

Portable Raman Spectrometer **INOPRS785**

Features

- High sensitivity detector
- Sensor cooled to -10°C
- Detachable optical fiber probe design, very convenient to use
- Ultra-low noise circuitry
- Powerful PC-side spectral analysis software
- Peak search and display
- USB 2.0
- User-friendly interface

Application

- Nanoparticles and New Materials
- Research Institutes
- Biological Sciences
- Forensic Identification
- Material Science
- Medical Immunoassay
- Agriculture and Food Identification
- Gemstone and Inorganic Mineral Identification
- Environmental Science

Description

INOPRS785 portable Raman spectrometer fit to laboratory work. With high reliable performance, excellent low stray light, it enables a wide range of application, especially in sectors of biochemical analyzer, public safety, food safety, pharmaceutical engineering etc.

It provides free powerful software function facilitated the spectral analysis in wide application. The remote experiment through internet access makes the test item much easier. INOPRS785 built-in excellent algorithm, which can identify substances at ease, meanwhile it can add one's own spectral data. A user-friendly interface for both technical & non-technical users to make their job easier. High-quality hardware configuration and robust multivariate algorithms guarantee accurate, uniform and reliable results detected.

Model	Wavelength range (cm-1)	Resolution (cm ⁻¹) *
INOPRS785-26	200~2600	6
INOPRS785-35	200~3500	8
INOPRS785-43	200~4300	10



1. Parameter

INOPRS785			
Interface	USB 2.0		
Integration time	4ms~120s		
Power supply voltage	DC 5V±5%		
Operating temperature	-10~45 °C		
Operating humidity	< 95%		
Dimensions(L*W*H)	30×22.5×13.2 cm ³		
Weight	7 Kg		
Reliability			
Spectral stability	$\sigma/\mu < 0.5\%$ (COT 8 hours)		
Temperature stability	Spectral shift $\leq 1 \text{ cm}^{-1}$ (10~40 °C)		
Spectral intensity variation (in 5 ~ 40°C)	<±5%		
Optical parameters			
Spectral Range (cm ⁻¹)	200~2600	200~3500	200~4300
Resolution (cm ⁻¹)	4~6	6~8	7~10
SNR	>3000:1 (918 cm ⁻¹ of Acetonitrile , 10s accumulation, 200mW)		
Entrance Slit	50 μm		
Optical System	F/4 C-T Cross-Symmetrical Optical Path		
Focal Length	98 mm for incidence and output		
Detector			
Type	Ultra-High Sensitivity Fast-Cooling CCD		
Cooling Temperature	-10 °C		
Detection Range	200~1100 nm		
Effective Pixels	2048*64		
Dynamic Range	50000: 1		
Pixel Size	14 μm ×14 μm		
Full Well Capacity	300 Ke-		
Sensitivity	QE>40%, 6.5 $\mu\text{V}/\text{e}^-$		
Excitation Light			
Central Wavelength	785nm (±1nm)		
Laser Linewidth	0.08 nm		
Output Power	$\geq 500 \text{ mW}$		
Power Stability	$\sigma/\mu < \pm 0.2\%$		
Raman Probe			
Working Distance	6 mm		

Optical Density	OD>8
Numerical Aperture	0.3
Aperture	7mm

2. Optical Performance

General spectral performance

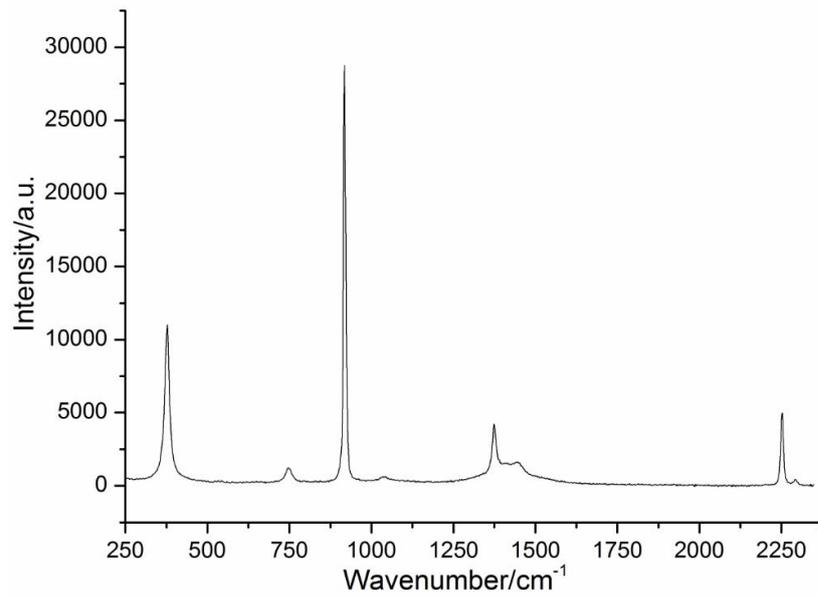


Figure 1 Raman spectra of acetonitrile

Spectral Resolution

Raman spectral of Tylenol

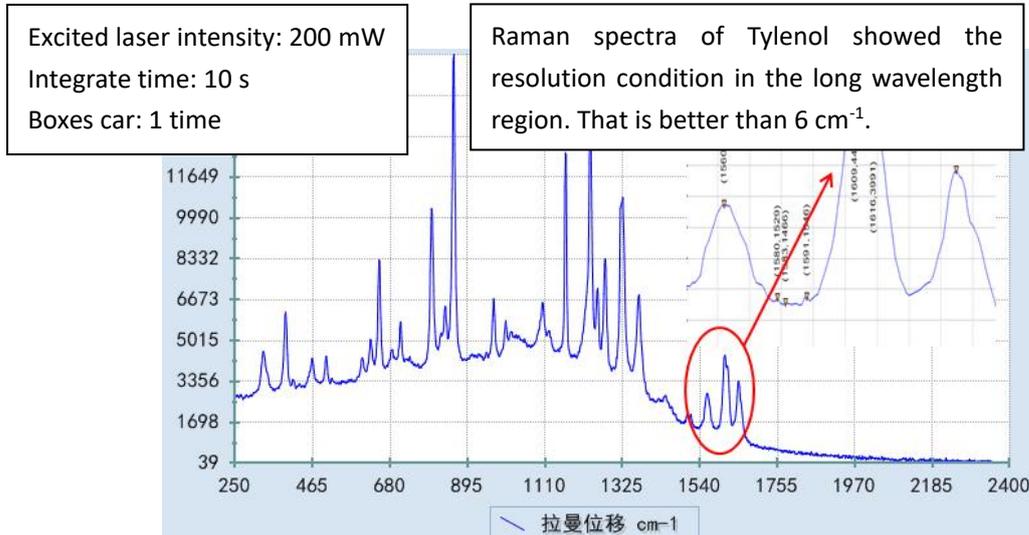


Fig.2.2 Raman spectrum of Tylenol, the vibration mode $1610/1615\text{ cm}^{-1}$ can be resolved.

Raman spectral of petrol

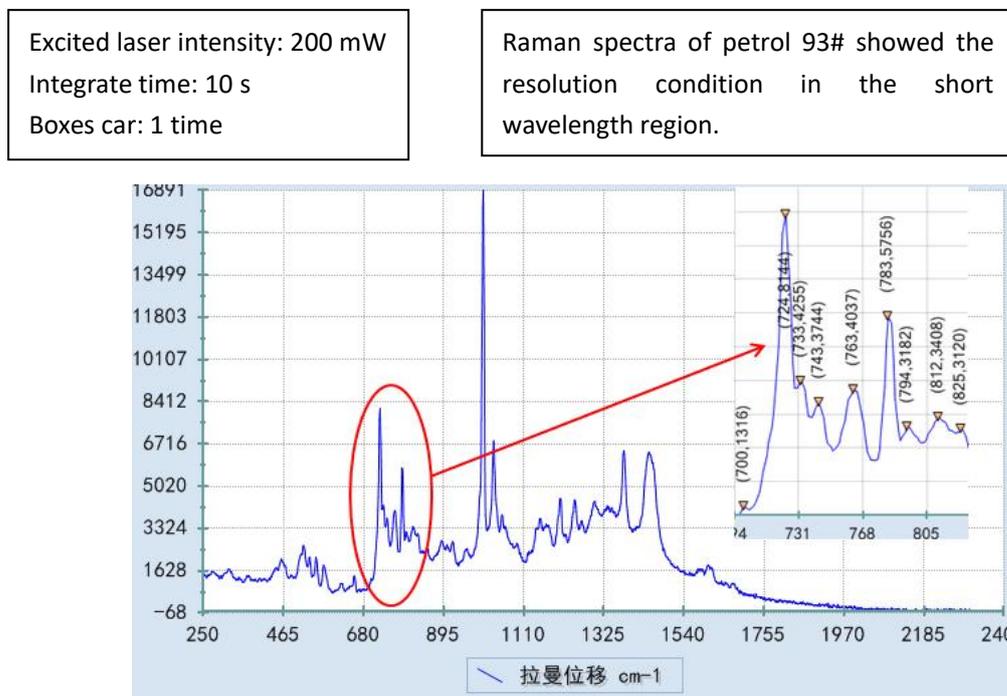


Fig.2.3 Raman spectrum of petrol 93#, the vibration mode $723/732/742\text{ cm}^{-1}$ can be resolved.

3. Reliability

Figure 3.1 and Figure 3.2 showed the temperature reliability testing results of five INOPRS785 portable Raman spectrometers. The testing temperature range was from 5 °C to 40 °C. 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).

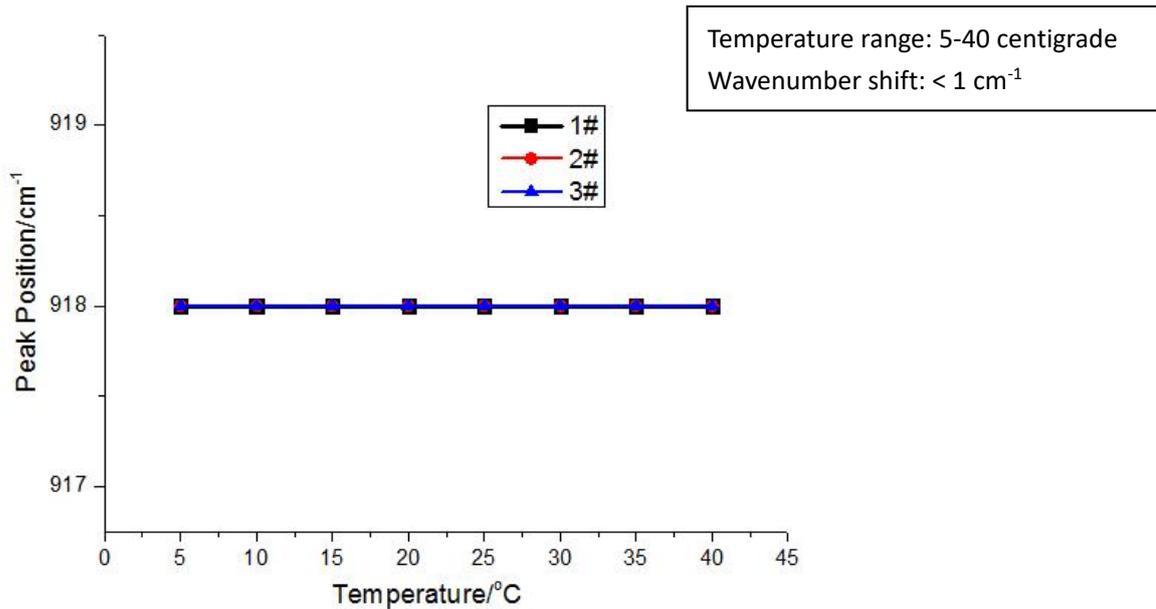


Fig. 3.1 Wavenumber shift results testing from 5 °C to 40 °C of five INOPRS785 portable Raman spectrometers

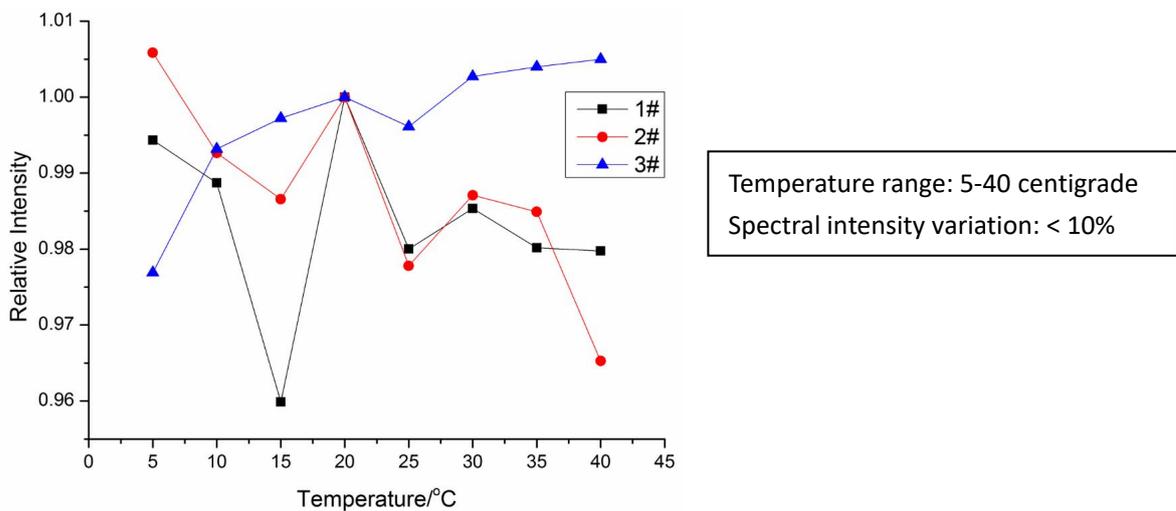


Figure 4 Intensity variation testing from 5 °C to 40 °C of three INOPRS785 portable Raman spectrometers

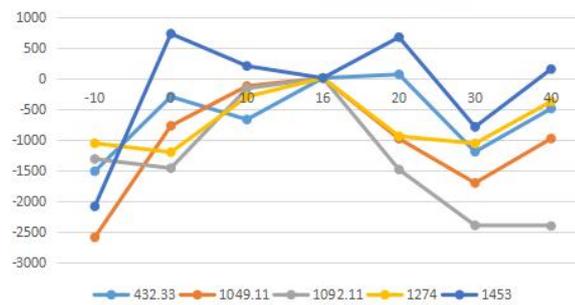


Figure 5 Intensity variation -10 °C to 40 °C of INOPRS785 portable Raman spectrometers, sample is alcohol.



4. Accessories



Figure 1: Liquid Sample Measurement Cell (Thermo Bottle)



Figure 2: Liquid Sample Measurement Cell (Optional Liquid Chromatography Bottle, Microliter)



Figure 3: Pistol-style Raman Probe (Optional)



Figure 4: Precision Adjustment Stand
(For Solid and Powder Measurements)

5. Selection Guide

Model	Wavelength (nm)	Laser Power (mW)	Spectral Range (cm ⁻¹)	Resolution (cm ⁻¹)	Features
INOPRS785-26	785	550	200~2600	4~6	Suitable for Most Applications
INOPRS785-35			200~3500	6~8	
INOPRS785-43			200~4300	7~10	