

Real-time online Raman Spectroscopy Process Analyzer

INOBRs

Features

- Real-time online monitoring.
- Non-contact, non-destructive, rapid detection, and not affected by water.
- Monitor 4 channels simultaneously.
- 18cm long rod probe, high temperature resistant and corrosion resistant versions available.
- Thread connection for Pg13.5.
- Withstand high temperature environment up to 300°C.
- Physical buttons and touch screen control.
- Probe distance, up to 500 meters.
- RS485, CAN, LAN and other remote communication methods.
- The explosion-proof level is not lower than Ex ic nc IIC T4 Gc.
- Threshold alarm, sound and light alarm can be set.

Application

- Online continuous measurement of biological processes
- Can be connected to up to 4 bioreactors
- Suitable for biological process environments
- Online monitoring in the pharmaceutical industry
- Real-time online monitoring of chemical reactions
- From process development, pilot testing to industrial production
- In-situ or remote monitoring of cultural relic identification
- Purification process

Description

INOBRs is a real-time online reaction process analyzer based on Raman spectroscopy technology. It can monitor the content and changes of each component in the reaction process system in real time, as well as the crystal form transformation during the crystallization process, that is, process analysis technology (PAT). By detecting the real-time Raman spectrum of the components in the reaction system and conducting quantitative analysis, it can track the change process of key materials and help users accurately understand the reaction process, determine key process parameters, optimize the process, improve product quality, and achieve efficient, safe, and stable scale-up production.

INOBRs adopts a refrigerated high-sensitivity CCD, which makes the instrument have good environmental adaptability. It adopts an optimized design of high-temperature-resistant long-rod Raman probe, making it very suitable for enterprise production and laboratory scientific process analysis research.

The multi-functional software shipped with the INOBRs enables real-time monitoring of key information during the reaction process and automation of spectral analysis, allowing users to quickly extract the required information.

Model	Excitation wavelength and maximum excitation power
INOBRs-785	785nm, ≥500mW
INOBRs-532	532nm, ≥100mW
INOBRs-638	638nm, ≥100mW
INOBRs-1064	1064nm, ≥500mW



1. Performance parameters

INOBRs technical specifications				
System				
Interface	USB2.0, SMA905			
Power voltage	DC5V, 3.5A			
Weight	<50 Kg			
Dimension	About 700 × 525 × 322 mm			
Optical system				
	INOBRs-785	INOBRs-532	INOBRs-638	INOBRs-1064
Excitation wavelength (nm)	785	532	638	1064
Maximum laser power	≥500mW	≥100mW	≥100mW	≥500mW
Spectral range	200-2600 @6cm-1 200-3500 @9cm-1	200-3700 @12 cm-1	200-2700 @ 9cm-1 200-3800 @12cm-1	200-2600 @13cm-1 200-3400 @18cm-1
Detector	Ultra-highly sensitive refrigerated (-10°C) back-illuminated 2048*64 area array detector			Cooled 512-pixel InGaAs CCD
Spectral stability	$\sigma/\mu < 0.5\%$ (COT 8 hours)			
Temperature stability	Spectral shift ≤ 1 cm-1 (10-40 °C)			
Variation of intensity	$< \pm 2\%$ (in 5 ~ 40 °C)			
SNR	>3000: 1			
Laser				
Half width	0.1nm			
Power stability	$\sigma/\mu < \pm 0.2\%$			
Raman probe				
Optical fiber and interface	Excitation light interface: FC/PC, 105μm core diameter; Raman signal fiber: SM905, 200μm			
Fiber length	1.5m, length can be customized			
Diameter	Outer diameter 12.7mm, hole diameter 8.5mm			
Working distance	6mm			
Probe length	250mm, can be customized			
Software function				
Automatic calibration, real-time data collection, data modeling, real-time monitoring and quantitative analysis of substance concentration trends (two-dimensional and three-dimensional graphs) during the reaction process, substance concentration threshold reminders...				

2. Measured spectrum

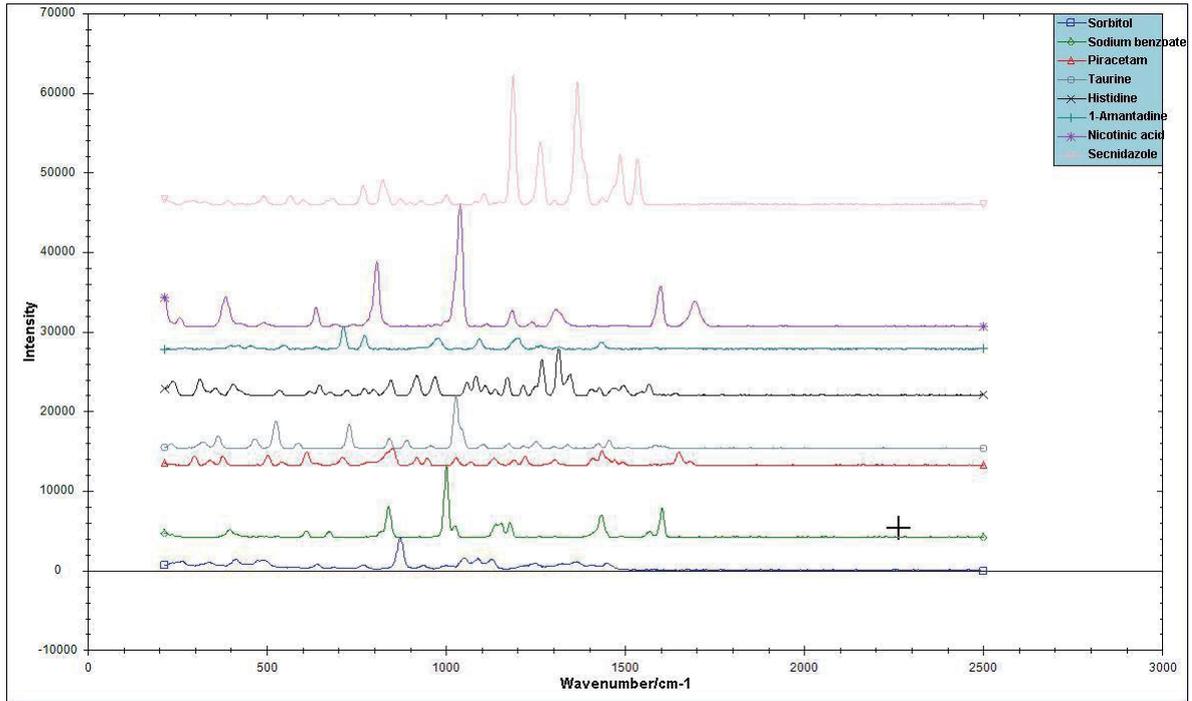


Figure 1 NOBRS measured spectrum.

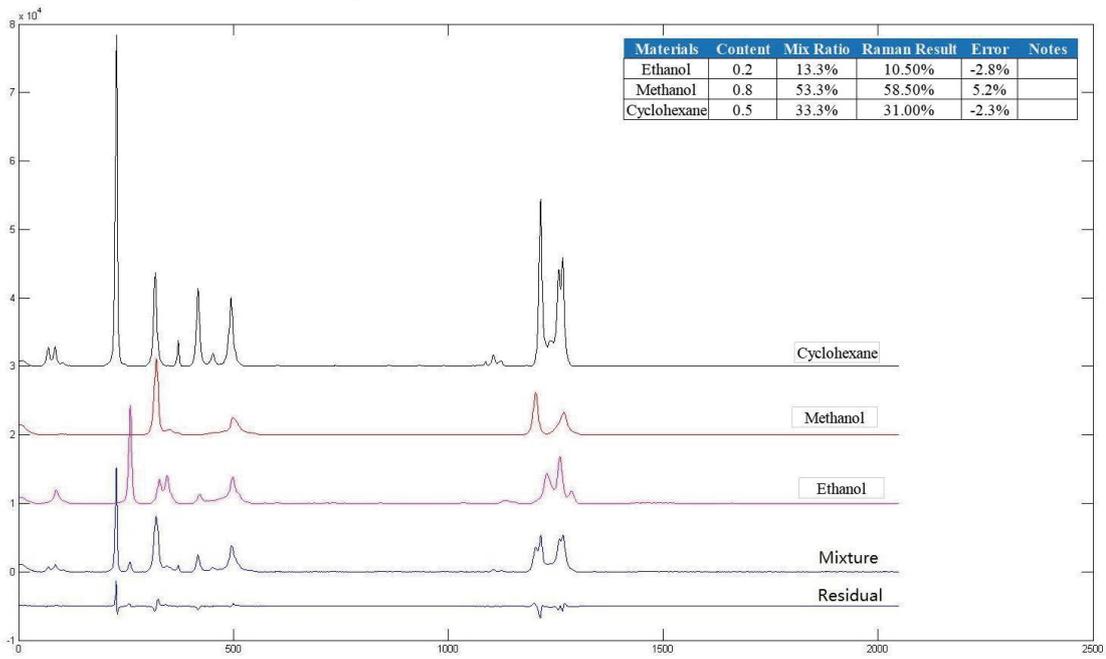


Figure 2 INOBRS measured spectrum.