

MonoVista CRS - Confocal Raman System



PI/Acton's new MonoVista Confocal Raman Microscope Systems are completely integrated Raman systems offering both macro and confocal micro analysis capabilities in a single system, enhancing experimental flexibility and allowing easy switching between macro and micro modes. Integration with Olympus upright and Inverted microscopes provides spectroscopic data with diffraction limited spatially resolved accuracy. Integrated laser options are available and the systems can also be integrated with single or multiple existing laser systems, allowing easy use of different excitation wavelengths. The unique modular mechanical design allows easy configuration and can be easily upgraded to grow with your needs.

Applications: Life science, Biochemistry, Materials analysis

Features	Benefits
Optically coupled Microscope and/or Macro chamber providing a dedicated Raman system for Macro and Confocal micro sampling	Full featured Turn Key Raman Spectrometer which allows easy switching from Micro to Macro mode
High stability base plate, with 5 point mounts	Ridged coupling assures long-term stability and repeatable measurements
Seamless operation through intuitive yet powerful software interface	Optimal system control allowing faster results and easy experimental set-up. Multi layer calibration assures precision measurements at any wavelength
Integrated lasers available	Completely integrated Raman solution
Can support single and multiple existing lasers	Switch between laser lines with ease
Imaging spectrometer used	Maximum confocal resolution
Multiple detector options including PI/Acton's full line of industry leading ultra low noise, ultra high sensitivity CCD cameras and InGaAs arrays	Maximum signal detection through the widest range of detectors commercially available
6 position filter wheel	Maximum flexibility
Dual spectrometer exits	May be configured for dual multichannel arrays, dual slits for single channel data collection or one of each
Triple grating turret	Allows three gratings to be used with calibration stored in spectrometer memory
Over 100 gratings available, including a full line of holographic gratings	Maximize your experimental results
Optional Large Raman Macro Chamber	
Design includes optics for right angle scattering, back scattering, and Brewster angle standard with the option for multi-pass of the laser beam	Analyze solids, liquids and gases with ease
Large capacity	Can accommodate several brands of cryostats
Modular optical design	Allows for easy setup and alignment of the sample
Back Alignment camera	Provides a real time image of the light entering the spectrometer for FAST and PRECISE sample positioning

MonoVista CRS Specifications

Microscope Options

BX51 Upright	<p>Manual XY stage 5 position revolving nose piece Wide range of objectives for deep UV to NIR is available Reflected and Transmitted light illumination Video Imaging system for sample visualization and precision targeting of small features</p>		
IX71 Inverted	<p>Manual XY stage 6 position revolving nose piece Wide range of objectives for deep UV to NIR is available. Reflected and Transmitted light illumination Video Imaging system for sample visualization and precision targeting of small features</p>		
Additional Options	<p>Motorized XY tables with step width <0.1μm and XY Raman Mapping Software Motorized Z- Focus with step width < 0.1μm and XYZ Raman Mapping and Auto-Focus Software Microscope Heating and cooling stages for various temperature ranges</p>		
Confocal Performance	Diffraction limited (1 micron)		
Excitation wavelengths available	532nm, 785nm; Other excitation wavelengths available upon request		
Spectrometer Systems	MonoVista CRS-3	MonoVista CRS-5	MonoVista CRS-7
Focal Length (mm)	300	500	750
Gratings per Turret	3	3	3
Aperture	f/4.0	F/6.0	f/9.0
Resolution	4 cm ⁻¹	1.2 cm ⁻¹	0.90 cm ⁻¹
Grating Size (mm)	68 X 84	68 X 84	68 X 68
Repeatability	+/- 1 Pixel	+/- 1 Pixel	+/- 1 Pixel
Raleigh rejection	Possible down to 30cm ⁻¹ depending on laser excitation wavelength and available filters		
Total CCD Coverage	<p>CCD coverage is dependant on grating selection and spectrograph mode Choice of three gratings on an individual grating turret allows one grating with low grove density to be matched to achieve an overview spectrum of 2000cm⁻¹ to 3000cm⁻¹</p>		
Detector Systems	<p>Choose between over 30 different Princeton Instruments CCD, ICCD, EMCCD and InGaAs multi channel arrays PMT, Si, Ge and other single channel detectors also available upon request</p>		
Wavelength Range	<p>200nm-2.2μ Multi Channel 190nm-<3 microns Single Channel Custom optical coatings available to optimize performance for all reflective surfaces</p>		

MonoVista CRS CCD Selection Chart

Model	Pixel Formats available[model]	Pixel size (μm)	Max. Cooling ¹	QE ² (peak QE) Options	System Read Noise ³
PIXIS:100	1340 x 100	20 x 20	-80°C	BI (95%),FI (50%),UV(50%),BR (90%)	2.5 e- rms
PIXIS:400	1340 x 400	20 x 20		BI (95%),FI (50%),UV(50%),BR (90%)	2.5 e- rms
PIXIS:2K	2048 x 512	13.5 x 13.5		BI (95%),UV(50%)	3.5 e- rms
PIXIS:256E	1024 x 256	26 x 26		OE (55%)	6 e- rms
Spec-10:100	1340 x 100	20 x 20	-120°C	BI (95%),FI (50%),UV(50%),BR (90%)	3 e- rms
Spec-10:400	1340 x 400	20 x 20		BI (95%),FI (50%),UV(50%),BR (90%)	3 e- rms
Spec-10:2K	2048 x 512	13.5 x 13.5		BI (95%),UV(50%)	3.5 e- rms
Spec-10:256	1024 x 256	26 x 26		OE (55%)	6 e- rms
OMA-V: 512-1.7	512 x 1	50 x 500	-100°C ⁴		520 e- rms
OMA-V: 1024-1.7	1024 x 1	25 x 500			
	1024 x 1	25 x 250			

1. Max. cooling is specified at an ambient temperature of 20°C.

2. F=Front illuminated, B=Back Illuminated, BR-DD=Back Illuminated Deep Depletion,UV=UV enhanced CCDs, Front illuminated UV enhanced with Lumogen, back illuminated UV enhanced with UnichromeTM

3. Read noise specification is for the entire detector system, not just the CCD. All read noise figures for 100 kHz readout rate (except for OMA-V, which is taken at 1MHz).

4. OMA-V standard cooling range is -50°C to -100°C. Enhanced option available for -70°C to -120°C cooling range, where required.

MonoVista CRS ICCD Selection Chart

	Model	Pixel Formats available	Pixel size (μm)	Image Area (mm x mm)	Max. Cooling ¹	Image Intensifier Size (mm)	Max. Digitization rate, Spectral rate ²
PI-MAX ICCD	PI-MAX2:512	512 x 512	24 x 24 (effective)	12.3 x 12.3	-20°C	18	5MHz, 1350 Hz
	PI-MAX:1024	1024 x 256	26 x 26	26.6 x 6.7	-20°C	18 or 25	1MHz, 185Hz (200μm high @ 630Hz)
TE cooled	PI-MAX:512	512 x 512	24 x 24 (effective)	12.3 x 12.3	-20°C	18	1MHz, 500Hz (200μm high @ 875Hz)
	PI-MAX:1K	1024 x 1024	13 x 13	13.3 x 13.3	-20°C	18	1MHz, 30Hz (200μm high @ 280Hz)

1. Max. cooling is specified at an ambient temperature of 20°C.

2. Spectral rate (spectra per second) with full vertical binning (front-illuminated CCD) is specified. Faster rates specified in parenthesis require "Custom Chip" software option.

Intensifier Option ³		Input Window	Spectral Range (nm)	Gating Speed ⁴ (ns FWHM)	Max Rep Rate ⁵ (kHz)	Resolution Limit (lp/mm)	Phosphor ⁶
Gen II	RB	BK7 Glass	200 - 900	< 2 (500 ps)	50 / 500	54 to 64	P43
	SB	BK7 Glass	200 - 700	< 2	50 / 500	54 to 64	P43
	UV	MgF ₂	150 - 900	< 2	50 / 500	54 to 64	P43
Gen III	HB	BK7 Glass	350 - 900	< 5	5 / 50	64 to 72	P43
	HQ	BK7 Glass	450 - 900	< 5	5 / 50	64 to 72	P43
	UNIGEN	Fiber	150 - 900	< 5	5 / 50	64 to 72	P43
Gen III filmless	HBf	Borosilicate Glass	300 - 700	< 2 (500 ps)	50 / 500	57 to 64	P43
	HQf	Borosilicate Glass	300 - 800	< 2 (500 ps)	50 / 500	57 to 64	P43

3. All intensifier specifications are for 18mm, fast-gate intensifiers. 25mm option available for PI-MAX:1024 models

4. Specified as optical FWHM. Inquire about ultra-fast gating option for 500ps.

5. Max rep rates are listed as "sustained / burst"

6. P46 phosphor available upon request

See individual data sheets for more detailed specifications.

Princeton Instruments



www.piaction.com

email: moreinfo@piaction.com

USA +1.877.4 PIACTION | Benelux +31 (347) 324989

France +33 (1) 60.86.03.65 | Germany +49 (0) 89.660.779.3

Japan +81.3.5639.2741 | UK +44 (0) 28.38310171