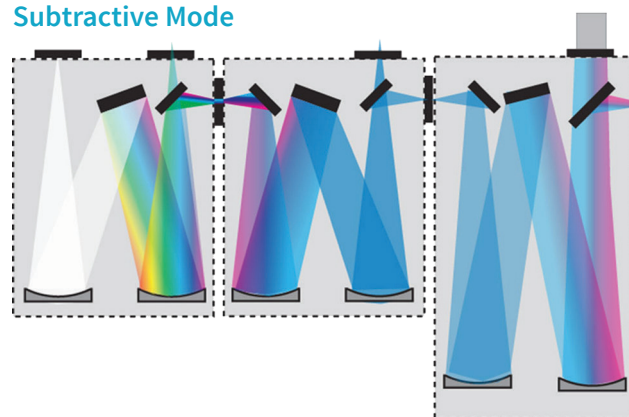
Triple Mode



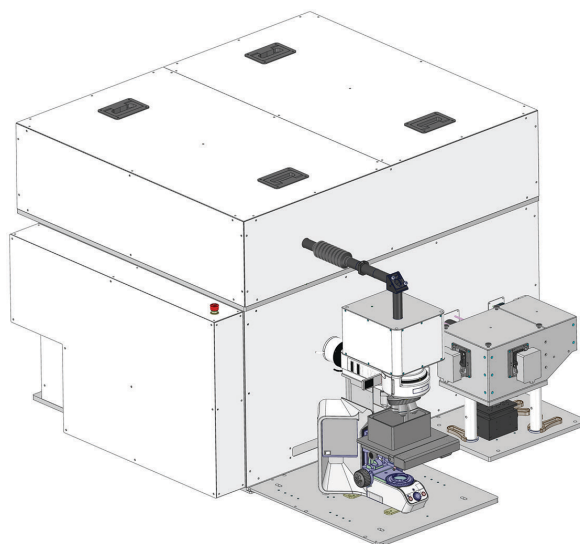
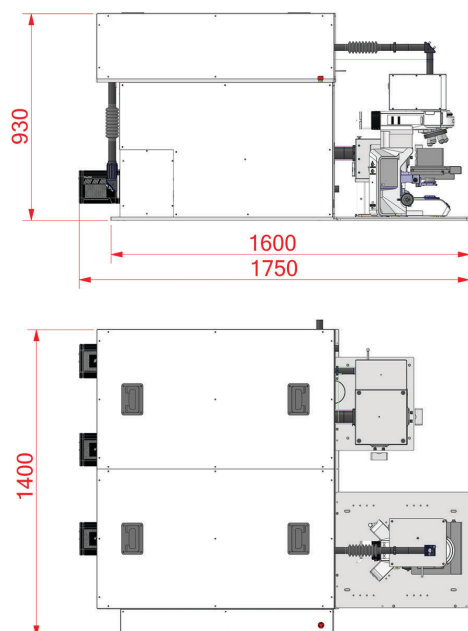
Additive Mode



Subtractive Mode

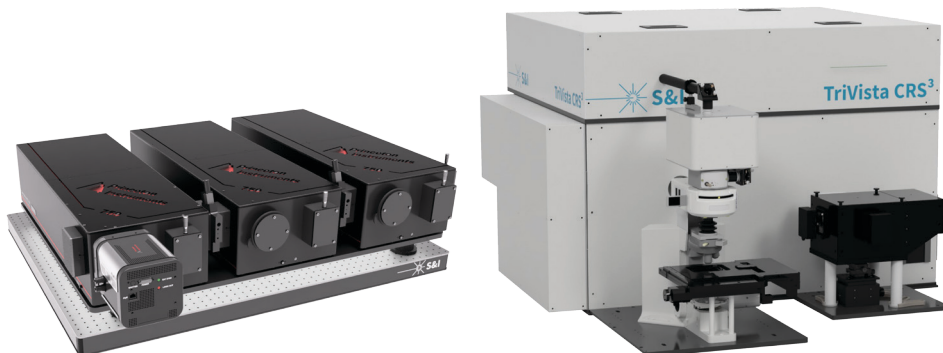


System measurements





TriVista Website



Specification	TriVista Basic	TriVista CRS ³
Type of System	Triple Monochromator System	Confocal Raman/PL Spectroscopy System
Number of Monochromators	3	
Monochromator focal lengths available	3 x 300 mm or 500 mm or 750 mm 2 x 300 mm and 1 x 500 mm or 2 x 500 mm and 1 x 750 mm	
Number and type of Entrance ports	up to 4 3 mm slit assemblies	
Number and type of Exit ports	up to 4 3 mm slit assemblies or array detector ports	
Housing available	Open system for user's side integration	Fully housed Sliding door for microscope cover optionally possible Laser Safety Class I optionally possible
Microscope system included?	optional	Yes
Spatial resolution with 100x, NA 1.0 objective, @ 532 nm		< 350 nm XY < 1 µm Z
Macro-Chamber possible?	Yes (externally)	Yes
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	0.002 nm / 0.08 cm ⁻¹ with triple 750 mm spectrograph (2250 mm focal-length) additive mode	
max. Laser Lines	open system user and space dependent	7 (14 optionally possible)
max. Detectors	4 on all versions 8 via optional quick-change mount	
Spectral range	> 185 nm - 20 µm	200 - 2200 nm (astigmatism corrected) up to 20 µm optionally possible
Number of grating turrets	3 Standard (1 per stage) 3 x 3 optionally	
Number of gratings Standard / max	9 / 27	
Excitation laser range	> 185 nm	213 nm - 1064 nm
max. System size in cm (L x W x H)	114 x 87 x 25 114 x 110 x 25 (incl. Bypass)	Base System 160 - 175 x 140 x 93
Typical weight incl. detectors and accessories	200 kg	500 kg
Power requirements	2 x 230 V / 16 A	



Contacts