ADVANCED RAMAN TECHNOLOGY

Research Confocal Raman Microscope

Ram-M400 **Ram-M800**

Flagship confocal Raman platform — up to four ultra-narrow-linewidth lasers, a true pinhole + slit confocal path, ultra-low wavenumber detection to ±5 cm^{-1}, and TERS-ready extension. Built for laboratories that need maximum spectral resolution and complete experiment flexibility.



Ram-M400 / Ram-M800 research confocal Raman microscope

Choose Your Configuration

Ram-M400 — 400 mm focal length

≤0.8 cm^{-1}

- Routine high-resolution research — pharma, materials QC, teaching labs
- Same lasers, detector options and extensions as M800

Ram-M800 — 800 mm focal length

≤0.5 cm^{-1}

- 2D materials, strain / phonon physics, closely spaced bands
- The flagship choice for demanding spectroscopy groups

≤0.5 cm^{-1}
spectral resolution class (Ram-M800, 800 mm focal length)

4 lasers
simultaneously installed, 213–1064 nm, software auto-switching

±5 cm^{-1}
ultra-low wavenumber cutoff — Stokes / anti-Stokes simultaneously

−100 °C
deep-cooled CCD option (air / water cooling) for weakest signals

ULTRA-HIGH RESOLUTION

400 / 800 mm focal-length spectrometers with up to 4 gratings (150–4964 g/mm). 50–9700 cm^{-1} Raman shift coverage with 200–1100 nm detector response.

TRUE CONFOCALITY

Physical confocal pinhole plus entrance slit, each 15–2000 µm continuously adjustable under software control — real axial sectioning, not software apodization.

LASER FLEXIBILITY

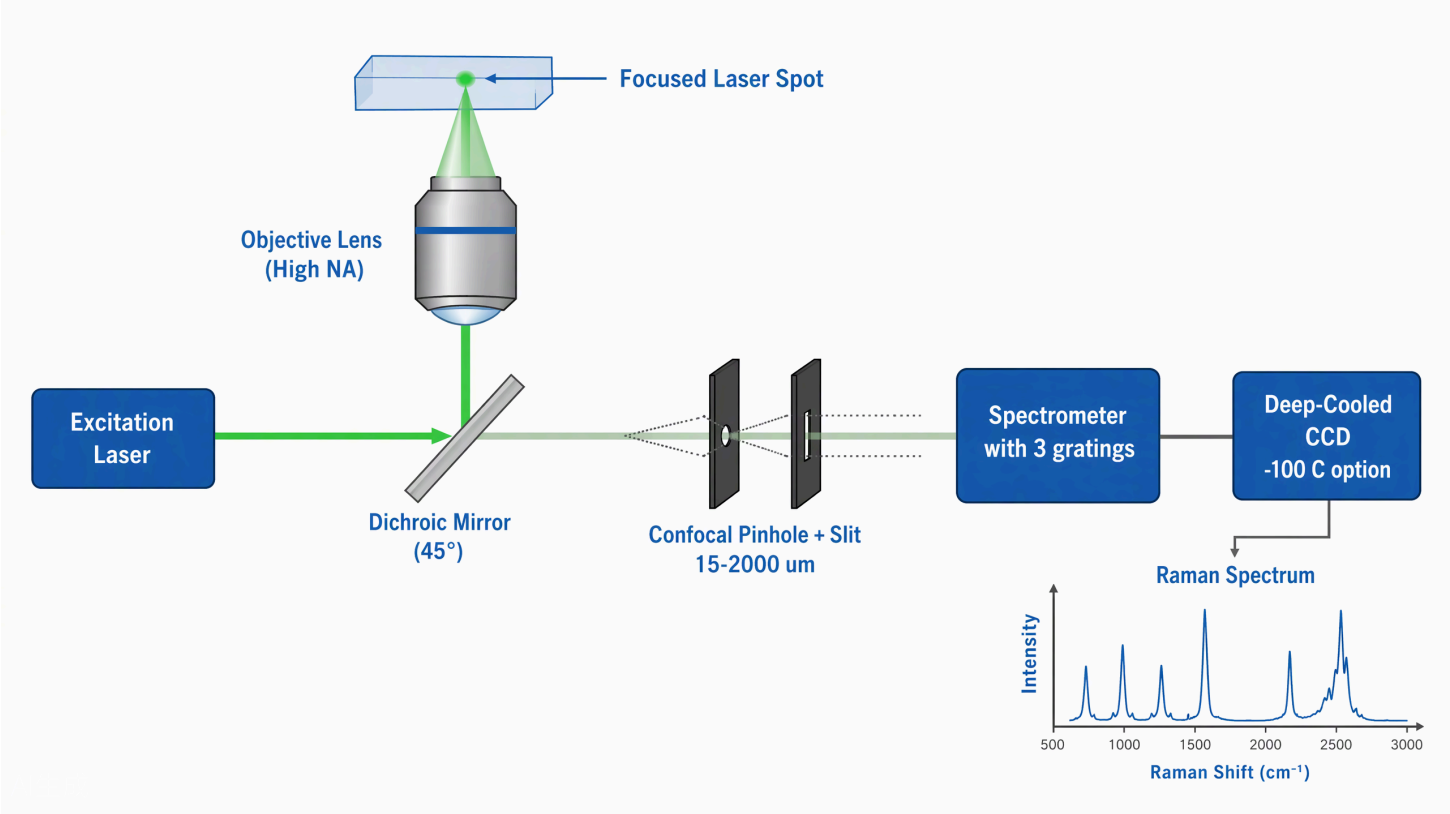
Up to 4 ultra-narrow-linewidth semiconductor lasers from 12 wavelengths (213–1064 nm). Edge-filter sets switch automatically; intensity 0.1–500 mW in 0.1 mW steps.

BEYOND STANDARD RAMAN

Ultra-low wavenumber module, 3-electrode electrochemical cell, −15… +55 °C stage, detachable fiber TERS probe for AFM coupling, remote probe option.

Call us: +86 189-6516-4839 · **Email:** sales@nwspec.com · **Address:** Xiongan Pilot Free Trade Zone, Hebei, China

How It Works — True Confocal Detection



1 · Excitation
Up to 4 software-selected lasers (213–1064 nm) deliver a focused spot from UV to NIR.

2 · Confocal collection
The same objective collects scattered light; the adjustable pinhole + slit reject out-of-focus depth.

3 · Dispersion
Long focal-length spectrometer with up to 3–4 gratings resolves bands to 0.5 cm^{-1} class.

4 · Detection
Deep-cooled CCD (−70 / −100 °C options) records Stokes and anti-Stokes down to ±5 cm^{-1}.

System Overview

Spectrometer
400 / 800 mm focal length; up to 4 gratings (150–4964 g/mm), software switching; 50–9700 cm^{-1} range.

Confocal microscope
Upright reflected brightfield; 5×/10×/20×/50× LWD/100× plan-achromatic objectives; 3 µm (50×) / 1 µm (100×) laser spot.

Laser bay
Up to 4 ultra-narrow-linewidth lasers, 213–1064 nm; RMS power stability ≤0.24% / 4 h; auto filter sets.

Detection
TEC deep-cooled CCD; −70 °C air / −100 °C water options; Si 3rd-order peak SNR >30:1, 4th peak visible.

Automation
Motorized XYZ stage (75×50×30 mm, 0.5 µm repeatability, 50 nm min step), auto-focus, auto mode switching.

Software
Raman / fluorescence / absorption imaging, auto fluorescence-baseline removal, library search + custom database.

Applications

Materials & 2D materials
Phonon physics, strain engineering, lattice dynamics

Pharmaceuticals
Polymorphism, salt screening, API ID, tablet uniformity

Energy research
Battery electrodes, SEI, operando electrochemical Raman

Life sciences
Label-free cell and tissue imaging, autofluorescence separation

Geology & heritage
Mineral ID, pigment analysis, artwork authentication

Catalysis & chemistry
In-situ reaction monitoring, photoluminescence + Raman

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Specifications

Item	Ram-M400	Ram-M800
Spectral resolution	≤0.8 cm^{-1}	≤0.5 cm^{-1}
Focal length	400 mm	800 mm
Gratings	Up to 4 mounted; 150 / 300 / 600 / 1200 / 1800 / 2400 / 3600 / 4964 g/mm options, software switching	
Spectral range	Raman shift 50–9700 cm^{-1}; detector response 200–1100 nm	
Ultra-low wavenumber	Stokes / anti-Stokes simultaneous acquisition, cutoff ≤ ±5 cm^{-1}	
Excitation lasers	Up to 4 ultra-narrow-linewidth semiconductor lasers, selectable from 213 / 244 / 257 / 355 / 405 / 488 / 532 / 633 / 785 / 830 / 850 / 1064 nm; e.g. 532 nm ≥60 mW (<0.00001 nm), 633 nm ≥30 mW, 785 nm ≥35 mW	
Power stability / control	RMS ≤0.24% / 4 h; intensity 0.1–500 mW software adjustable, 0.1 mW step	
Laser spot	3 μm (50× objective) / 1 μm (100× objective)	
Confocal	Pinhole + slit confocal, both 15–2000 μm continuously adjustable	
Detector	TEC deep-cooled CCD; −70 °C air-cooled / −100 °C water-cooled options	
Sensitivity / repeatability	Si 3rd-order peak SNR >30:1 (4th peak visible); wavenumber repeatability <0.12 cm^{-1}	
Microscope	Upright, reflected brightfield, 10× eyepiece; 5×/10×/20×/50× LWD/100× plan-achromatic objectives	
Sample stage	Motorized XYZ, 75 × 50 × 30 mm, 0.5 μm repeatability, 50 nm minimum step; auto-focus	
Software	Raman + fluorescence + absorption imaging; auto fluorescence-baseline removal; library search with custom database; microscope / measurement / observation auto-switching	

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