

## Laboratory Raman Microscope

## ATR8300Pro

### Features

- Full-automated, auto-focusing, auto-scan.
- Ultra-high resolution  $1\text{cm}^{-1}$ , optimum up to  $0.35\text{cm}^{-1}$ .
- Ultra-high sensitivity,  $\text{SNR}>6000:1$ .
- Supports up to 2 excitation wavelengths, excitation wavelengths: 405, 473, 532, 633, 785, 830, 1064nm optional.
- True confocal, accurate Raman mapping.
- Ultra-high spatial resolution.
- Unique software controlled to switch optical path.
- Imported optical devices, good product performance.
- Fast positioning, quick locate focal position.
- High quality objective, micro spot.
- 5-mega pixel camera, crisp clear images.
- Optical fiber transmits signals, free and flexible.
- USB2.0 in direct connect with PC.

### Application

- Nanoparticles
- Universities and research institutes
- Biology
- Forensic Medicine Identification
- Materials science
- Medical Immunoassay
- Agriculture and food identification
- Water pollution analysis
- Gem and inorganic mineral identification
- Environmental science

### Description

The ATR8300Pro series combines the advantages of microscopes and Raman spectrometers. The Raman microscope detection platform makes it possible to "what you see is what you measure". The visual and precise positioning of the Raman detection platform allows observers to detect Raman signals of different surface states on the sample, and can simultaneously display the microdomain morphology of the detected location on the computer, greatly facilitates Raman microdomain detection.

The ATR8300Pro high-end version can fully auto-focus, fully auto scanning, and one-click operation. It can perform batch experiments, uniformity scanning, etc. without waiting, and can obtain highly reliable scanning imaging Raman data. Microscope objective is specially designed for the Raman system, which makes the laser spot close to the diffraction limit. It overcomes the problem that the focal plane for collecting Raman signals in ordinary Raman systems is slightly higher or slightly lower than the actual optimal focal plane, thus improving the quality of Raman spectra.

ATR8300Pro is equipped with spectrometers with different focal lengths, which can achieve an optimal spectral resolution of  $0.35\text{cm}^{-1}$ . The spectrometer has multiple built-in gratings. The gratings and their rotation angles can be set by software to meet the requirements of different resolutions and different wave number ranges.

At the same time, ATR8300Pro uses high-performance Raman specially optimized for Raman microscopy systems. It is industry-leading in terms of sensitivity, signal-to-noise ratio, stability, etc., providing a strong guarantee for Raman research.



## 1. Ordering Information

Table 1 ATR8300Pro product selection table

Model	Spectrometer focal length	Excitation wavelength/nm	Power/mW	Wavenumber range <sup>*1</sup> /cm <sup>-1</sup>	Minimum resolution/cm <sup>-1</sup>
ATR8300Pro-FL 210	210mm	532	100	150~10000	2.2
		633/638	80		2.2
		785	350		2.5
		1064	350		6.2
ATR8300Pro-FL 350	350mm	532	100	150~10000	1.4
		633/638	80		1.4
		785	350		2.1
		1064	350		5.1
ATR8300Pro-FL 510	510mm	532	100	150~10000	0.9
		633/638	80		0.9
		785	350		1.4
		1064	350		3.6
ATR8300Pro-FL 810	810mm	532	100	150~10000	0.5
		633/638	80		0.5
		785	350		1.0
		1064	350		2.7
<b>ATR8300Pro-LT:</b> Deep cooling to -30°C, ultra-long integration time (up to 1.3h) <b>ATR8300Pro-SCM:</b> Cooled sCMOS detector ATR8300Pro-BS: Basic type ATR8300Pro-AF: Autofocus type ATR8300Pro-MP: Mapping, autofocus *1: Customizable low wavenumber Raman (starting from 50cm <sup>-1</sup> ), terahertz Raman (starting from 10cm <sup>-1</sup> ) The above parameters can be customized *2: The parameters in the table are all standard parameters, and other parameters can be customized.					

Naming example:

- ATR8300Pro-AF-LT-FL350-532+633: auto focus, long integration time, focal length of 350mm, excitation wavelength of dual wavelengths: 532nm and 633nm respectively.
- ATR8300Pro-MP-SCM-FL810-532+1064: scanning imaging, sCMOS detector, focal length is 810mm, excitation wavelength is dual wavelength: 532nm and 1064nm respectively.

## 2. Performance parameters

ATR8300Pro	
Spectral resolution	Refer to table 1.
Spectral range	Refer to table 1.
Maximum laser output	500mW (Max. 100mW for 532nm)
Spectral Stability	$\sigma/\mu < 0.8\%$ (COT 8 hours)
SNR	>6000:1

Detector	Deeply cooled linear area array back-illuminated CCD, deep cooled InGaAs detector
Wavelength range detected	200nm-1100nm, 900-1700nm
Pixel size	14×14 μm, 25×500μm
Dynamic range	13000:1
Microscope camera	5-megapixel camera
Focusing	True confocal
laser spot diameter	>1μm
Laser stability	$\sigma/\mu < \pm 0.2\%$
Laser linewidth	0.08 nm
Connectivity	USB2.0
<b>X, Y axis electronically controlled platform</b>	
Moving range	50×50mm
Moving resolution	0.1μm
Positioning accuracy	1μm
Scan speed	20mm/s
<b>Z axis (auto focus)</b>	
Positioning accuracy	$\leq \pm 0.2\mu\text{m}$
Max. range	20mm
Focus speed	No more than 10s

## 3. Test results

### 3.1 Spectral performance

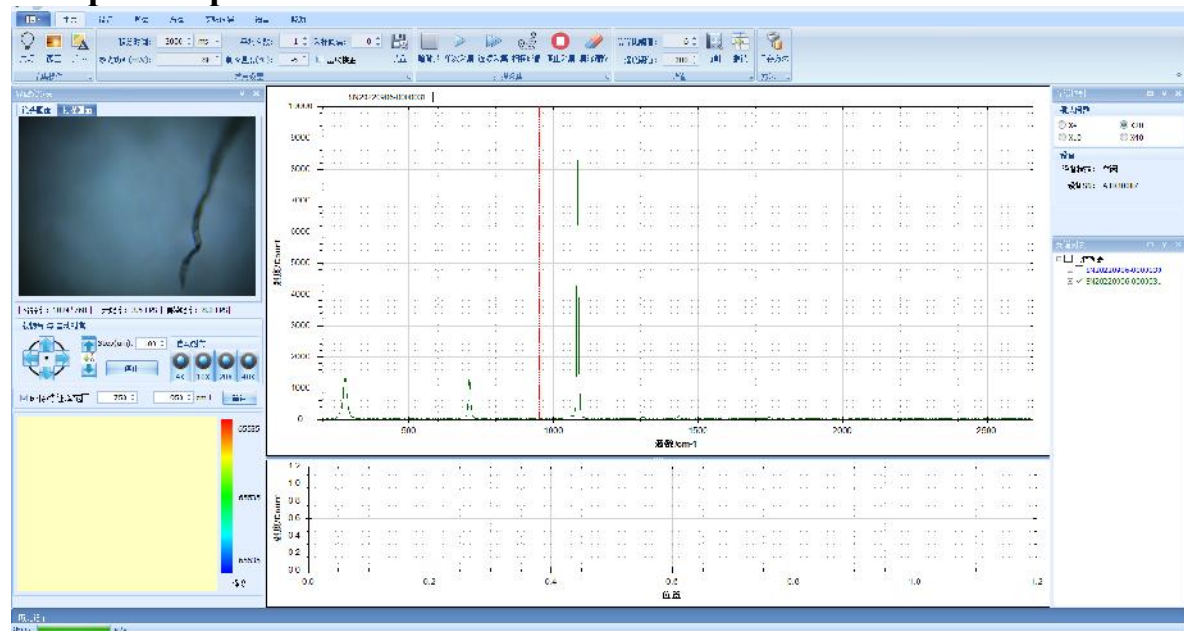


Figure 1 ATR8300Pro tests the Raman spectrum of a crystal.

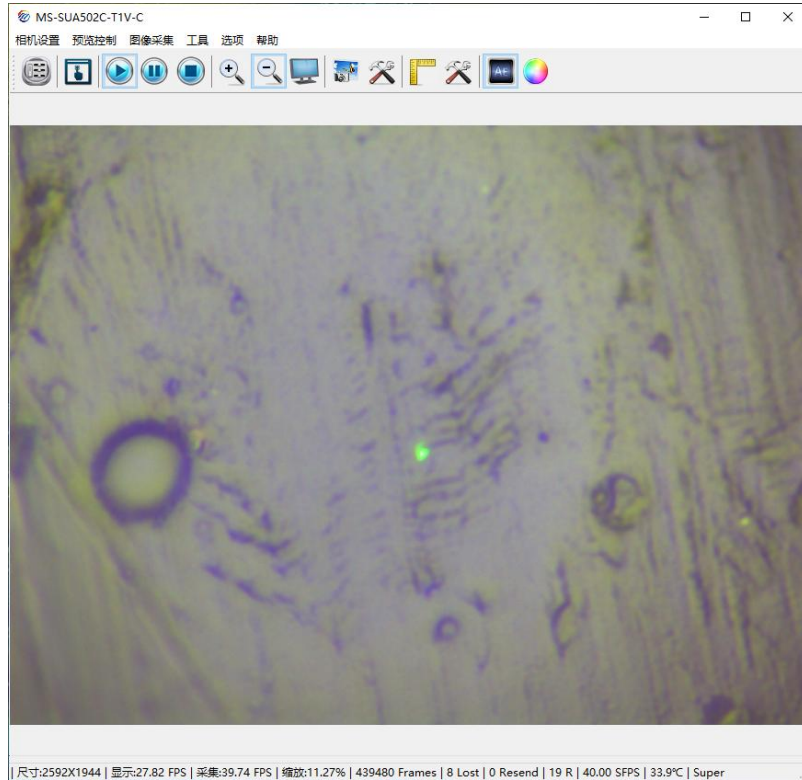


Figure 2 Laser spot size under microscope.

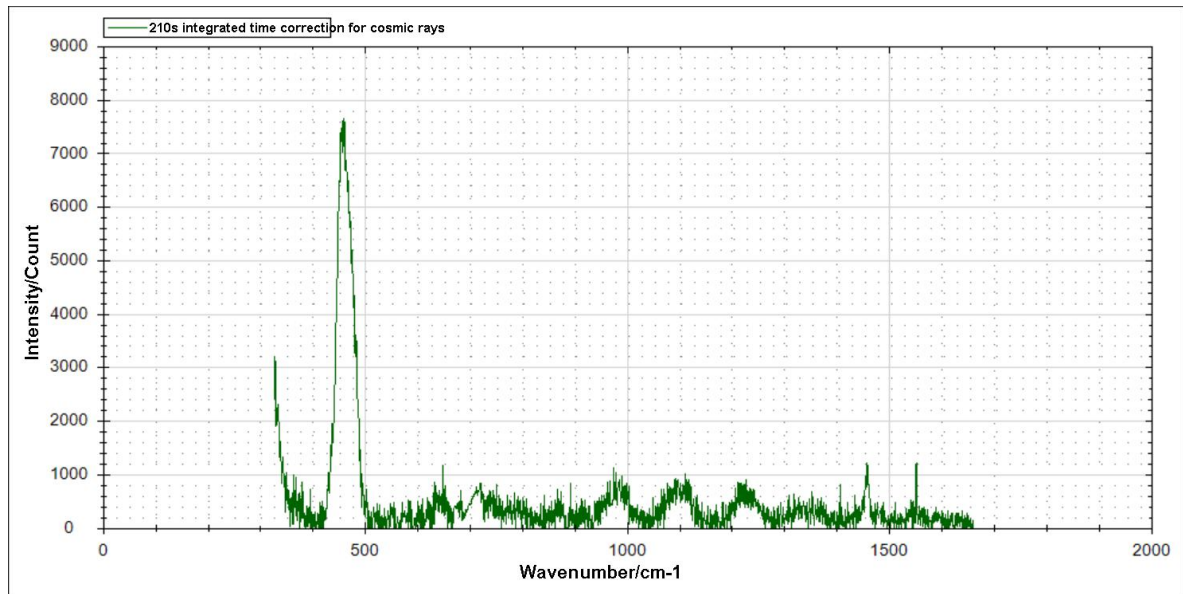


Figure 3 The third-order peak of Si tested by ATR8300Pro.



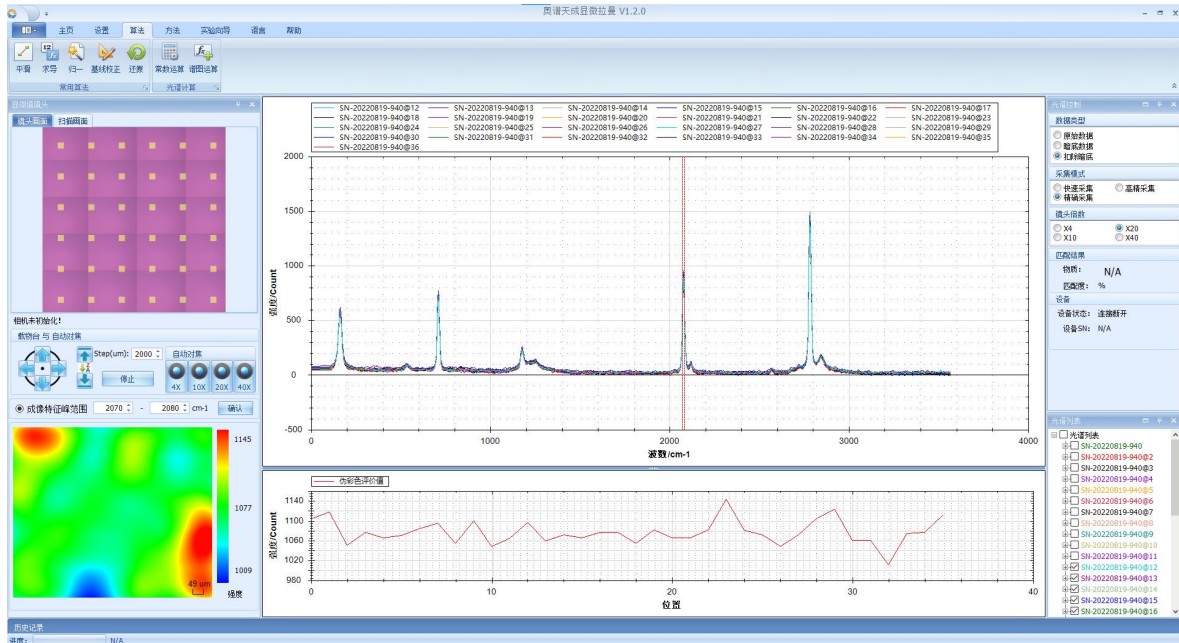


Figure 4 ATR8300Pro test interface.

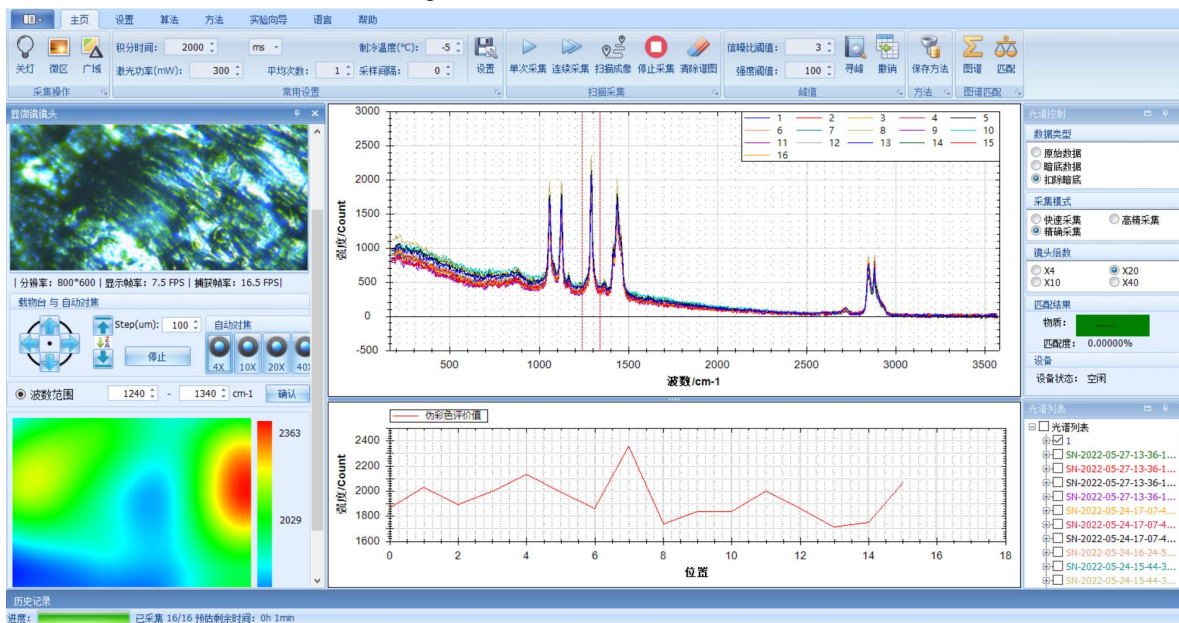


Figure 5 ATR8300Pro test interface.

## 4. Physical pictures and instrument details

Product data information is current as of publication data. Products conform to specifications per the terms of Optosky Standard warranty.

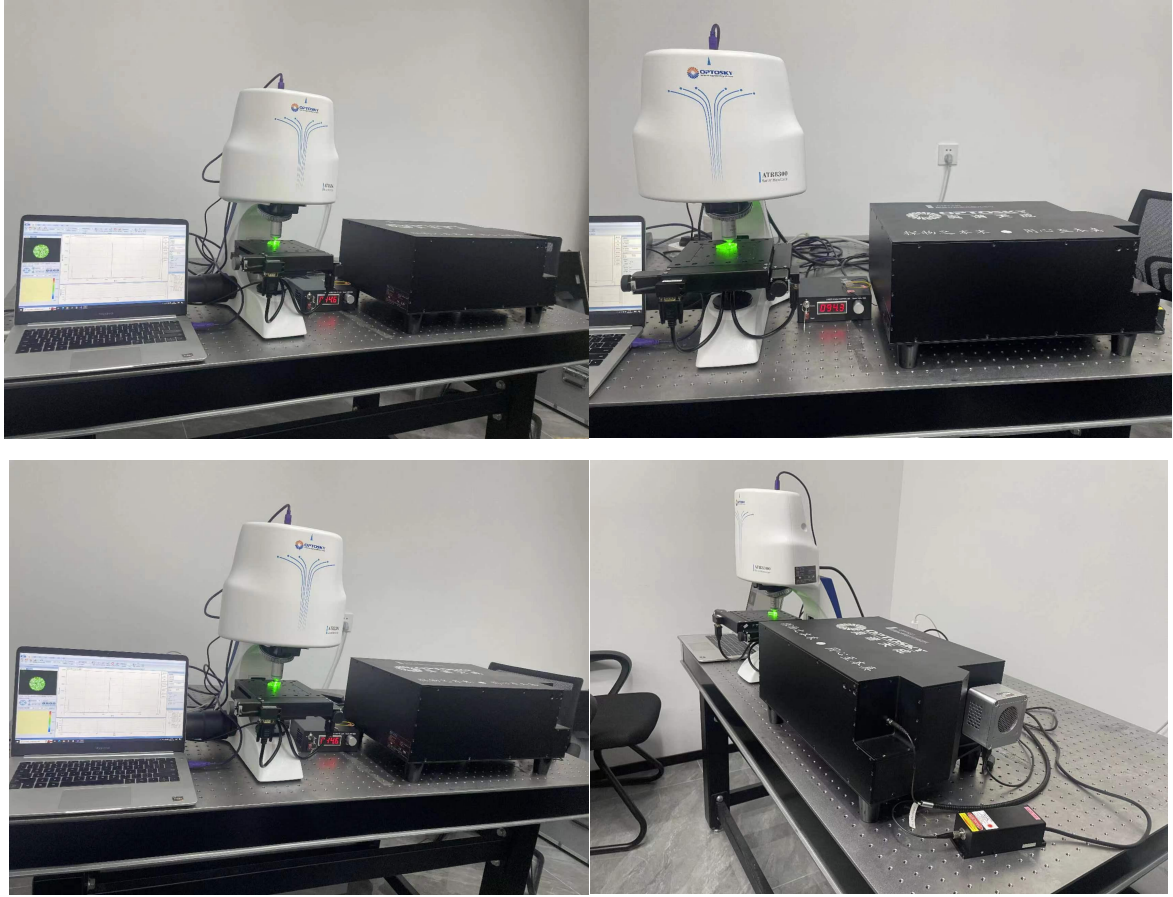


Figure 6 ATR8300Pro-FL510 high-resolution Raman microscope (focal length 510mm).





Figure 7 ATR8300Pro-FL210 high-resolution Raman microscope (focal length 210mm).