Micro-Raman Spectrometer | ATRP8300

Features

- Microscopic reflectance spectroscopy, microscopic Raman spectroscopy, microscopic imaging;
- Micro area positioning device
- Ultra-high power optical positioning system
- Auto focus, auto scan;
- Broad reflection spectrum measurement (350-1100nm, 350-2500nm optional);
- Fully automatic reflectance spectrum imaging experiment;
- Ultra-high sensitivity, performance-to-noise ratio >6000:1
- Unique software controls switching light path
- Rapid positioning
- High-quality objective lens, micron-level light spot
- 5 million camera
- Raman excitation wavelength: 532, 633, 785, 830, 1064nm optional
- USB2.0

Application

- Nanoparticles and new materials
- Universities and research institutes
- Biology
- Forensic medicine identification
- Material science
- Medical immunoassay
- Agriculture and food identification
- Water pollution analysis
- Gem and inorganic mineral identification
- Environmental science

Description

This instrument is an advanced device that integrates micro-area Raman spectroscopy, micro-area reflectance spectroscopy and optical digital microscopy. Reflection microscopy and Raman spectrometer can be used to characterize and analyze the surface morphology, reflection spectrum and Raman spectrum performance of nanomaterials respectively, thereby providing more comprehensive information on the sample and providing sharp microscopic images.

The ATRP8300 visual precise positioning Raman detection platform allows observers to detect Raman signals of different surface states on the sample, and can simultaneously display the micro-area morphology at the detected location on the computer.

ATRP8300 is equipped with an objective lens specially designed for the Raman system, which makes the laser spot close to the diffraction limit. The focus information is accurately and intuitively displayed on the computer through a 5-megapixel camera to improve the quality of the Raman spectrum.

At the same time, ATRP8300 uses high-performance Raman specially optimized for micro-Raman systems. It is industry-leading in terms of sensitivity, signal-to-noise ratio, stability, etc., providing a strong guarantee for Raman research.

Model	Feature
ATRP8300	Micro-Raman + reflection integrated machine,Base
ATRP8300-AF	Auto Focus
ATRP8300-MP	Mapping type (highest configuration, auto-focus, auto-scan)

1. Parameter

ATRP8300 (taking 785nm excitation wavelength as an example)	
Raman Spectroscopy Properties	
Spectral Stability	σ/μ < 0.5% (COT 8 hours)
Temperature Stability	Spectral shift ≤ 1 cm^{-1} (10~40 ℃)
Signal-To-Noise Ratio	>6000:1
Detection Wavelength Range	Si：200nm~1100nm InGaAs：900-1700nm
Detector Dynamic Range	13000:1
Microscope Camera System	3 or 5 megapixel industrial camera
Focus Method	conjugate focus
Minimum Laser Spot Diameter	<20μm
Laser Stability	σ/μ <±0.2%
Laser Linewidth	0.08 nm
Communication Mode	USB2.0
Microscopic Reflectance Spectroscopy	
Operating Mode	Micro-area reflectance spectrum
Band Range	Two options are available: ● 350-1100nm ● 350-2500nm
Spectral Resolution	● 350-1000nm：1.5nm ● 1000-2500nm：6.0nm
Spectral Bands	● 2048 band ● 2060 band
Spot Size	<50μm
Microscopic Imaging	
Objective Lens	5X/10X/20X/50X plan apochromatic objective lens
Optical Focus	BS: Coarse and fine manual focusing AF: auto focus MP: auto focus, auto scan
Camera	5 million pixel CMOS sensor
X, Y Axis Electronically Controlled Two-Dimensional Platform	
Moving Range	50 X 50 mm, 100×100mm optional
Mobile Resolution	0.1 μm

Positioning Accuracy	1.0 μm
Scan Speed	20mm/s
Z Axis (Auto Focus)	
Focus Accuracy	≤ ±0.2μm
Maximum Stroke	20 mm
Focus Speed	Less than 10 seconds

2. Order Guide

Model	Feature
ATRP8300-BS	Base
ATRP8300-AF	Auto Focus
ATRP8300-MP	Mapping type（auto-focus, auto-scan）

Table 1 Performance parameters of ATRP8300 built-in Raman

Excitation Wavelength/nm	Power /mW	Wavenumber /cm^{-1}	Resolution/cm^{-1}
532	100	200 ~ 3700	5 ~ 7
633	50	200 ~ 3500	3 ~ 6
		250 ~ 2700	3 ~ 7
785	500	200 ~ 3500	4 ~ 9
		200 ~ 4300	5 ~ 11
1064	500	200 ~ 2600	7 ~ 12

Other wavelengths can be customized

* All the above parameters can be achieved, but requiring the resolution to reach the optimal value in the table will affect the sensitivity of the instrument and is generally not recommended.
* The above parameters can be customized;