

Dual-Band Portable Raman Spectrometer

INODPRS

Features

- Dual bands: 532, 633, 785, 1064nm (optional dual wavelengths combination);
- High sensitivity, SNR>3000:1
- High Stability
- Hamamatsu CCD, excellent performance;
- High performance spectrometer
- USB2.0 connect to PC

Application

- Scientific Research
- Biology Science
- Forensic Science
- Material Science
- Medical Immunology
- Agriculture and food identification
- Water Pollution analysis
- Gemstones and inorganic mineral
- Environment Science

Description

In many cases in lab is uncertain of wavelengths better for their application, INODPRS dual-band Raman spectrometer integrate two wavelengths laser sources to detect small sample. It requires no contact, no treatment to make an undestructive detect. This instrument has advantages of high performance-to-ratio, smart size can detect liquids, including fabrics, biology, alcoholics, crystals etc.

INODPRS built-in 532nm, 633nm, 785nm Raman spectrometers, all of them employs cooled high sensitivity Raman signal enhanced CCD, high efficient Raman probe with a laser power up to 600mW narrow linewidth lasers, combined with high reliable optical design, circuit design, structure design, detect result is very stable, and super SNR.

INODPRS built in 1064 Raman, employs ultra high cooled semi-conductor lasers, 2nd class cooled ultra high sensitivity InGaAs linear array CCD. As a result, with high performance, high sensitivity can fit to scientific research, medical instrument industry.



1.1 Order guidance

INODPRS-785+1064	785+1064	500	200 ~ 3500	3 ~ 8
		500	200 ~ 2600	7 ~ 15
INODPRS-532+633	532+633	100	200 ~ 3700	5 ~ 12
		50	200 ~ 3800	6 ~ 11
INODPRS-532+1064	532+1064	100	200 ~ 3700	5 ~ 12
		500	200 ~ 2600	7 ~ 15
INODPRS-532+785	532+785	100	200 ~ 3700	5 ~ 12
		500	200 ~ 3500	3 ~ 8
INODPRS-633+1064	633+1064	50	200 ~ 3800	6 ~ 11
		500	200 ~ 2600	7 ~ 15

Book 1 INODPRS Built-in Raman Spectrometer Performance Parameters

Excitation	Excitation/nm	Power /mW	Wavenumber/cm ⁻¹	Resolution/cm ⁻¹
532 nm	532	100	200 ~ 3700	5 ~ 12
633 nm	633	80	200 ~ 3800	6 ~ 11
785 nm	785	500	250 ~ 2700	3 ~ 6
			200 ~ 3500	4 ~ 8
			200 ~ 4200	5 ~ 10
1064 nm	1064	500	200 ~ 2600	7 ~ 15
Optional other wavelengths				

In many cases in lab is uncertain of wavelengths can better fit for their applications, such as 532nm, 785nm, 1064nm have their own characteristics:

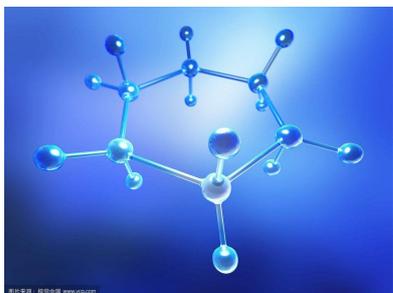
Excitation	Advantage	Disadvantage
532nm	High excitation efficiency, short detect time	Greatly disturbed by fluorescence
1064nm	Fluorescence Resistance	High cost, low laser excitation efficiency, long detect time
785nm	High comprehensive, low cost, high excitation efficiency	

1.2 Technical parameters

Types	INODPRS-532nm	INODPRS-633nm	INODPRS-785nm	INODPRS-830nm	INODPRS-1064nm
Interface	USB 2.0	USB 2.0	USB 2.0	USB 2.0	USB 2.0
Integration Time	1ms - 120s	1ms -64s	4ms - 120s	4ms - 120s	4ms - 120s
Power Voltage	AC 220V(+/-5%)	AC 220V(+/-5%)	AC 220V(+/-5%)	AC 220V(+/-5%)	AC 220V(+/-5%)
Working Temperature	-10~40 °C	-10~40 °C	-10~40 °C	-25~50 °C	-10~40 °C
Working Humidity	< 95%	< 95%	< 95%	< 95%	< 95%
Size (L*W*H) (mm)	800*500*300	800*500*300	800*500*300	800*500*300	800*500*300
Channels No.	100	100	100	100	100
Rail Accuracy	0.625μm	0.625μm	0.625μm	0.625μm	0.625μm
Weight	27 Kg	26 Kg	25Kg	25 Kg	27Kg
Reliability					
Spectral Stability	$\sigma/\mu < 0.5\%$ (COT 8 hours)	$\sigma/\mu < 0.5\%$ (COT 8 hours)			
Temp Stability	shift $\leq 1 \text{ cm}^{-1}$ (10-40 °C)	Shift $\leq 1 \text{ cm}^{-1}$ (10-40 °C)			
Spectral intensity change (in 5 ~ 40 °C)	< $\pm 5\%$	< $\pm 5\%$	< $\pm 5\%$	< $\pm 5\%$	< $\pm 5\%$
Optical parameters					
SNR	>1500:1	>3000:1	>3000:1	>3000:1	>3000:1
Detector					
Models	High sensitivity Cooled CCD	High sensitivity Cooled CCD	High sensitivity Cooled CCD	High sensitivity Cooled CCD, Raman signal enhanced back-thinned CCD	High sensitivity 512 pixels InGaAs detector
Detector cooled Temp	-10 °C	-10 °C	-10 °C	-10 °C	-20 °C
Detector Range	200-1100 nm	200-1100 nm	200-1100 nm	200-1180 nm	900-1700 nm

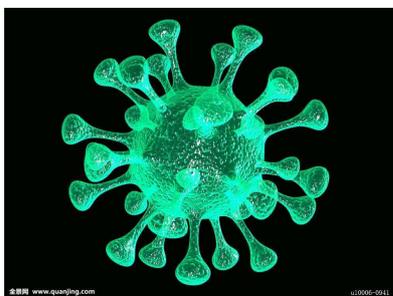
Dynamic Range	50000: 1	10000: 1	50000: 1	30000: 1	80000: 1
Excitation					
Central Wavelengths	532nm±0.5nm	633nm±0.5nm	785nm±0.5nm	830 nm±0.5nm	1064±0.5nm
PWHM	≤ 0.1 nm	≤ 0.1 nm	0.08 nm	0.1 nm	0.1 nm
Max. Power	≥100 mW	≥100 mW	≥500 mW	≥500 mW	≥500 mW
Power Stability	$\sigma/\mu < \pm 0.5\%$	$\sigma/\mu < \pm 0.5\%$	$\sigma/\mu < \pm 0.2\%$	$\sigma/\mu < \pm 0.2\%$	$\sigma/\mu < \pm 0.2\%$
Raman Probe					
Working Distance	6 mm	6 mm	6 mm	6 mm	6 mm
OD	OD>8	OD>8	OD>8	OD>8	OD>8
NA	0.3	0.3	0.3	0.3	0.3
Aperture	7mm	7mm	7mm	7mm	7mm
Operation System	Android				
Interface	WIFI, 4G (optional)				
System parameters					
Interface	USB 2.0				
Operation Mode	Touch screen, PC				
Power supply	110V-220V, 0.5A				
Integration Time	4ms - 120s				
Power Voltage	DC 19V(+/-5%)				
Power	Max. Power: 50W				
Working Temp.	-10~50 °C				
Working Humidity	< 95%				
Size (L*W*H)	350(d) x 296(w) x 172(h) mm				
Weight	12 Kg				

1.3 Application



Chemical

- Material come in/out test and certification
- online detect of in-process analysis technology
- Analyze physics/chemistry performance relative relationship (Molecular mass, Viscosity, glass transition Temp. etc)
- Petrol product identification and analysis
- Resin, petrol chemical products, daily products identification



Biology

- In-situ, tissue cells non-contact detect, nondestructive, free sample preparation.
- Chemical imaging of internal cell
- Lipid content of Biofuel
- Detect bacterial
- SERS of low energy organism



Land safety defense

- IED/HME explosives detect
- Unknown materials
- Forensic analysis
- Border patrol and check



Pharmacy

- Drugs polymorph/solvent detect and classification
- Drugs crystals identification
- Tablets, capsule, liquid content analysis
- Additives and excipients quality guarantee and control
- Fast analysis tool of high throughput screen



Evident Identification

- Non-destructive, safe drugs and tranquilizer identification, save evidences
- Explosives identification
- Forensic identification analysis, including fibers, hairs, pigment, ink, fiber fabrics
- Toxic solvent identification



Food Safety and Agriculture

- Gutter oil detects
- Pesticide residues
- Food additives
- Port of entry check
- Pesticide & Herbicide
- Wetland check
- Bacteria pollution



Geology

- Nondestructive identification geological materials
- Fake gemstones
- Identify minerals and gemstones origins
- Evaluate mining prospect and change minerals



Semi-conductor and thin-film

- Wafer defect check
- Thin-film coating
- Online process
- Quality safety and control

1.4 Attachment



Fig 1 Liquid sample cell (similar to Thermo)



Fig 2 Liquid sample cell (Liquid chromatogram bottle, micro) (optional)



Fig 3 Gun-type Raman probe (Optional)



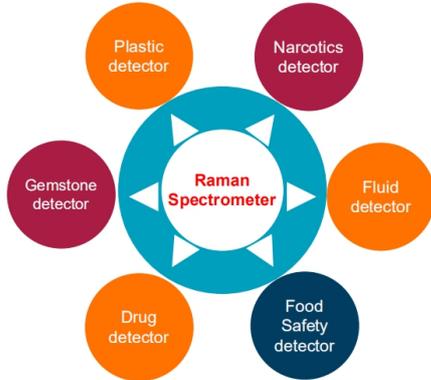
Fig 4 XY probe holder (solid & powder) (optional)



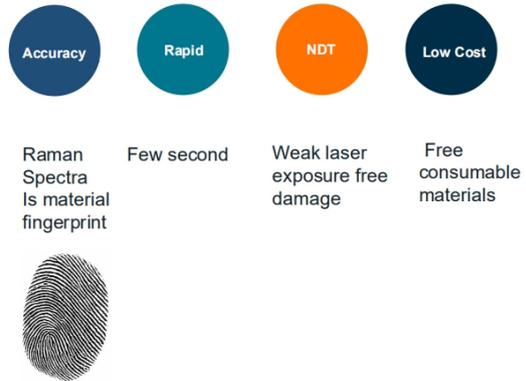
Fig 13 Long distance (2meters) Fiber Raman probe (Optional)

2 Application & Advantages

OPTOSKY Raman Spectrometer Series Categories



Advantages of Raman Spectrometer



1 Raman Application & Advantages