

Line-Scan Imaging Raman Microscope

ATR8810

Features

- 4 excitation wavelengths Optional
- Line-scan Raman imaging
- Spatial resolution up to 512 bands (single scan).
- Cooled and high sensitivity detector.
- Cooled to -70°C.
- Low noise circuitry.
- Powerful PC-based software.
- USB 3.0 interface.
- Automated Raman imaging experiments with auto-focus and auto-scan.
- Long focal length high-resolution design.
- Sealed chamber design
- Large imaging range (100x100mm) with automatic image stitching.
- Advanced spectral processing algorithms and software.
- User-friendly interface.

Application

- Material Science: Nanoparticles, Nanotech, Electronics
- Science : Research institutes
- Biological sciences : Microbiology
- Public Safety: Forensic analysis
- Materials science

Description

The ATR8810 Ultra-Fast Line-Scan Raman Spectral Imaging System is a groundbreaking macro Raman spectral imaging instrument developed by Optosky after more than 20 years of Raman spectrometer research experience and three years of dedicated development. This new and optimized design features high-power lasers, linear laser shaping technology, spatial resolution spectrometers, and ultra-low temperature cooled (-70°C) high-sensitivity area CCDs, enabling rapid scanning and imaging of large sample areas. The multifunctional software that comes with the ATR8810 has undergone rigorous testing by hundreds of scientists worldwide, incorporating their feedback through nearly a hundred updates. This has resulted in highly comprehensive and stable software, making it exceptionally suitable for Raman research.

The ATR8810 series combines the advantages of microscopes and Raman spectrometers, with its microscopic Raman detection platform making "what you see is what you measure" possible, greatly facilitating Raman micro-area detection.

The ATR8810 perfectly addresses optical path loss during camera imaging, achieving the separation of camera imaging and Raman signal collection, thereby obtaining optimal signal strength. The ATR8810 is adaptable to complex environments and has a wide range of applications, particularly in scientific research, food safety, pharmaceutical engineering, new materials, and new energy fields.



1. Selection Guide

Table 1: Specifications for Different Excitation Wavelengths

Excitation Wavelength	Maximum Laser Power	Wavelength Range (cm ⁻¹)	Resolution (cm ⁻¹) *
325nm	5 W	150~8000	2.6
405nm	5 W	150~8000	2.3
473nm	5 W	150~8000	2.1
532nm	30 W	150~8000	2.0
638nm	5 W	150~8000	2.0
785nm	30 W	150~8000	2.0
1064nm	30 W	150~8000	3.0

2. Parameter

	ATR8810	
System Parameters	Interface	USB 3.0
	Integration Time	8ms~1.3hours
	Power Supply Voltage	DC 12V±5%
	Working Temperature	10~35 °C
	Working Humidity	< 90%
	Microscopic Illumination	High-brightness long-life white LED
	Illumination Method	Epi-illumination
	Microscope Camera	5-megapixel industrial camera
	Focusing Method	Conjugate focusing
	Dimensions(L*W*H)	45×33×13.2 cm3
	Weight	14.5 Kg
Optical Parameters	Excitation Wavelengths	325、405、473、532、638、785、1064nm selectable, up to 4 wavelengths can be integrated simultaneously
	SNR	>8000:1
	Optical System	Transmission grating or plane reflection grating optics
	Spectral Resolution	2.0cm-1
	Spectral Bands	2048
	Spatial Bands	512(single scan), 100,000 (Z-scan stitching)
	Spatial Resolution	0.07 mm/pixel or 0.22 mm/pixel
Detector	Laser Spot Diameter	1mm
	Detector	Ultra-low temperature cooled, ultra-high sensitivity area CCD

	Cooling Temperature	Various configurations, minimum can reach -70 °C
	Detection Range	200~1100 nm
	Effective Pixels	2048*264
	Dynamic Range	50000: 1
	Full Well Capacity	300 Ke-
	Quantum Efficiency	QE>85%, 6.5 μ V/e-
Raman Laser Probe	Laser Power	Refer to Table 1
	Laser Linewidth	<0.2 nm
	Cooling Method	Water cooling
	OD Blocking	OD>8
	Single Scan Strip Width	0.35XD
	Excitation Divergence Angle	23°
X, Y Axis Two-Dimensional Platform	Movement Method	Fully motorized, manual optional
	Imaging Range	50 X 50 mm, 100 X 100 mm selectable
	Movement Resolution	0.1 μ m
	Positioning Accuracy	1 μ m
	Scanning Interval	Software set, minimum 1 μ m
	Scanning Speed	20 mm/s
	Nano Positioning Stage	Minimum displacement resolution 2 nm, displacement accuracy 10 nm (Optional)
Z Axis (Auto Focus)	Focusing Accuracy	$\leq \pm 0.2 \mu$ m
	Maximum Travel	20 mm
	Focusing Speed	No more than 10 s
	Nano Positioning Stage	Minimum displacement resolution 2 nm, displacement accuracy 10 nm (Optional)
Working Environment Requirements	Voltage	100~240 VAC
	Peak Power	< 200 W
	Additional Power Requirements	None
	Emissions	None
	Platform Requirements	Air-float vibration isolation optical platform
	Operating Temperature and Humidity	Constant temperature (25 $\pm$ 2°C) , constant humidity (50 $\pm$ 10%)
	Cleanliness	Class 10,000 or better