ATR8300

Raman Microscope (Pro) | ATR8300Pro

Feature:

- Full-automated, auto-focusing, auto-scan
- Ultra-high resolution 1cm^{-1}.
- Ultra-high sensitivity>6000:1
- True confocal, accurate Raman mapping
- Unique software controlled to switch optical path
- Ultra-high stability
- Excellent performance
- Fast positioning, quick locate focal position
- High quality objective, micro spot
- 3-mega/5-mega pixel camera, crisp clear images
- Excitation wavelength(Optional): 532,633，785,830,1064
- High-performance spectrometer configured
- USB2.0 in direct connect with PC

Application:

- Nano particles and new materials
- Science research Institutions
- Bioscience
- Forensic identification
- Material science
- Medical immunology analysis
- Agriculture and food accreditation
- Gemstones & minerals identification

Description:

Optosky provides miniature Raman microscope integrating benefits of microscope and Raman spectrometer into one instrument. It becomes possible to see micro areas of samples on the computer screen with just a single mouse click. When the sample is visualized in accurate position, the observer scan Raman spectrum under various surface conditions, and synchronous Mapping can be displayed intuitively on the screen in a click. As a result, it takes great convenience to detect micro areas of samples. Combine unique patented conjugate focusing(true confocal) system with accurate image processing algorithm, and it enables a very small sample areas to be analyzed, as well as it requires minimal operator training and maintenance, yet resulting in uniform result not just spectrum.

ATR8300Pro is equipped with tailor-made objective, and laser spot on the sample becomes very close to diffraction limit, then focal information can be displayed in accurate and intuitive on the screen with 3-megapixel/5-megapixel camera. This configuration improves Raman spectral quality for overcoming the limitations of Raman systems where the focal plane for Raman signal collection is slightly above or below the imaging plane.

ATR8300Pro works very stable with no moving components of optical path switch, hence it avoids loss off optical path while imaging being formed, and it gains optimized signal for separating imaging formed from Raman signal collection.

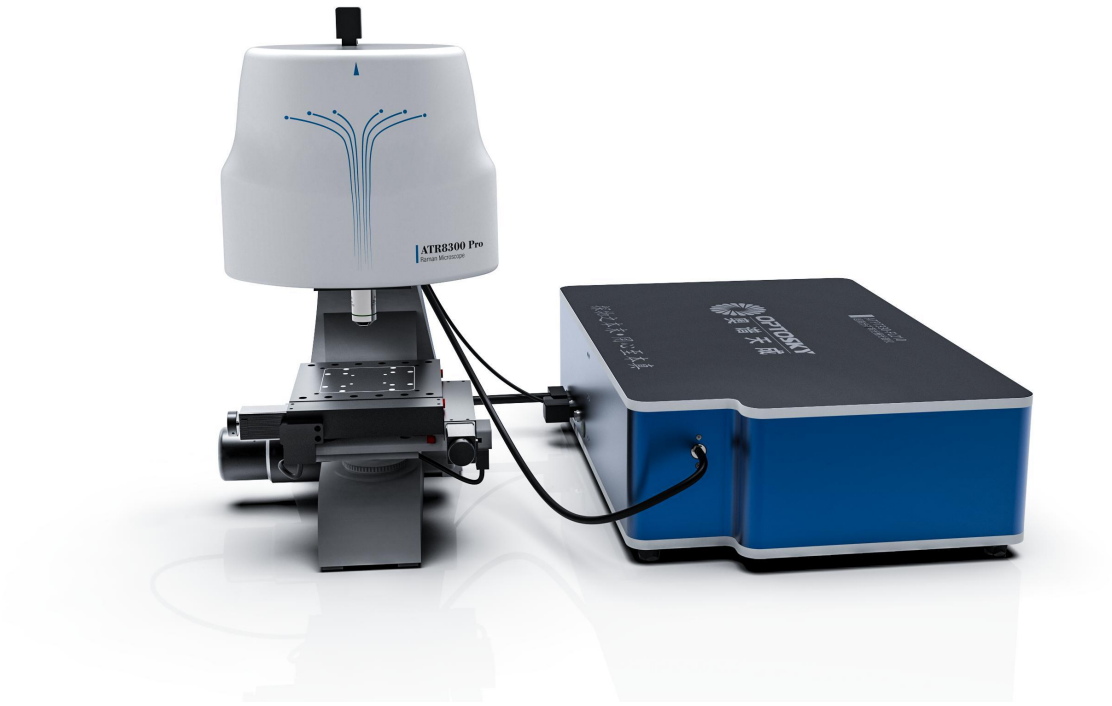


Fig. 1 ATR8300Pro Structure indication diagram

Table 1 ATR8300 Pro Product Selection

Models	Focus Length	Excitation Wavelength/nm	Excitation Power/mW	Max. Wavenumber Range	Min. Resolution/cm^{-1}
ATR8300Pro-FL 210	210mm	532	100	200-3500	2.2
		633/638	80	200-3300	2.2
		785	350	200-3500	2.5
		1064	500	200-2500	6.2
ATR8300Pro-FL 350	350mm	532	100	200-3700	1.4
		633/638	80	200-3500	1.4
		785	350	200-3500	2.1
		1064	500	200-2500	5.1
ATR8300Pro-FL 510	510mm	532	100	200-3700	0.9
		633/638	80	200-3500	0.9
		785	350	200-3500	1.4
		1064	500	200-2500	3.6
ATR8300Pro-FL 760	760mm	532	100	200-3700	0.5
		633/638	80	200-3500	0.5
		785	350	200-3500	1.0

		1064	500	200-2500	2.7

ATR8300Pro-LT: Cooled down to -30℃, ultra-long integration time (Max. Time can reach 1.3h).

ATR8300Pro-SCM： Te-cooled SCMOS detector.

ATR8300Pro-BS： Basic type.

ATR8300Pro-AF： Auto-focus.

ATR8300Pro-MP： Mapping, and auto-focus.

Naming example:

- ATR8300Pro-AF-LT-FL350-532+633: auto focus, long integration time, focus length of 350mm, dual excitation wavelength: 532nm and 633nm respectively
- ATR8300Pro-MP-SCM-FL760-532+633+1064: scanning imaging, SCMOS detector, focus length is 760mm, excitation wavelength is three wavelengths: 532nm, 633nm and 1064nm respectively

1. Specification

ATR8300MP Raman Microscope Pro	
Excitation wavelength	Refer to table 1.
Spectral resolution	Refer to table 1.
Spectral range	250-2700, 200-3500, 200-4300 cm-1 （available in customer wavelengths range down to 50 cm-1)
Maximum laser output	500mW (Max. 100mW for 532nm)
Spectral Stability	σ/μ < 0.5%　(COT 8 hours)
Thermal stability	Spectral shift ≤ 1 cm-1 (10-40 ℃)
SN ratio	>6000:1
Detector	TE cooled, semiconductor laser, 2048*64 pixel, back-thinned, IR enhanced CCD InGaAS cooled for 1064nm
wavelength range detected	200nm-1100nm
Pixel size	14 μm * 14 μm
Dynamic range	13000:1
Laser center wavelength	785nm (+/-0.5nm)
Microscope camera	3-megapixel /5-megapixel camera
focusing	True confocal
Laser output	>550mW （software adjustable）
laser spot diameter	>1μm
Laser stability	σ/μ <±0.2%
Laser linewidth	0.08 nm
Connectivity	USB2.0
Electrical controlled X,Y axis 2D platform	

moving range	5 X 5 cm
moving resolution	0.1μm
positioning accuracy	1μm
Scan speed	20mm/s
Z axis（automated focusing）	
focusing accuracy	≤±0.2μm
Max. range	20mm
focusing speed	Less than 10 s

2. Optical performance

2.1 Spectrum

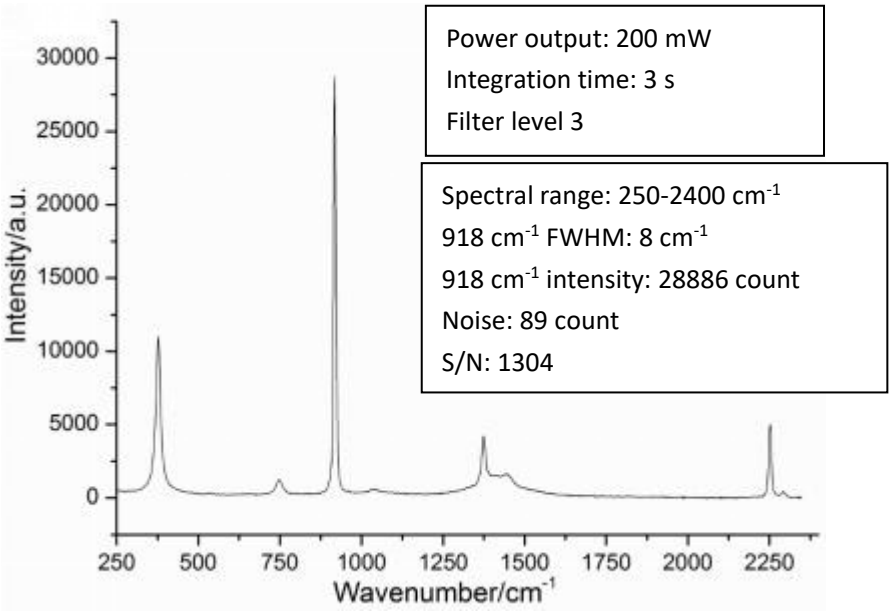
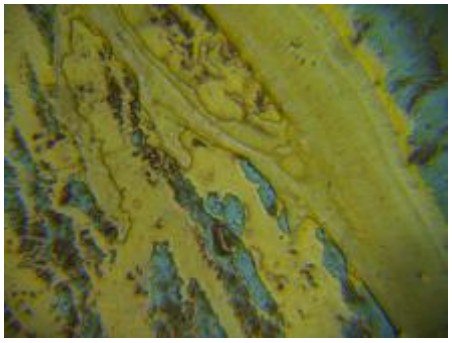
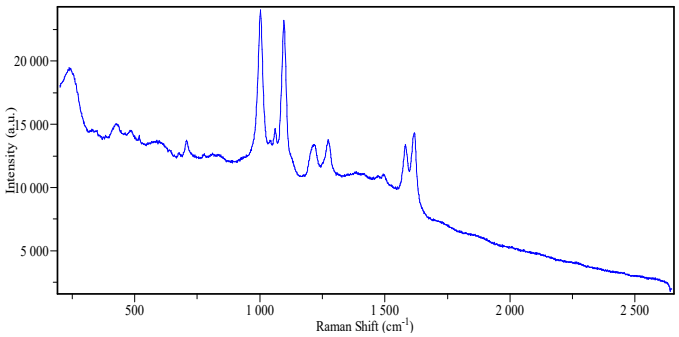


Fig. 1 ATR8300Pro collect acetonitrile spectra





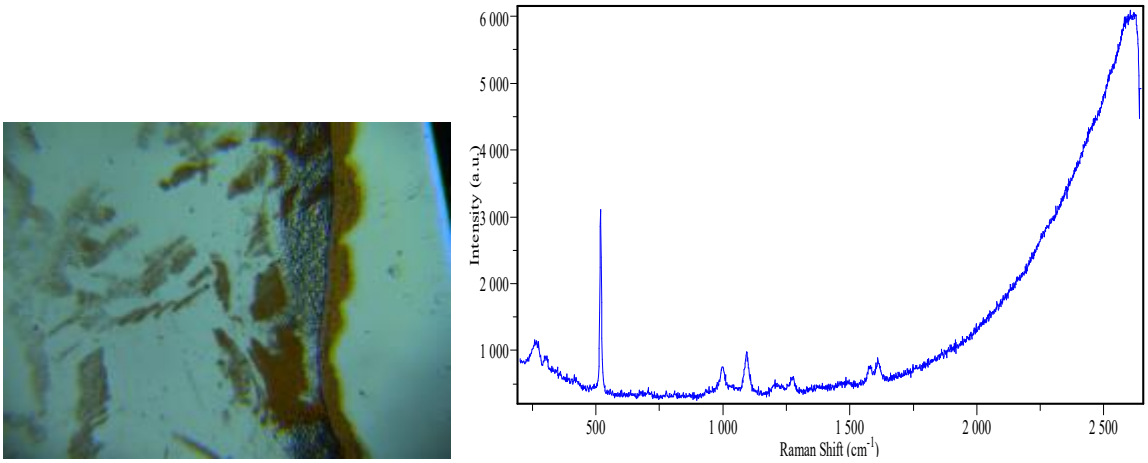


Fig.2 ATR8300Pro experiment（Left picture is sample, and right picture is Sers Raman spectra）

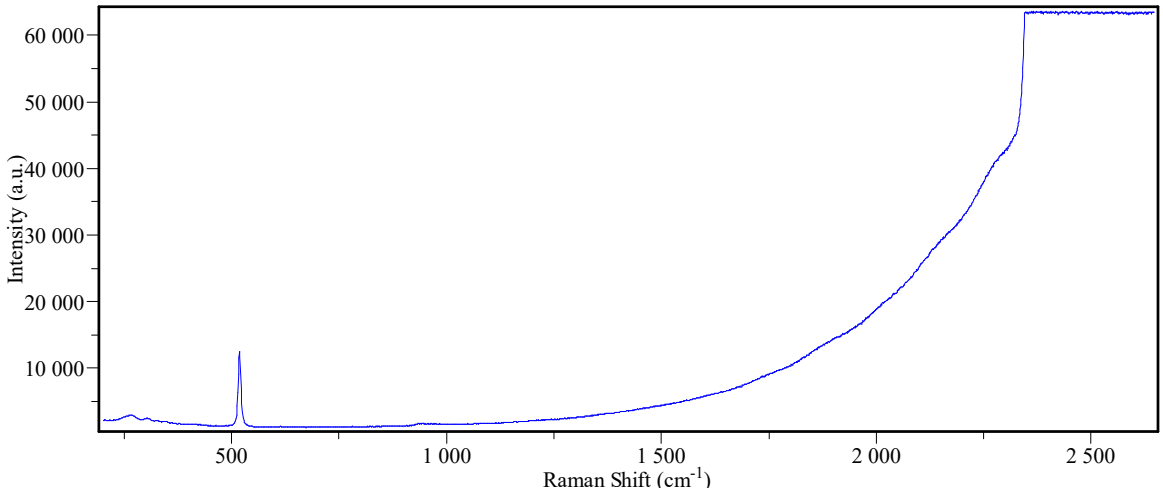


Fig 3 ATR8300Pro Measure Si Raman spectra（500mW， integration time: 1S）

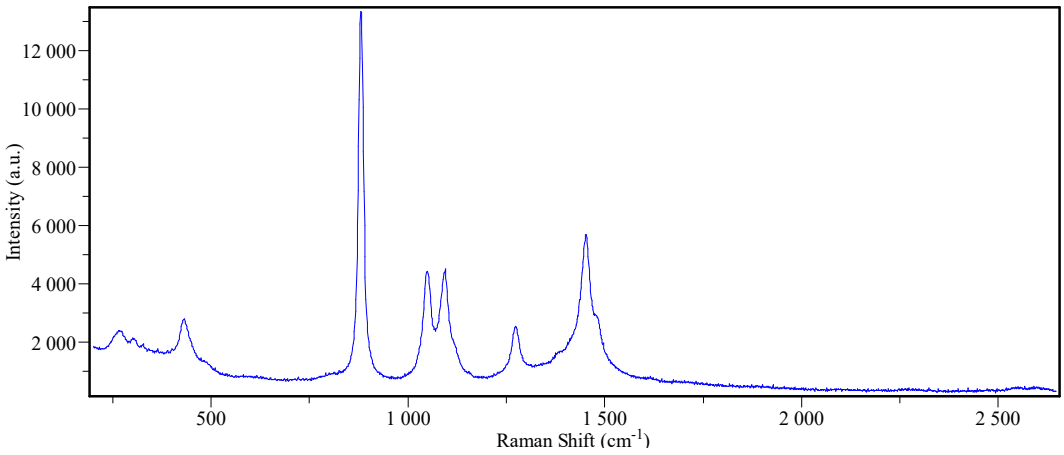


Fig 4 ATR8300Pro measure alcohol spectra（500mW, integration time:1S）

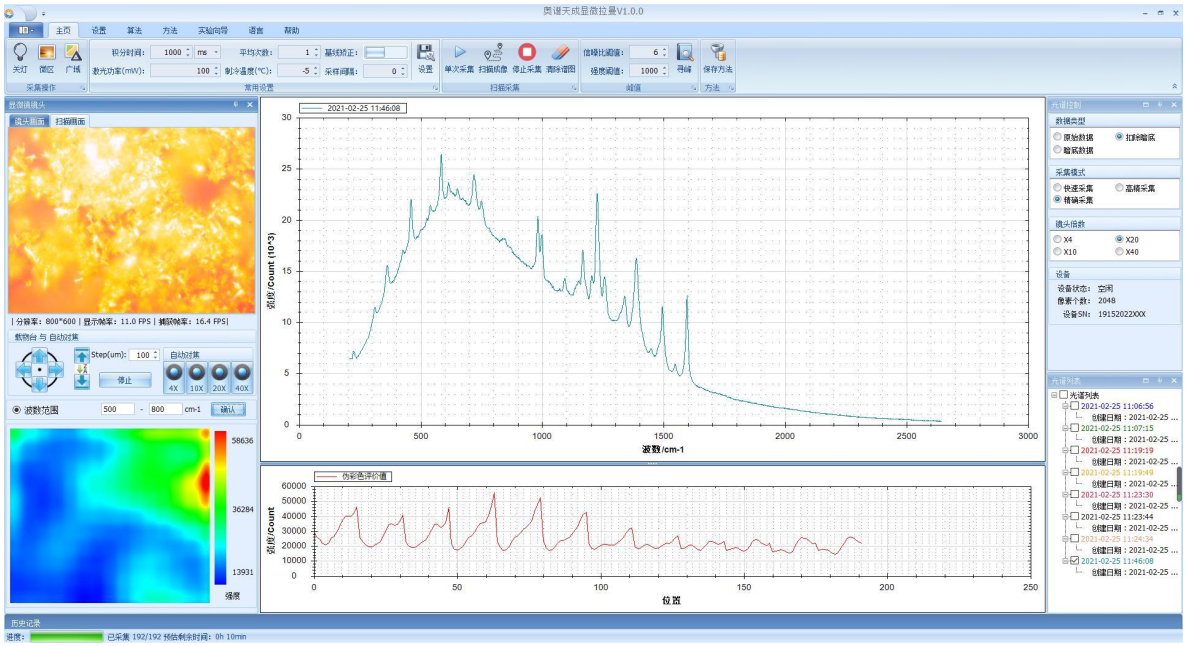


Fig 5 ATR8300Pro operation interface

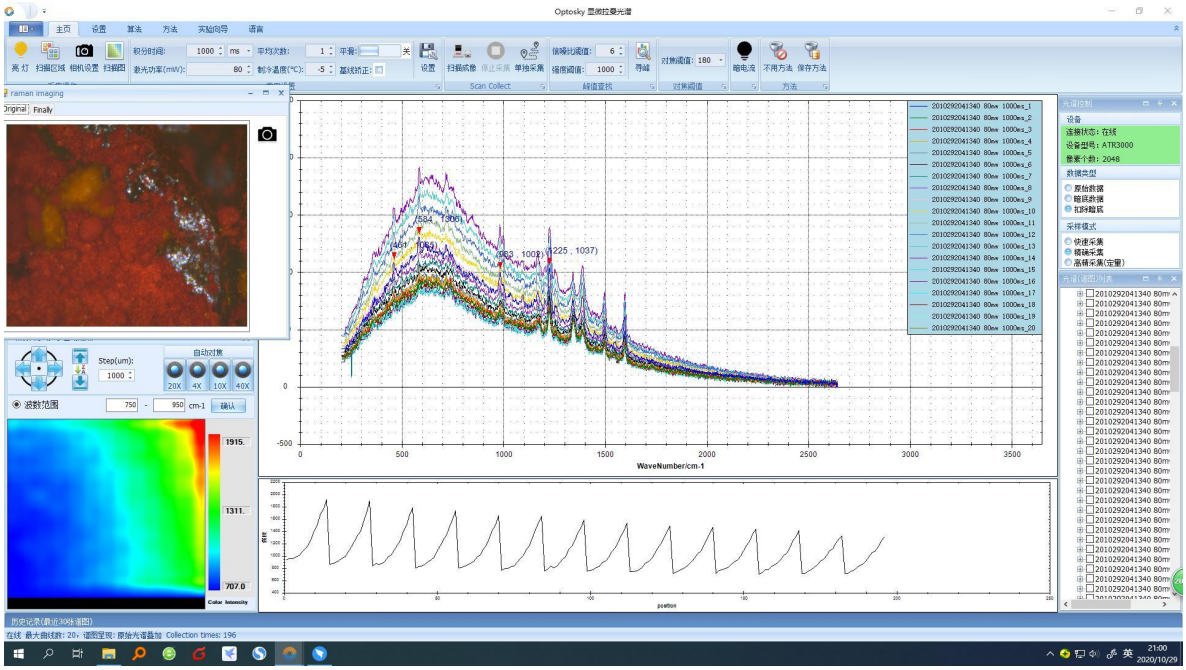


Fig 6 ATR8300Pro operation interface

2.2 Raman resolution

2.2.1Tylenol Raman spectra

Power output: 200 mW
Integration time: 10 s
Filter level 1

Raman spectra of Tylenol showed the resolution condition in the long wavelength region.

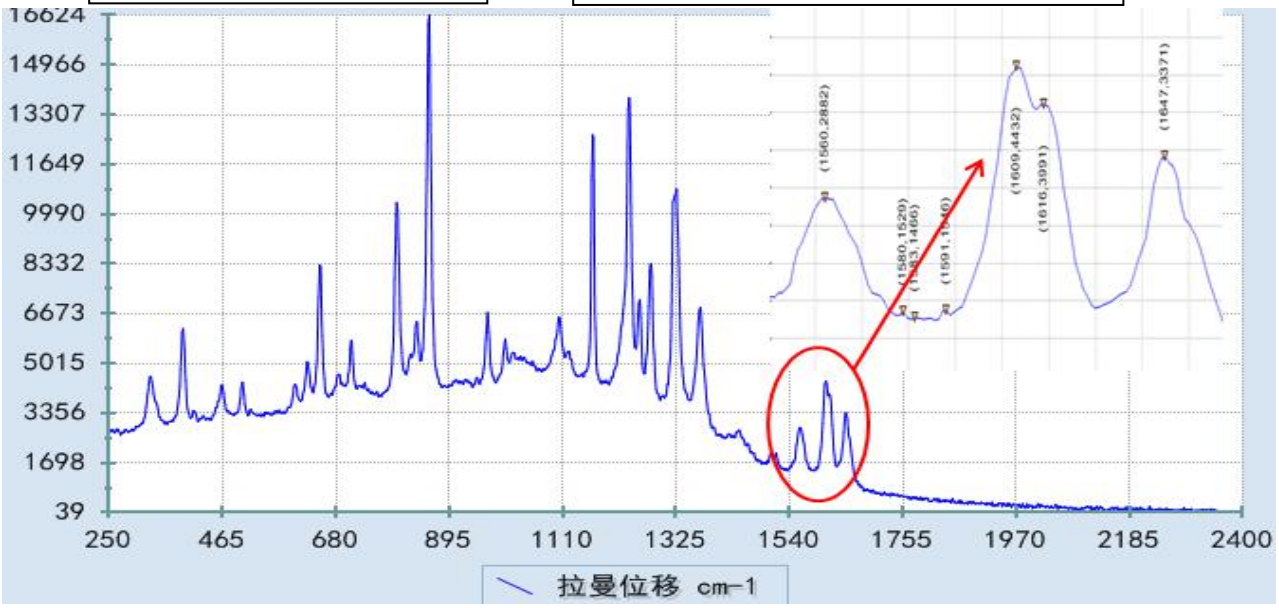


Fig 7 Tylenol spectra shows clear 1610/1615 cm^{-1}vibration peak

2.2.2 Petrol Raman spectra

Power output: 200 mW Integration time: 10 s Filter level 1	Raman spectra of 93# petrol showed the resolution condition in the long wavelength region.

Fig 8 93# petrol Raman spectra, 723/732/742cm^{-1} spectral shift is clearly recognized

3. Reliability

Fig3.1, Fig3.2 temperature stability is measured by ATR8300, keep stable above an hour for each temperature node ranging between 5-40℃. Sample measured is acetonitrile, wavenumbers shift≤1cm^{-1} （Fig 3.1）, peak top intensity change < 10%（Fig 3.2）

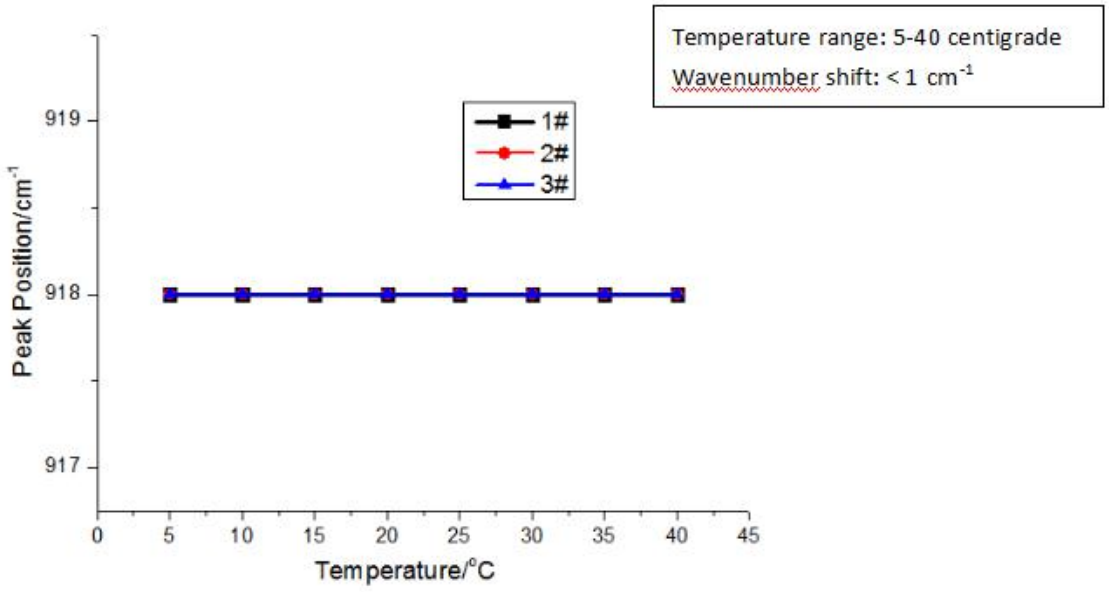


Fig. 3.1 Wavenumber shift results testing from 5 °C to 40 °C of fives ATR2000 portable Raman spectrometers

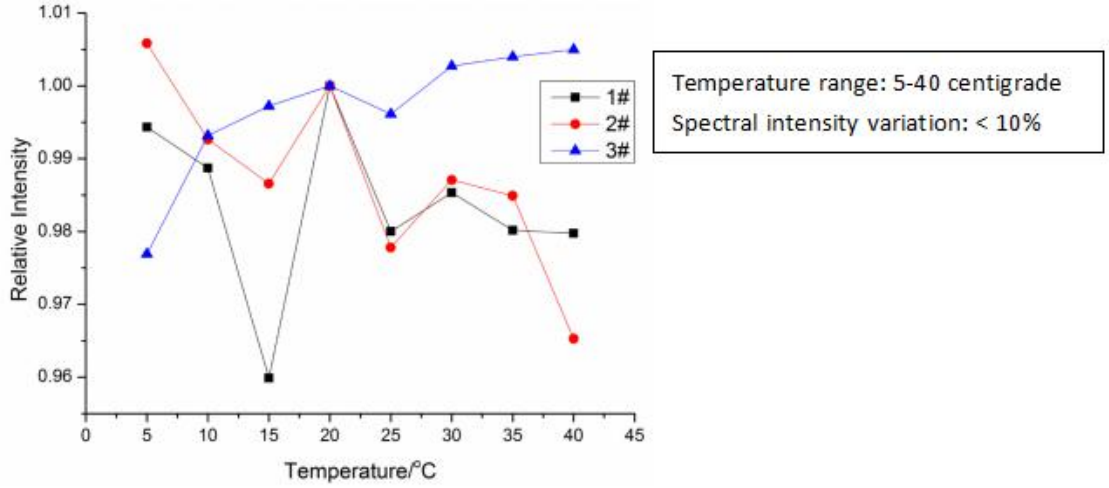
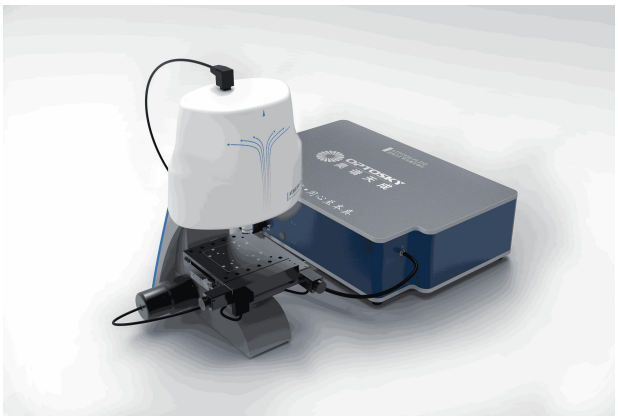


Fig. 3.2 Intensity variation testing from 5 °C to 40 °C of fives ATR2000 portable Raman spectrometers

4. Details



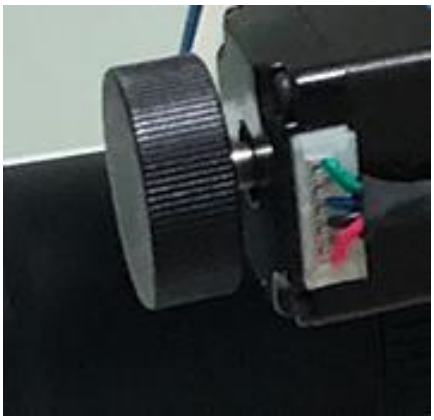


Fig 9 branded high stable microscope platform; X、Y、Z-axis precision adjustable; Adjustable knob work smooth, weight up to 5.6 Kg, very stable.

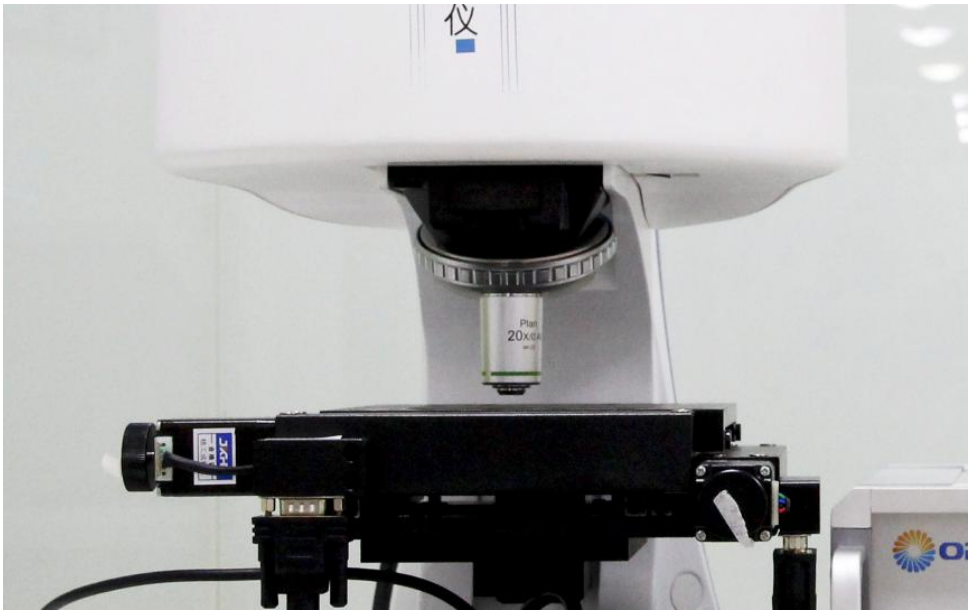


Fig 10 Raman signal high transmission objective, objective focal length up to 8mm

5. Successful customers


6. Company Profile

Optosky company is an first-class spectroscopy solution provider, with the headquarter locates in the 7th floor of the research institute of the Chinese Academic of Science at an area of 2500 square meter in Xiamen city where successfully held the international 9th BRICK summit in 2017.The subsidiary company locates in Wuhu city with an area of 2035 square meter.

The company founder Dr.Hongfei,Liu graduated Docter degree from Chinese Academic of Science and postdoctral degree from Xiamen University, by integrating both of top Universities' spectroscopy technology background into Optosky company aiming at developing the leading spectroscopy equipment in the world.

The company bases on unique technologies of Optomechatronics, Spectroscopy Analysis, Process Weak Optical and Electrical Signals, Cloud Computing, and have been developed wide products line of the competitive Raman spectroscopy instruments, micro spectrometer, hyperspectral imager, field spectroradiometer, fluorescence spectroscopy, LIBS etc. Driven by advanced technologies and products, Optosky brand has been well-known to customers all over the world.

Optosky company base on technologies innovation, market driven direction, customer first, provides first-class products and services, and one-stop solutions to many fortune 500 companies in many industries. The company received praise from different industries companies, as well as many innovative intellectual property, software copyright, qualification certification, and winner awards over hundred numbers.

Optosky receives top class A introduced high-tech company to international Xiamen city, the national high-tech and new innovative technology company award. The founder Dr.Hongfei Liu receives the innovation talent award by ministry of science and technology.

The company is currently conducting the exclusive project of major industrialization national oceanic administration with a total fund of five million us dollar. The company in charge of drafting national industry standard of VNIR and SWNIR Field Spectroradiometer, and six national standard drafter, including China National Standard Drafter for Hazmat detector based on Raman spectroscopy, China National Standard Drafter for Buoy-type Monitor eco-environment, China National Standard Drafter for water quality monitor in unmanned boat, China National Standards drafter for online water quality monitor by spectroscopy, China National Standard Drafter for UV-absorbent measure fabrics.

The company has over 70 IPs and over 20 innovative patents.

The company received ISO9001:2015 certification, CE certification, Police Administration Certification, FDA approval compliant, IQOQPQ compliant.

Figure 1 Optosky (Xiamen) Photonics Inc. Company Headquarter

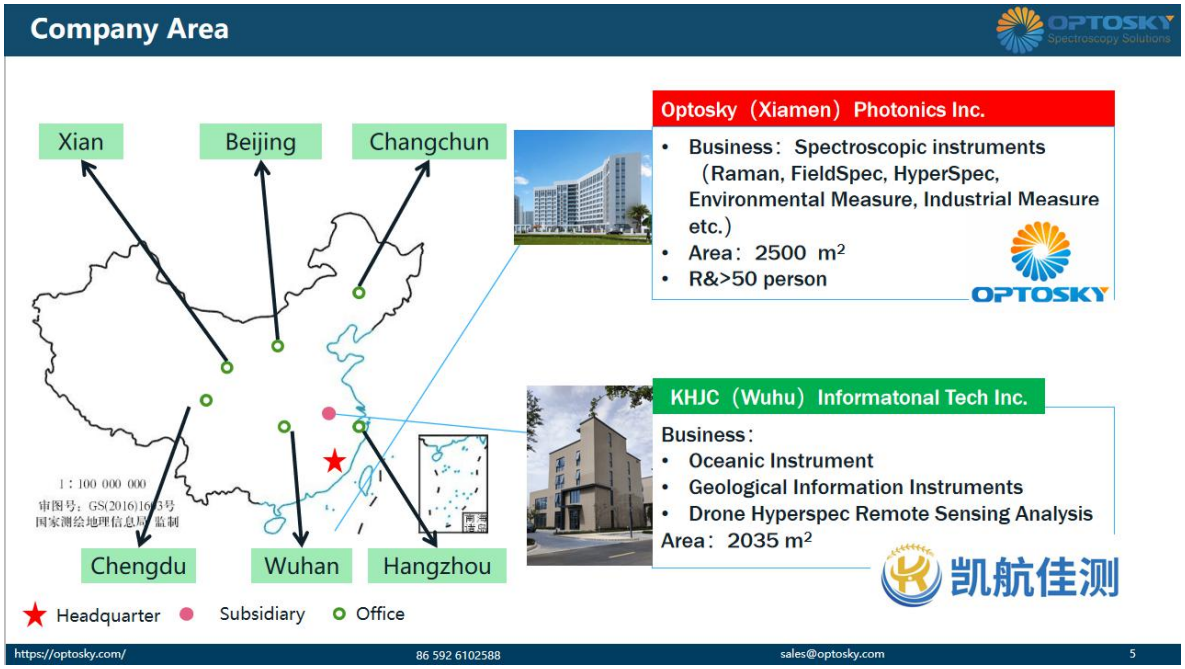


Figure 2 Optosky Company Area

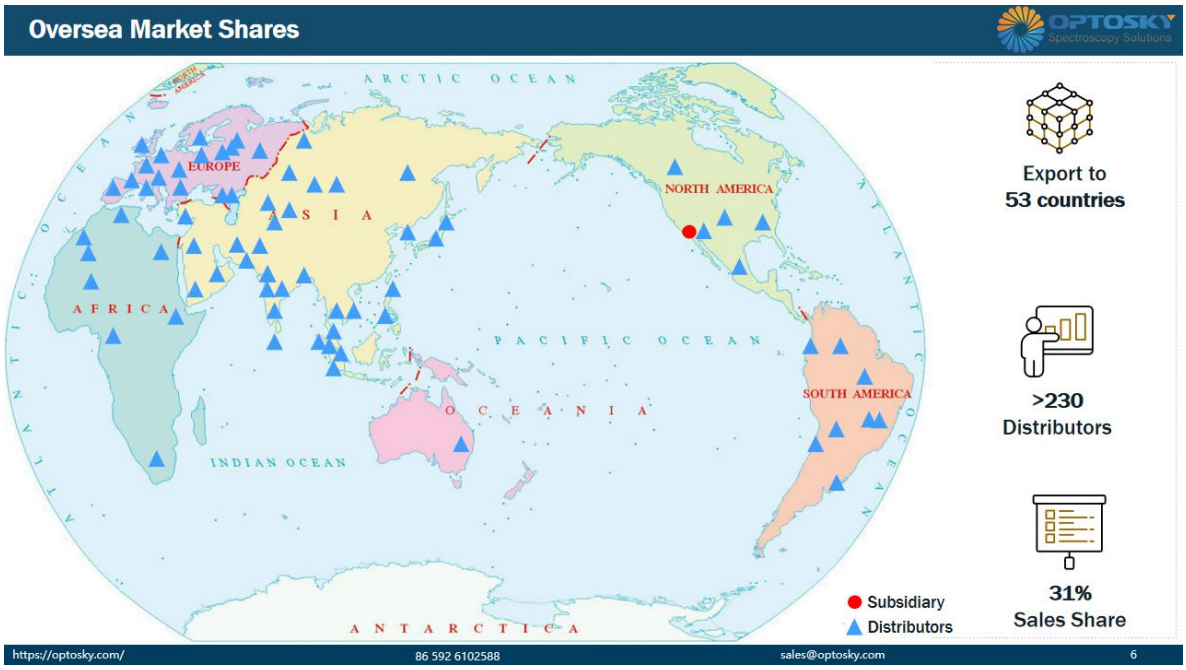


Figure 3 Oversea Market Shares

Figure 4 Optosky Chair and Draft National Standards Lists.

Figure 5 Qualification

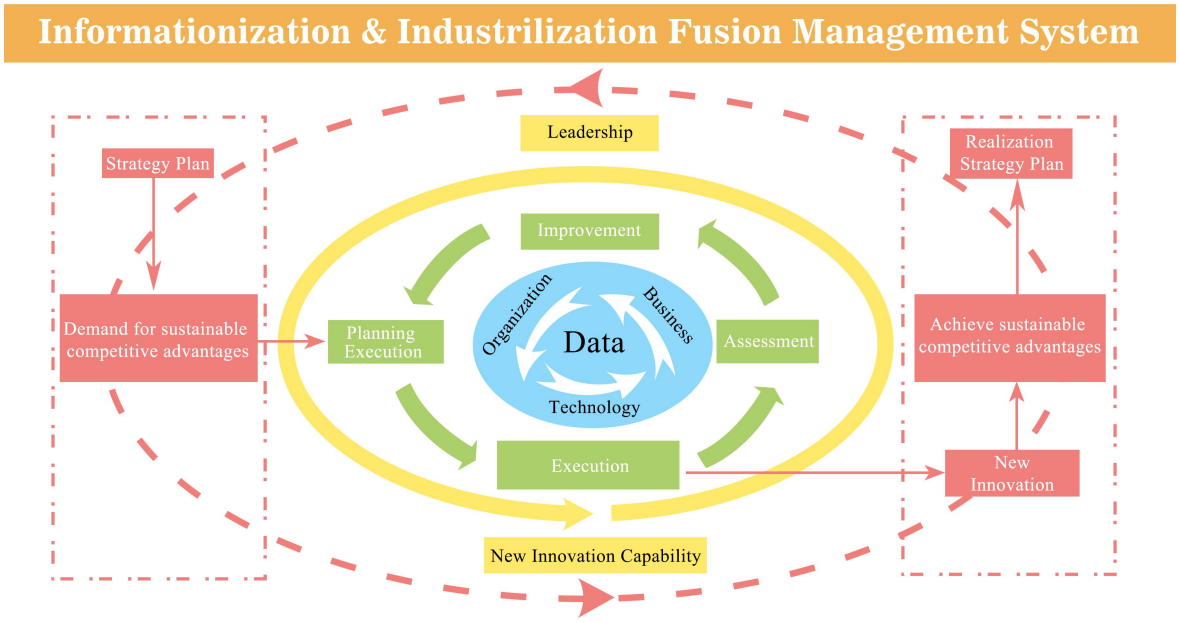


Figure 6 GB/T 23001_Informationization & Industrilization Fusion Management System

Figure 7 Optosky's Co-founder_Dr. Hongfei Liu

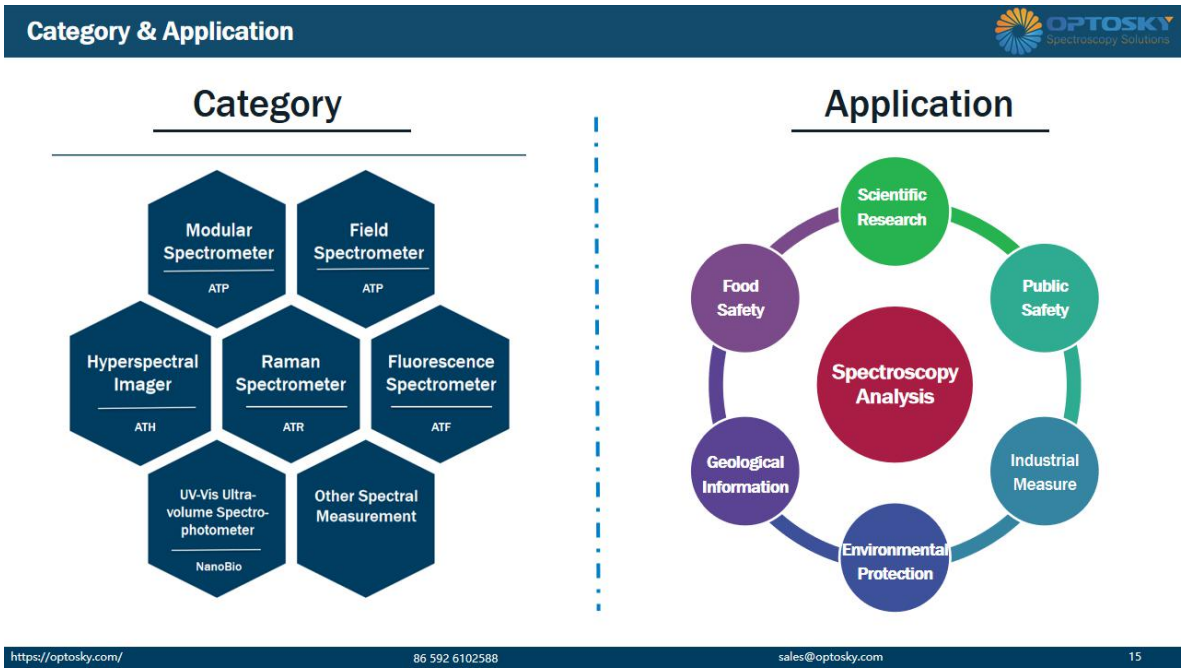


Figure 8 Category & Application

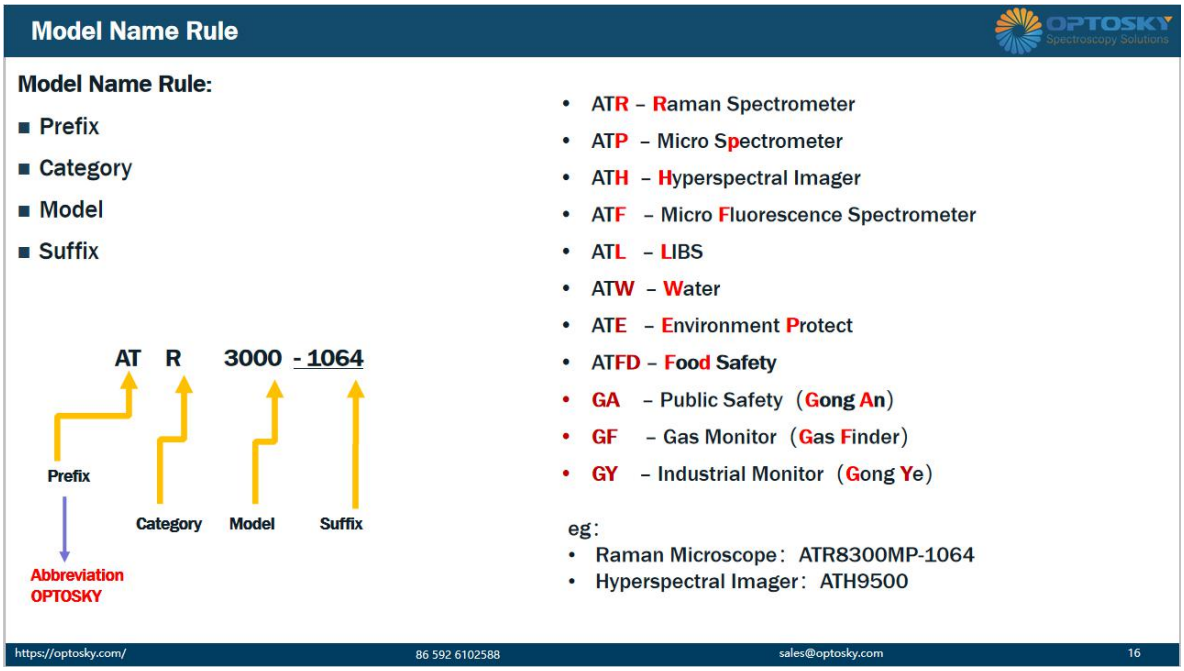


Figure 9 Model Name Rule