

# Fully automatic focusing microscope laser Raman scanning imaging spectrometer (Mapping) DTR8300



Full-automated, auto-focusing, auto-scan

Ultra-high sensitivity,SNR>6000:1 True confocal, accurate Raman mapping Ultra-high spatial resolution Unique software controlled to switch optical path Ultra-high stability Imported optics ,Excellent performance Fast positioning, quick locate focal position High quality objective, micro spot 300 million pixel camera, crisp clear images Excitation wavelength(Optional): 532,633,785,830,1064 High-performance spectrometer configured USB2.0 in direct connect with PC



#### DTR8300 Structure indication diagram

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Nano particles and new materials
Science research Institutions
Bioscience
Forensic identification
Material science
Medical immunology analysis
Agriculture and food accreditation
Water pollution analysis



### Description

DTR8300 series combines the advantages of both microscope and Raman spectrometer. The microscopic Raman detection platform makes it possible to "what you see is what you see". The visual and precise positioning of the Raman detection platform allows the observer to detect the Raman signals of different surface states on the sample and display the detected signals

simultaneously on the computer .The location of the micro area morphology greatly facilitates Raman micro area detection. DTR8300 high-profile version can fully auto focus, auto scan, one-key operation, batch experiment, uniformity scan, etc., without waiting, and can obtain highly reliable scan imaging Raman data;

DTR8300 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.

DTR8300 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.

At the same time, DTR8300 uses high-performance Raman optimized specifically for micro-Raman systems, whether it is

sensitivity, signal-to-noise ratio, stability, etc., are industry-leading levels, providing a strong guarantee for Raman research

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Models	Functions				
DTR8300BS	Basic Configuration				
<b>DTR8300AF</b>	Auto Focus				
<b>DTR8300MP</b>	Mapping, (higher configuration, auto-focus, auto-scan)				
DTR8300 (Take 785nm excitation wave	DTR8300 (Take 785nm excitation wavelength as an example)				
Spectral resolution	3cm-1				
Spectral range	250-2700, 200-3500, 200-4300 cm-1(available in customer				
	wavelengths range down to 50 cm-1)				
Maximum laser output	500 mW (Max. IOOmW for 532nm)				
Spectral Stability	o/p < 0.5% (COT 8 hours)				
Thermal stability	Spectral shift < 1 cm-1 (10-40 $^{\circ}$ C)				
SN ratio	>6000:1 TE cooled comises ductor leger 2049*(4 sincl healt thinsed ID enhanced				
Detector	CCD InGaAS cooled for 1064nm				
wavelength range detected	200nm-1100nm				
Pixel size	14pm * 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	>lim				
Laser stability	o/p<±0.2%				
Laser linewidth	0.08 nm				
Connectivity	<b>USB2.0</b>				
Electrical controlled X,Y axis 2D platfo	Electrical controlled X,Y axis 2D platform				
Moving range	5 OX 5 0mm				
Moving resolution	0.1pm				
Positioning accuracy	1pm				
Scan speed	20mm/s				
Zaxis (automated focusing)					
Focusing accuracy	≤ ±0.2pm				
Max. range	20mm				
Focusing speed	Less than 10 s				





## Fig 1 DTR8300 Raman microscope functional structure indicator diagram

Fig 2 The software page of DTR8300

**P56** 

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![](_page_2_Figure_1.jpeg)

# 2. Optica | performance

![](_page_2_Figure_3.jpeg)

Power output: 200 mW Integration time: 3 s Boxes car: 3 times Spectral range: 250-2400 cm<sup>-1</sup> 918 cm<sup>-1</sup> FWHM: 8 cm<sup>-1</sup> 918 cm<sup>-1</sup> intensity: 28886 count Noise: 89 count

![](_page_2_Figure_5.jpeg)

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![](_page_2_Picture_7.jpeg)

Fig.6 DTR8300 Sers experiment 1 (Left picture is sample, and right picture is Sers Raman spectra)

by 8 times, and the signal-to-noise ratio has increased by 8 times.

![](_page_2_Picture_9.jpeg)

![](_page_2_Figure_10.jpeg)

Figure 7 DTR8300 Sers experiment 2 (left picture is sample, right picture is Sers Raman spectra)

![](_page_2_Figure_12.jpeg)

![](_page_2_Figure_13.jpeg)

Figure 8 DTR8300 test of cell metabolites. The top three figures are the surface topography, and the bottom is the Raman spectrum. Tested by DTR8300-1064, DTR8300-785, **DTR8300-532** 

![](_page_2_Figure_15.jpeg)

Fig 10 DTR8300 measure diamond Raman spectra (30mW, integration time: 1S)

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![](_page_3_Figure_1.jpeg)

Fig10DTR8300 measure boron carbide (PN) spectra (200mW, integration time: 2S)

#### **Tylenol Raman spectra**

![](_page_3_Figure_4.jpeg)

#### Petrol Raman spectra

![](_page_3_Figure_6.jpeg)

### Fig 11 Tylenol spectra shows clear 1610/1615 cm-lvibration peak

Fig 12 93# petrol Raman spectra, 723/732/742cm-l spectral shift is clearly recognized

### Reliability

Fig3.1, Fig3.2 temperature stability is measured by DTR8300, keep stable above an hour for each temperature node ranging between 5-400C. Sample measured is acetonitrile, wavenumbers shift<lcm-1 (Fig 3.1), peak top intensity change < 10% (Fig 3.2)

![](_page_3_Figure_11.jpeg)

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

Order guide

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

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PN	Wavelength /nm	Power /mW	Wavenumber range/cm-1	<b>Resolution/cm-1</b>	
<b>DTR8300-532</b>	532	100	200-3700	7	
DTR8300-633	633	50	200-3500	6	
DTR8300-785-27	785	600	200-2700	4	
DTR8300-785-35			200-3500	6	
DTR8300-785-43			200-4300	8	
<b>DTR8300-1064</b>	1064	600	200-2600	12	
Available in oustom wavelength					

Available in custom wavelength

**P58** 

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![](_page_4_Picture_1.jpeg)

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

![](_page_4_Picture_3.jpeg)

![](_page_4_Picture_4.jpeg)

![](_page_4_Picture_5.jpeg)

![](_page_4_Picture_6.jpeg)

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

Simple interface: Raman spectrometer: power socket +USB2.0 connector

![](_page_4_Picture_9.jpeg)

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