Datasheet

OEM Raman Spectrometer Modules ATR3000SJ

Features

- Ultra-high sensitivity FFT-CCD TE-cooled;
- low noise circuit;
- Powerful embedded software;
- Fluorescent background eliminates;
- Peak finding and display;
- USB 2.0;
- User friendly human-machine interface;
- Remote control via LAN;

Application

- Biological science
- Pharmaceutical engineering
- Forensic analysis
- Agriculture and food safety
- Gemstone
- Environmental science

Description

The ATR3000SJ series Raman spectroscopy core module is a Raman spectroscopy core module composed of a highly stable narrow linewidth Raman laser, a high-efficiency Raman probe, and a refrigerated fiber spectrometer. Its design starts from OEM customers, facilitates integration and secondary development, provides rich control interfaces and development tools, provides core modules to many Raman spectroscopy manufacturers, and has a rich user market.

The core module of the ATR3000SJ series Raman spectrometer has a variety of instrument types to choose from, high-sensitivity Raman signal detection, high-resolution spectral resolution, and provides a wealth of secondary development tools and development kits, which is very beneficial to OEM customers' secondary development. Development work.

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1. Parameter

ATR3000SJ System	
Interface	USB 2.0
Voltage	DC 19V(+/-5%)
Operating Temperature	-10~40 ℃
Working Humidity	< 95%
Reliability	
Spectral Stability	σ/μ < 0.5% (COT 8 hours)
Temperature Stability	Spectral shift ≤ 1 cm-1 (10-40 ℃)
Spectral Intensity Change (in 5 ~ 40 ℃)	<±5%
Raman Probe	
Working Distance	6 mm
Transmission Rate	OD>8
Numerical Aperture	0.3
Aperture	7mm

2. Order Guide

Model	Excitation wavelength（nm）	Maximum laser power（mW）	Spectral range (cm^{-1})	Resolution (cm^{-1})	Features
ATR3110SJ -27	785	550	250~2700	4~6	Suitable for most applications
ATR3000SJ -35			200~3500	6~8	
ATR3000SJ -43			200~4300	7~10	
ATR3000SJ -1064	1064	500	200~2600	13	No fluorescence interference, especially suitable for dark samples, colored samples and other samples with strong fluorescence properties, such as pigments, biological samples, etc.

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ATR3000SJ-830	830	550	200~3300	7	It can better penetrate human skin and is suitable for measuring biological samples, such as non-invasive blood sugar and early cancer detection.
ATR3000SJ-266	266	50	200~3000	25	Suppress fluorescence
ATR3000SJ-532	532	100	200~3200	11	Graphene, coal, biological samples, two-dimensional materials, SERS, etc.
ATR3000SJ-638	638	80	200~3200	10	Metal oxides, new materials
ATR3000SJ-PS: Ultra-high signal-to-noise ratio, ultra-low temperature cooling back-illuminated CCD, integration time up to 25 minutes; ATR3000SJ-LT: ultra-high signal-to-noise ratio, -15℃ ultra-low temperature refrigeration back-illuminated CCD, integration time up to 1.3 hours;					

3. Optical Performance

1) General spectral performance

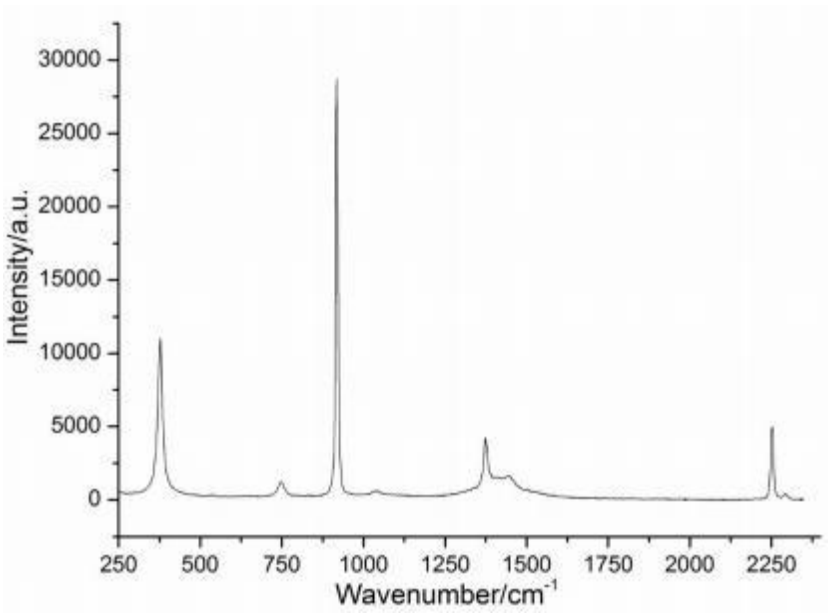

Figure 1 Raman spectra of acetonitrile

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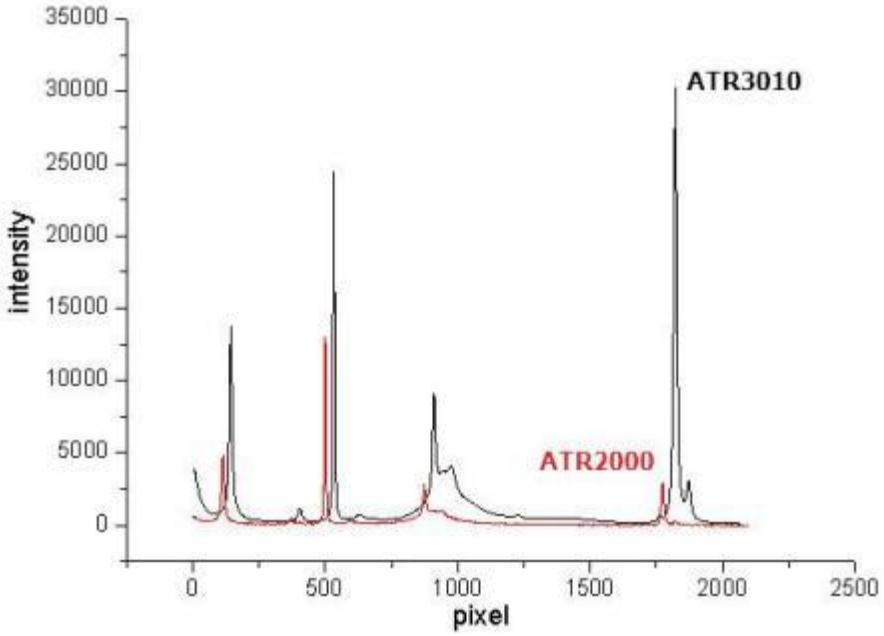

Figure 2 Sensitive of ATR3000SJ vs ATR2000

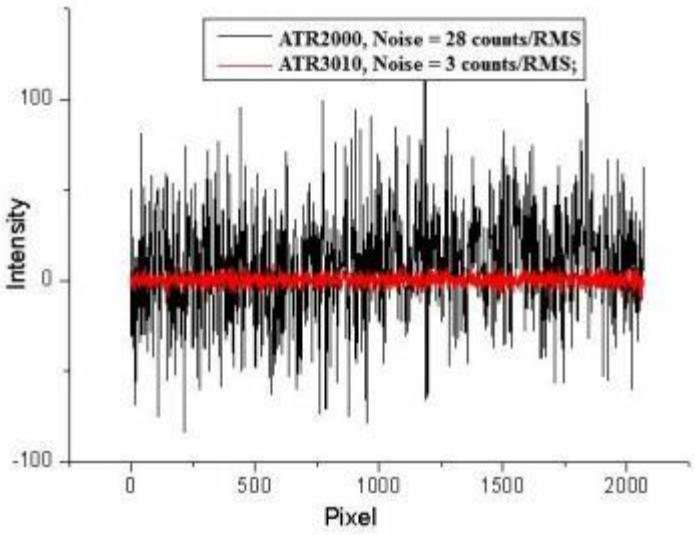

Figure 3 Noise of ATR3000SJ vs ATR2000

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2) Spectral Resolution

Raman spectral of Tylenol

Excited laser intensity: 200 mW

Integrate time: 10 s

Boxes car: 1 time

Raman spectra of Tylenol showed the resolution condition in the long wavelength region. That is better than 6 cm-1.

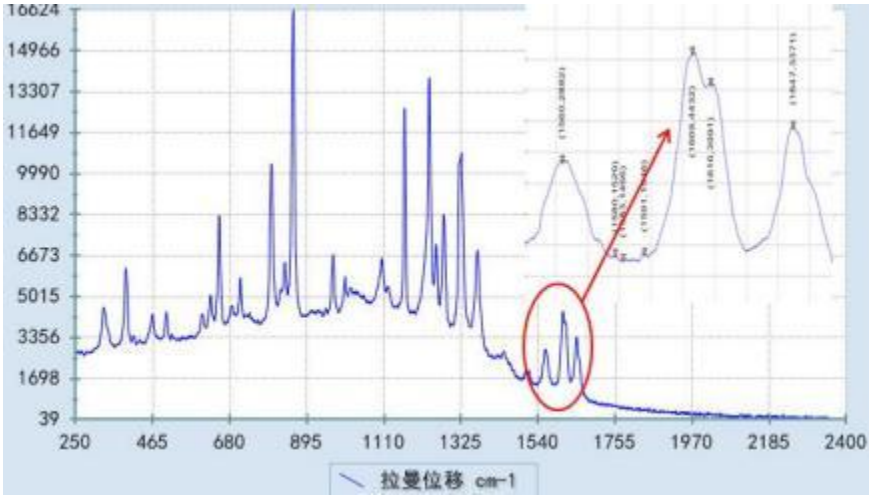

Fig.2.2 Raman spectrum of Tylenol ， the vibration mode 1610/ 1615 cm-1 can be resolved.

Raman spectral of petrol

Excited laser intensity: 200 mW

Integrate time: 10 s

Boxes car: 1 time

Raman spectra of petrol 93# showed the resolution condition in the short wavelength region.

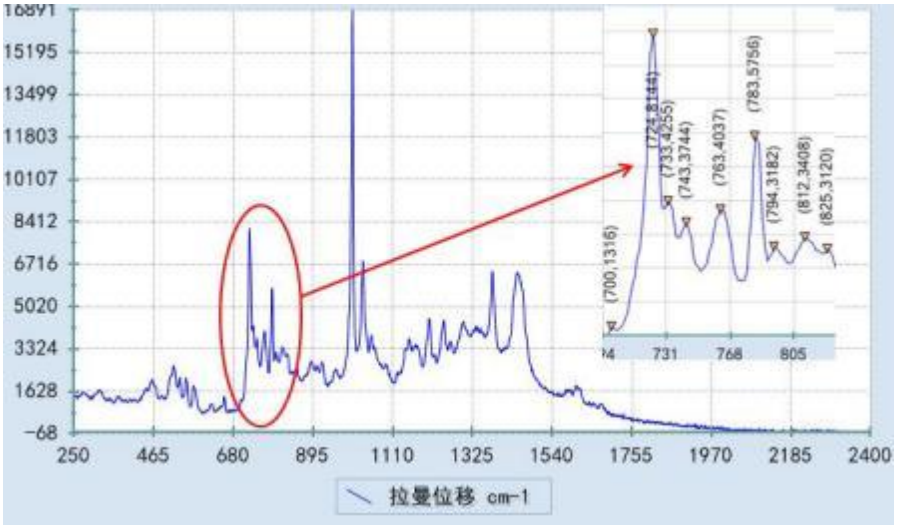

Fig.2.3 Raman spectrum of petrol 93#, the vibration mode 723/732/742cm-1 can be resolved.

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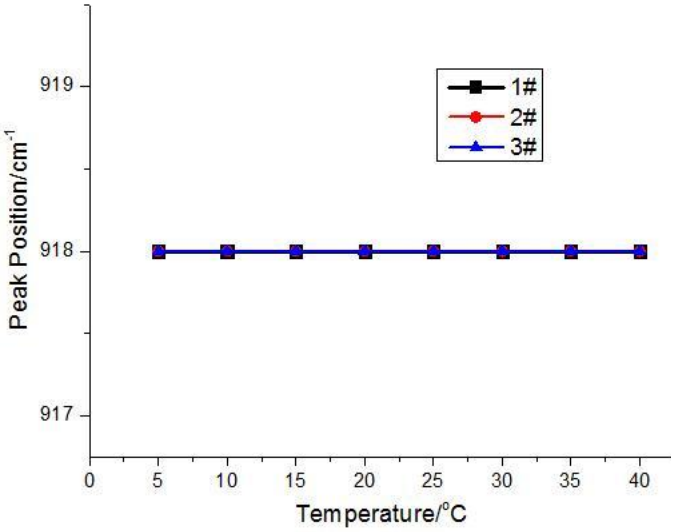
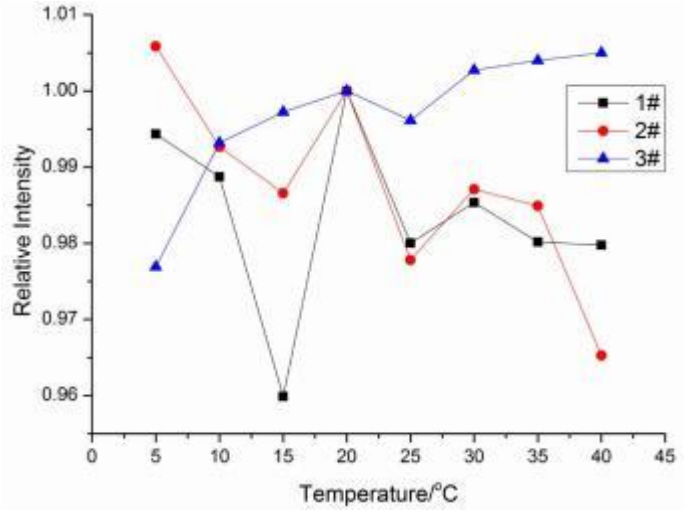
4. Reliability

Figure 3.1 and Figure 3.2 showed the temperature reliability testing results of fives ATR3000SJ portable Raman spectrometers. The testing temperature range was from 5 oC to 40 oC. The spectrometer was kept more than 1 hour at every temperature spots. Acetonitrile was used as the standard sample in the testing. The testing results were calculated using 918 cm-1 of acetonitrile. The wavenumber shift was 1 cm-1 or less(as show in Fig. 3.1). The peak intensity variation was less than 10% (as show in Fig. 4).



Temperature range: 5-40 centigrade
Spectral intensity variation: < 10%

Fig. 3.1 Wavenumber shift results testing from 5 oC to 40 oC of fives ATR3000SJ portable Raman spectrometers



Temperature range: 5-40 centigrade
Spectral intensity variation: < 10%

Figure 4 Intensity variation testing from 5 oC to 40 oC of three ATR3000SJ portable Raman spectrometers

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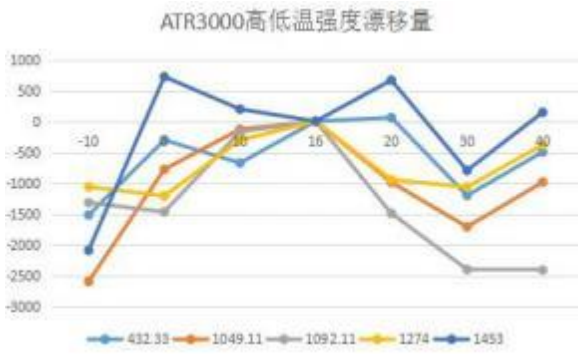
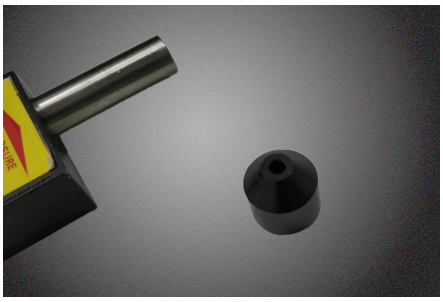
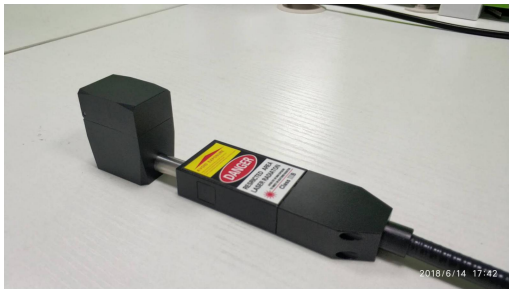


Figure 5 Intensity variation - 10 oC to 40 oC of ATR3000SJ portable Raman spectrometers, sample is alcohol.

5. Measuring attachment



Solid, powder measurement probe



Fluid sample cell（Thermo bottle）

Fluid sample cell（Liquid chromatography bottle）(Optional）

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Raman probe gun (optional)

Test adjustment stand (optional)

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