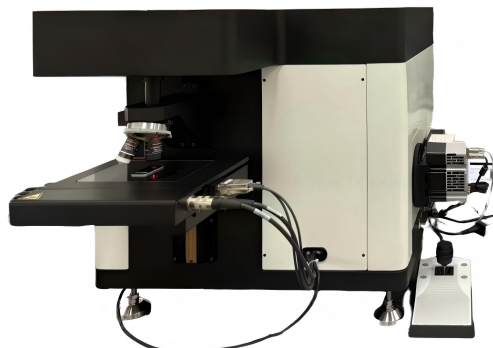


Confocal Raman Microscope

MODELS RAM-M330 / RAM-M350

Multi-wavelength confocal Raman microscopy with photoluminescence analysis



RAM-M330

RAM-M350

01

TRIPLE WAVELENGTH

Configurable 532/633/785 nm excitation with automatic software-controlled switching.

02

ULTIMATE RESOLUTION

Spectral resolution $<0.9 \text{ cm}^{-1}$ (M350) with sub-micron lateral imaging at $0.5 \mu\text{m}$.

03

SUPERIOR SENSITIVITY

Deep-cooled CCD (-60°C) delivers silicon third-order Raman peak SNR $>30:1$.

04

FULLY AUTOMATED

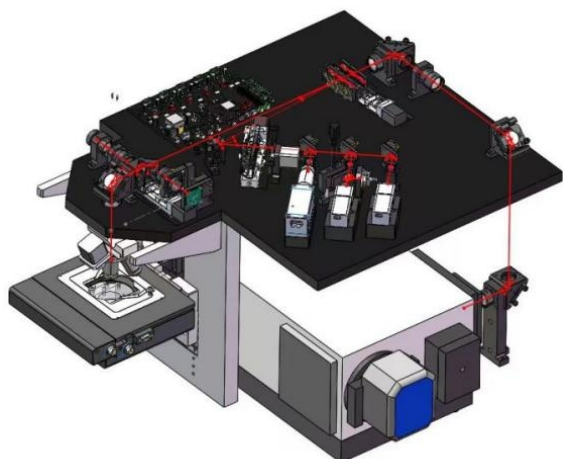
Auto-focus with image recognition and automated sample handling integration.

KEY ADVANTAGES

- Automatic switching between three excitation wavelengths (532/633/785 nm)
- Seamless switching between microscopic imaging and Raman modes
- Integration with automated sampling for unattended operation
- Spectral resolution up to 0.9 cm^{-1} for high-resolution analysis
- High sensitivity with Si third-order Raman peak SNR $> 30:1$
- Sub-micron high-resolution Raman imaging at $0.5 \mu\text{m}$ lateral
- Czerny-Turner spectrometer with $80\text{-}8000 \text{ cm}^{-1}$ range
- Motorized XYZ stage: $75 \times 50 \times 50 \text{ mm}$ travel, $0.05 \mu\text{m}$ step
- Back-illuminated CCD: 2000×256 pixels, -60°C cooling
- QE up to 90% across 200-1100 nm spectral range
- 4-position objective turret: 10x, 50x, 100x objectives
- Unified software: microscopy, Raman, and spectral analysis
- Compact footprint: only $720 \times 811 \times 553 \text{ mm}$
- RazorEdge ultra-steep edge filters for maximum signal

Confocal Raman Microscope

FEATURES & TECHNOLOGY



TRIPLE LASER SYSTEM

Integrated 532/633/785 nm laser sources with TEM00 mode and software-controlled automatic switching.

ADVANCED SPECTROMETER

Czerny-Turner design with 150/600/1800 g/mm gratings and software-controlled grating switching.

DEEP-COOLED CCD DETECTOR

Back-illuminated CCD at -60°C, 2000x256 pixels, 200-1100 nm range with QE up to 90%.

PRECISION XYZ STAGE

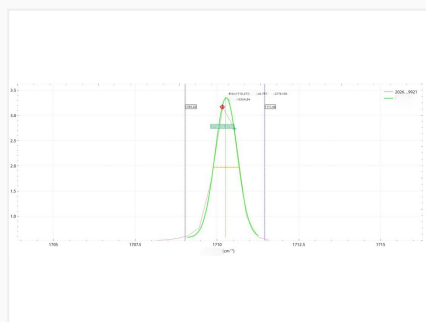
Motorized stage with 75x50x50 mm travel and 0.05 μm minimum step for Raman mapping.

AUTO-FOCUS INTELLIGENCE

Advanced image recognition algorithm enables precise focusing with automated sample handling.

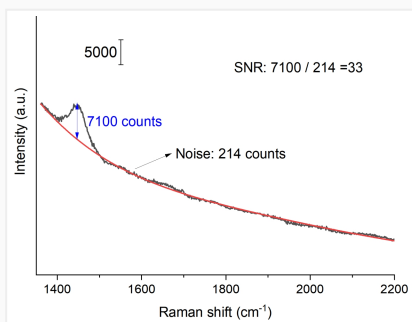
CORE TECHNOLOGIES

Engineered for precision and reliability



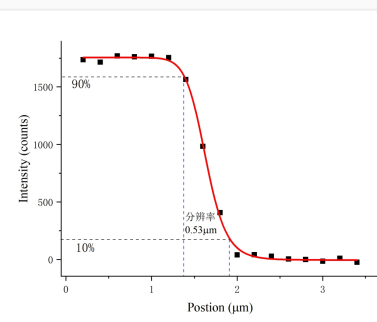
SPECTRAL RESOLUTION

- Half peak width: 0.797 cm^{-1}
- 585 nm neon lamp line test
- M350 achieves $<0.9 \text{ cm}^{-1}$
- Three gratings: 150/600/1800 g/mm
- Range: 80-8000 cm^{-1} (@532 nm)



SIGNAL SENSITIVITY

- Signal: 7100 counts peak intensity
- Noise: 214 counts (measured)
- SNR ratio: 33:1 (Si 3rd order)
- Deep-cooled CCD at -60°C
- QE up to 90% at peak wavelength



SPATIAL RESOLUTION

- Lateral resolution: 0.53 μm
- 10%-90% edge response test
- Diffraction-limited $<1 \mu\text{m}$ spot
- 0.05 μm stage minimum step
- Sub-micron Raman mapping

APPLICATION AREAS

MATERIALS SCIENCE

2D materials, stress analysis, polymer ID

PHARMACEUTICALS

API ID, polymorphism, tablet uniformity

LIFE SCIENCES

Cell imaging, protein analysis, biofilms

BATTERY RESEARCH

Electrode analysis, SEI characterization

GEMOLOGY

Gemstone auth., inclusion analysis

HERITAGE

Pigment ID, artwork authentication

Confocal Raman Microscope

TECHNICAL SPECIFICATIONS

INSTRUMENT PERFORMANCE

Excitation Wavelengths	532, 633, 785 nm (TEM00); triple configurable
Laser Power	532 nm: 100 mW; 633 nm: 35 mW; 785 nm: 100 mW; software adjustable
Laser Optical Path	Narrow-band filters; RazorEdge ultra-steep; auto switching
Laser Spot Size	Diffraction-limited <1 µm
Spectral Resolution	<2 cm ⁻¹ ; up to 0.9 cm ⁻¹ (M350, @1800 g/mm)
Spectral Range	80-8000 cm ⁻¹ (@532 nm)
Sensitivity	SNR >30:1 (silicon third-order Raman peak)
Imaging Resolution	Lateral resolution 0.5 µm

MICROSCOPE SYSTEM

Microscope Type	Upright research-grade reflected bright-field
Objective Turret	4-position motorized
Objectives	10x (NA 0.3), 50x (NA 0.5), 100x (NA 0.9)
Positioning System	Motorized XYZ stage; travel 75 x 50 x 50 mm
Stage Resolution	Minimum step 0.05 µm
Focus Mechanism	Z-axis motorized with auto-focus recognition

SPECTROMETER

Optical Design	Czerny-Turner configuration
Gratings	150, 600, 1800 g/mm; software switching
Spectral Range	80-8000 cm ⁻¹ (@532 nm)
Resolution (M350)	<0.9 cm ⁻¹ (1800 g/mm grating)
Resolution (M330)	<2 cm ⁻¹

PERFORMANCE HIGHLIGHTS

<0.9 cm⁻¹

Best spectral resolution (M350)

33:1 SNR

Si 3rd-order Raman peak

0.5 µm

Lateral imaging resolution

-60°C

CCD deep cooling

90%

Peak quantum efficiency

DETECTOR

Detector Type	Back-illuminated deep-cooled CCD
Operating Temperature	-60°C
Pixel Array	2000 x 256 pixels
Spectral Response	200-1100 nm
Quantum Efficiency	Up to 90%

SOFTWARE & CONTROL

Control Platform	Dedicated PC with unified software
Integration	Microscopy + Raman + spectral analysis
Automation	Seamless automation module connectivity
Modes	Automated white-light imaging + spectral acquisition
Auto-Focus	Advanced image recognition algorithm
Sample Handling	Customizable automated loading solutions

PHYSICAL & ELECTRICAL

Dimensions (WxDxH)	720 x 811 x 553 mm
Configuration	All-in-one integrated optical system
Operation Modes	Raman spectroscopy + Photoluminescence