Raman Microscope（Pro）DTR8300Pro

Features

- Full-automated, auto-focusing, auto-scan Ultra-high resolution1 cm-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 clearimages
  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

DTR8300Pro Structure indication diagram

Description

- Drawell 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.
  DTR8300Pro 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.
  DTR8300Pro 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.

Parameters

DTR8300MP 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. lOOmWfor 532nm)
Spectral Stability	o/p <0.5% (COT 8 hours)
Thermal stability	Spectral shift < 1 cm-1 (10-40°C)
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 pm * 14 pm
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	>lpm
Laser stability	o/p <±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	0.1pm
Positioning accuracy	1pm
SCAN SPEED	20mm/s
Zaxis (automated focusing)	
Focusing accuracy	Sdb0.2pm
Max. range	20mm
Focusing speed	Less than 10 s

2. Optical performance

2.1 Spectrum

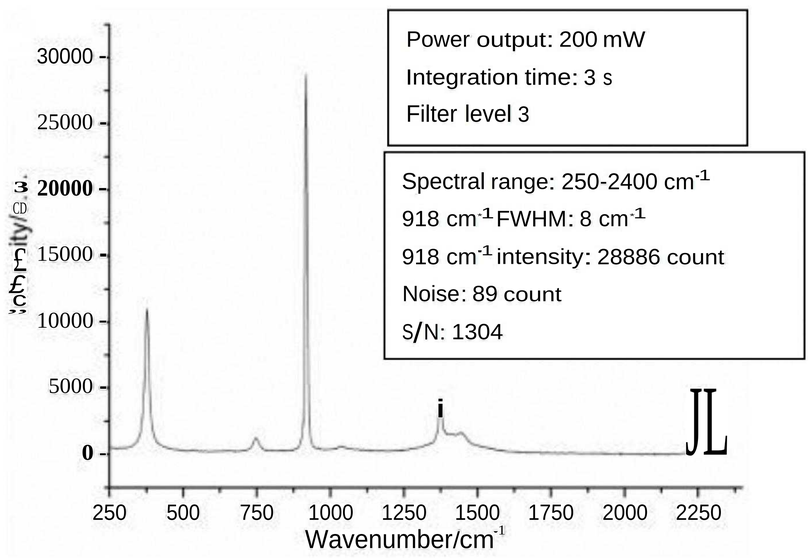
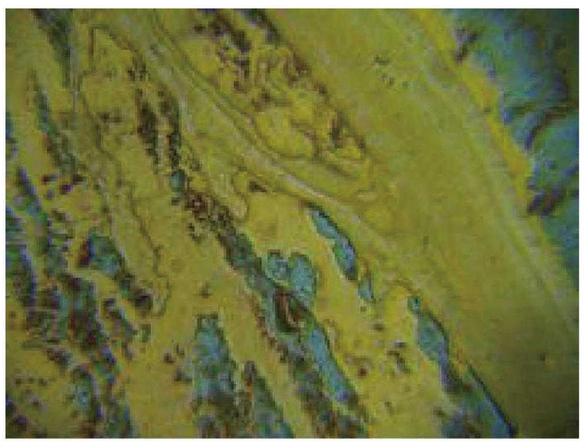
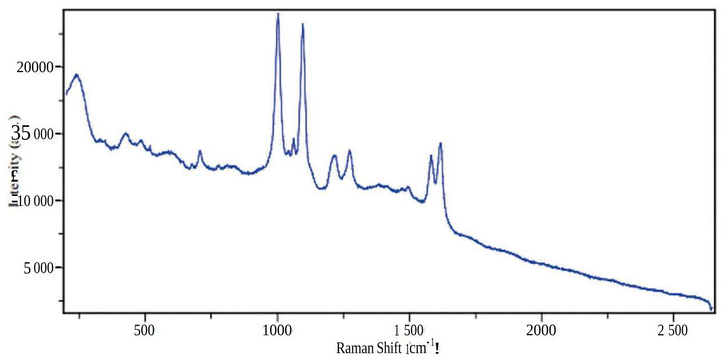
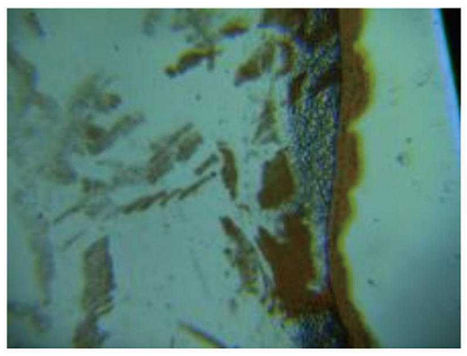


Fig. 1 DTR8300Pro collect acetonitrile spectra







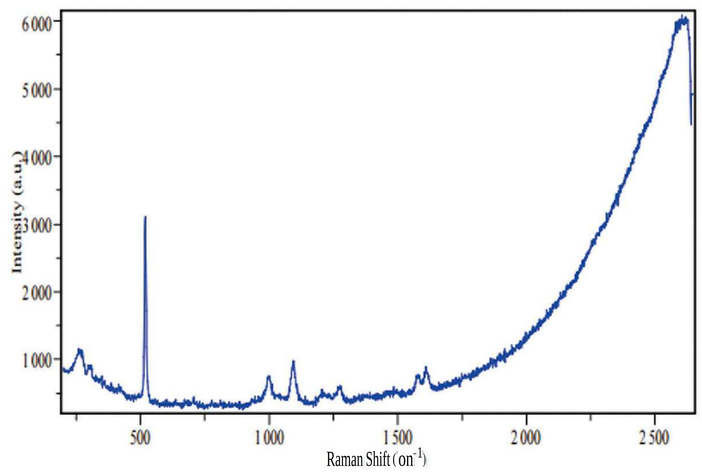


Fig.2 DTR8300Pro experiment（Left picture is sample, and right picture is Sers Raman spectra）

Table 1 DTR8300 Pro Product Selection

Models	Focus Length	Excitation Wavelength/nm	Excitation Power/mW	Max.Wavenumber Range	Min. Resolution/cm-1
DTR8300Pro-FL210	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
DTR8300Pro-FL350	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
DTR8300Pro-FL510	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
DTR8300Pro-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

DTR8300Pro-LT: Cooled down to -30°C，ultra-long integration time (Max. Time can reach 1.3h).
DTR8300Pro-SCM： Te-cooled SCMOS detector.
DTR8300Pro-BS： Basic type.
DTR8300Pro-AF： Auto-focus.
DTR8300Pro-MP： Mapping, and auto-focus.

Naming example:
•DTR8300Pro-AF-LT-FL350-532+633: auto focus, long integration time, focus length of 350mm, dual excitation wavelength: 532nm and 633nm respectively
•DTR8300Pro-MP-SCM-FL760-532+633+1064: scanning imaging, SCMOS detector, focus length is 760mm, excitation wavelength is three wavelengths: 532nm, 633nm and 1064nm respectively

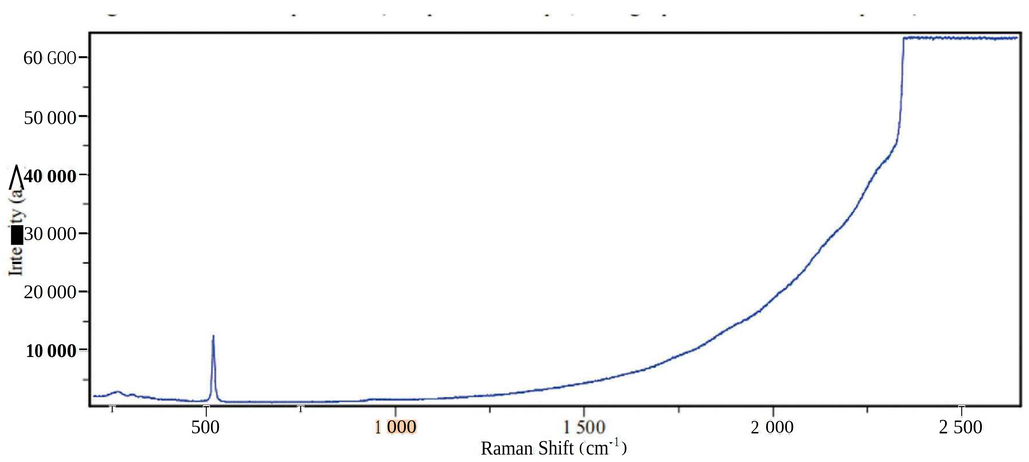


Fig 3 DTR8300Pro Measure Si Raman spectra (500mW, integration time: IS)

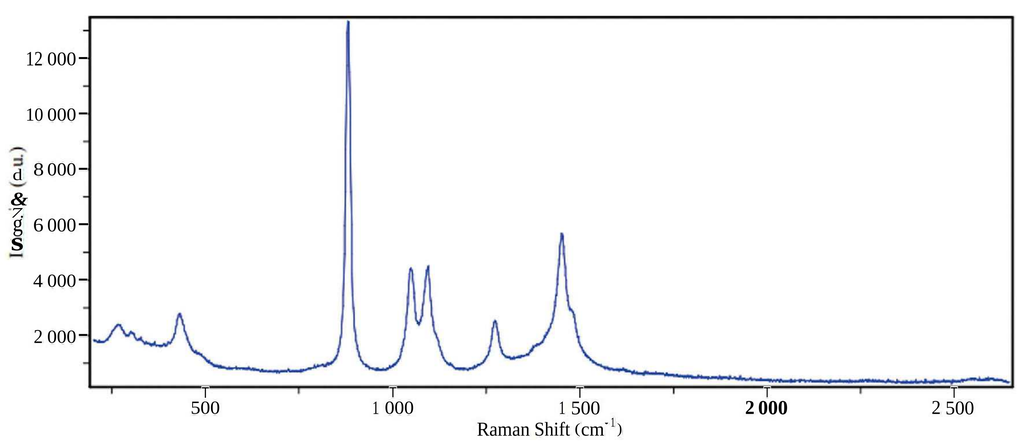


Fig 4 DTR8300Pro measure alcohol spectra (500mW, integration time: IS)

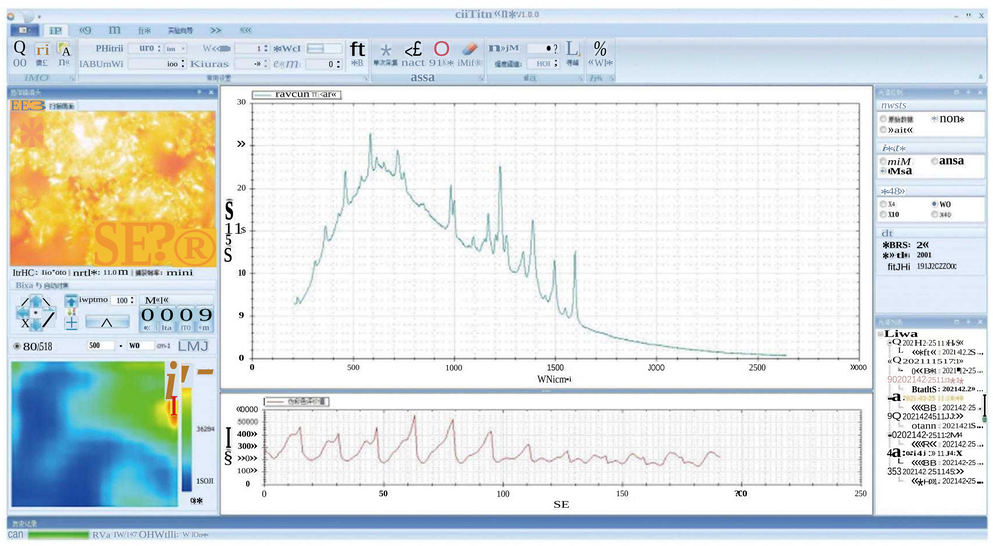


Fig 5 DTR8300Pro operation interface

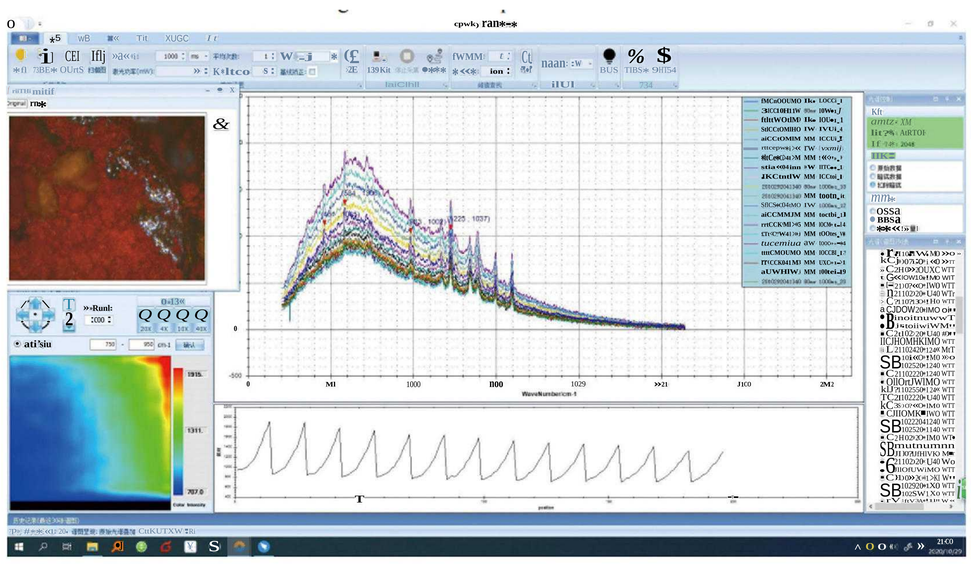


Fig 6 DTR8300Pro operation interface

2.2 Raman resolution

2.2.1Tylenol Raman spectra

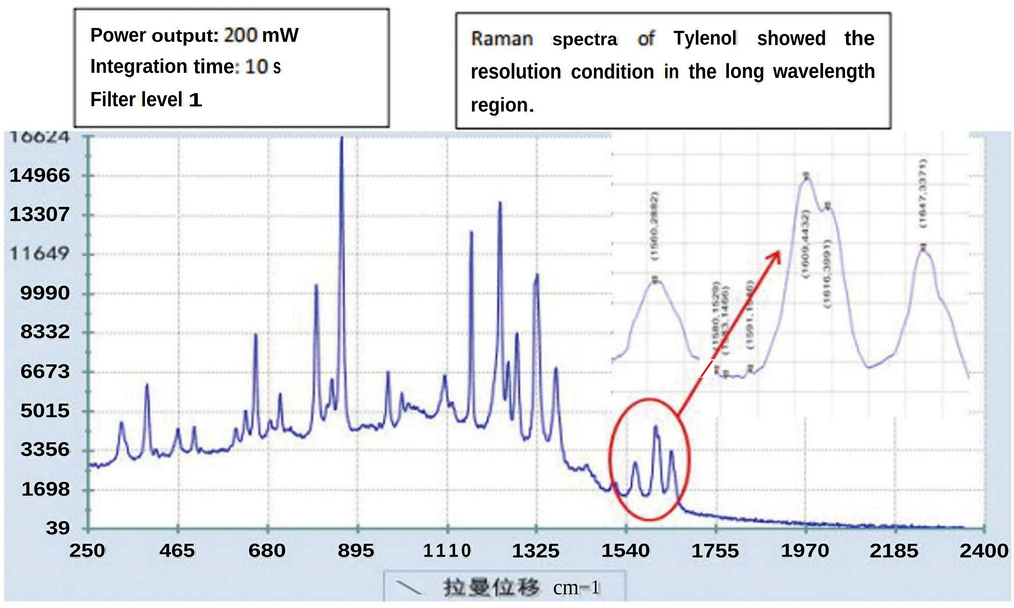


Fig 7 Tylenol spectra shows clear 1610/1615 cm-1vibration peak

2.2.2 Petrol Raman spectra

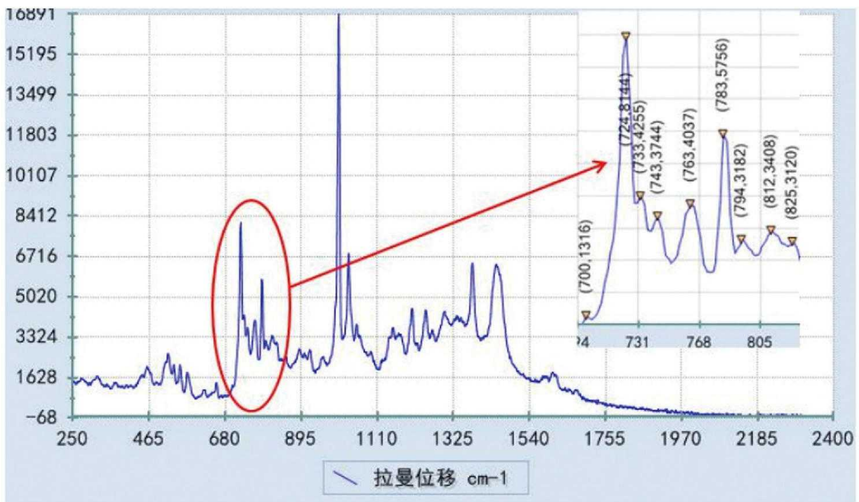


Fig 8 93# petrol Raman spectra, 723/732/742cm-1 spectral shift is clearly recognized

3.Reliability

Fig3.1, Fig3.2 temperature stability is measured by DTR8300, keep stable above an hour for each temperature node ranging between 5-40°C Sample measured is acetonitrile, wavenumbers shift<1cm-1 (Fig 3.1)，peak top intensity change < 10% (Fig 3.2)

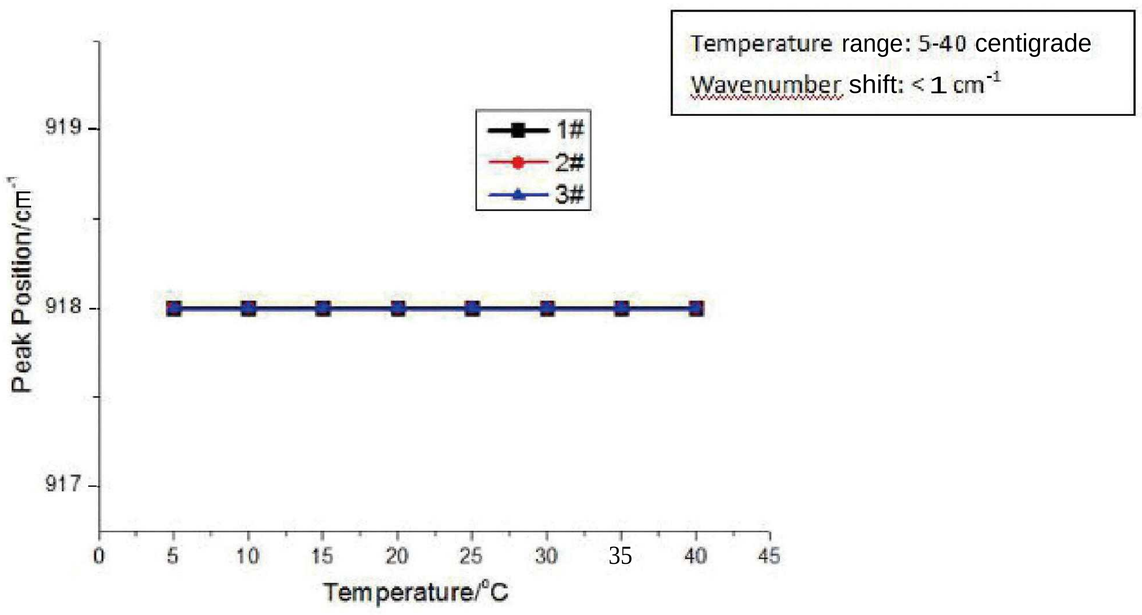


Fig. 3.1 Wavenumber shift results testing from 5 °C to 40 Y of fives ATR2000 portable Raman spectrometers

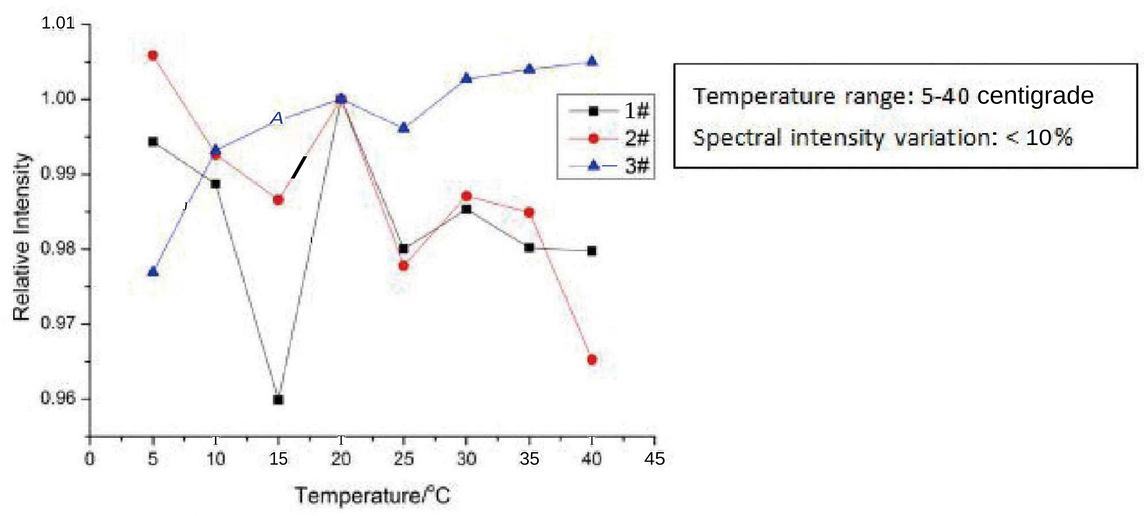


Fig. 3.2 Intensity variation testing from 5 °C to 40 °C of fives ATR2000 portable Raman spectrometers

4. Details

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

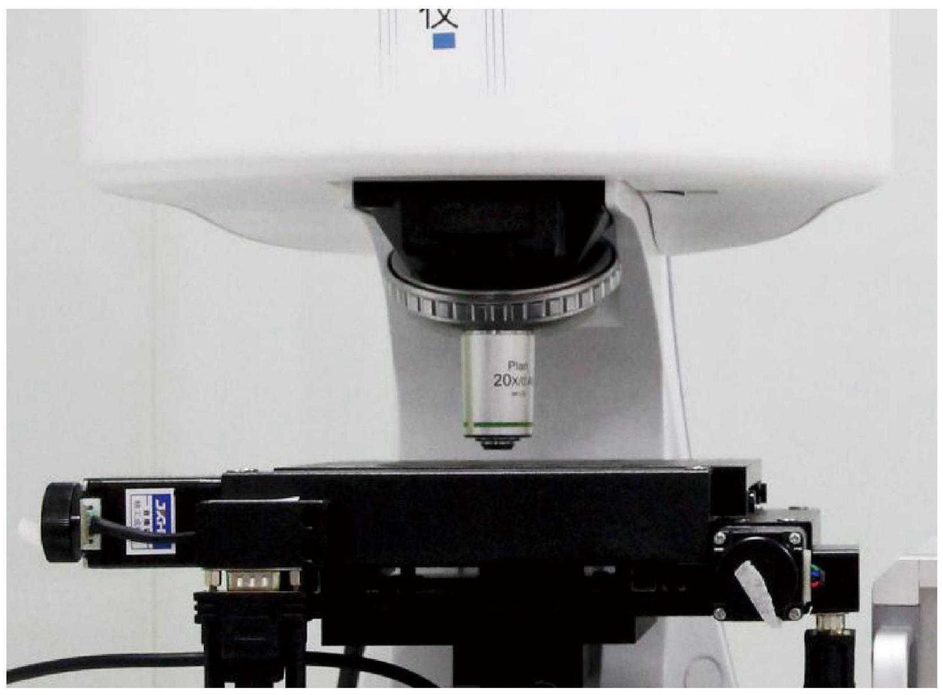


Fig 10 Raman signal high transmission objective, objective focal length up to 8mm