

Vacuum FT-IR Spectrometer

ATP8900Ad

Description

ATP8900Ad vacuum Fourier transform infrared spectrometer is a new high-end research-grade infrared spectrometer from Optosky Photonics Inc. The ATP8900Ad has a vacuum design for optical bench and sample chamber, the user does not have to worry about the effect of water vapor and carbon dioxide on the weak absorption signal, at the same time, the design can improve the throughput of the spectrometer. The vacuum FT-IR spectrometer is widely used in nano surface analysis, polymer industry, materials science, pharmaceuticals, semiconductors and catalysis etc.

ATP8900Ad vacuum FT-IR spectrometer is made of cast aluminum and has an independent optical chamber design. The oil-free vibration-damping pump can rapidly vacuumize the optical chamber and sample chamber with real-time vacuum level display. And the sample chamber can be vacuumized independently, allowing the user to change samples quickly and efficiently.

Mid-IR and Far-IR($6000-50\text{cm}^{-1}$) spectra of sample can be scanned in one single measurement, which will obtain all the vibrational and rotational structure information of the sample. Users can switch to the NIR optical system via the software to obtain the near infrared($12500-4000\text{cm}^{-1}$) spectra of the sample. In addition, the ATP8900Ad can be equipped with an external water-cooled mercury lamp light source and a liquid helium Bolometer detector, allowing the user to extend the spectral range to 10cm^{-1} , reaching the terahertz research band.

The ATP8900Ad can be configured with multiple external optical paths to connect various external optical chambers, such as UHV vacuum sealed chambers, cryogenic dewars, high temperature emission infrared chambers, external sample chambers, external detector chambers, etc., which greatly enriching the researcher's optical platform and research area.

We offer a spectral database(about 10,000 spectra), including inorganics, organometallic complexes, polymers, additives, organics, and the user can also build their own libraries.



Features

- Vacuum design for optical bench and sample chamber, vacuum level ≤ 0.2 mbar
- Cover mid-, near and far IR/THz region ($12,500$ - 10 cm^{-1}). Software controlled optical system and detectors switching
- Acquisition of spectral information in the mid- and far spectral regions in one single measurement (6000 - 50 cm^{-1})
- High spectral resolution: 0.25 cm^{-1}
- Removal of water vapor and CO_2 interference to weak signals
- Unaffected by changes in ambient laboratory temperature
- Higher throughput and greater sensitivity
- Better stability and repeatability
- The sample chamber can be evacuated separately to facilitate sample change and improve testing efficiency
- Can be equipped with an ATR accessory with pure diamond crystal to enable measurement under vacuum condition
- Can be connected to a long-path gas cell to measure high-resolution gas spectra
- Multiple external optical paths can be configured to connect various external optical chambers such as UHV vacuum sealed chambers, low temperature dewars, high temperature emission infrared chambers, external sample chambers, external detector chambers etc

Application

- Self-assembled ultra-thin film studies
- UHV vacuum-sealed ultra-high vacuum cavities
- Low temperature matrix-isolation
- Quantification of group III and V impurities (B, P, Al, Sb, As, Ga, In) in Si single crystals
- In-situ diffuse reflection characterization of catalysts in a vacuum environment
- Inorganic and organic coordination compound studies
- lattice vibrational absorption of molecular crystals
- study of pure rotation spectra of gas molecules

Parameters

Name	Parameters
Spectral range	6000-50cm ⁻¹ (Expandable to 12500-10 cm ⁻¹)
Spectral resolution	≤ 0.25cm ⁻¹
Wave number accuracy	≤0.01cm ⁻¹
Design	Integrated casting and moulding, vacuum level: ≤0.2mbar
Interferometer	High stability Cube corner interferometer, 10-year warranty
Beamsplitter	Wide range: mid and far infrared beam splitter (options: potassium bromide, calcium fluoride, quartz, zinc selenide, etc)
Detector	Mid and far DLaTGS detector (options: InGaAs, MCT and Bolometer, etc)
IR source	Long life mid-infrared ceramic light source (options: Water-cooled mercury and tungsten light sources)
Laser	He-Ne laser, 633nm
Connection port	Network cable data port
ATR accessory	Diamond crystals, resistant to wear and tear, corrosion resistant and easy to clean
Software	Functions: Spectral measurement, spectral data pre-processing, fast spectral comparison, self-built standard spectral library, quantitative analysis, intelligent spectral recognition, one-touch direct measurement and storage, automatic report generation and printing, etc
Database	Professional infrared spectral database, more than 10,000 spectra, including various inorganic compounds, organometallic complexes polymers, additives, organic compounds, etc
Weight	<100kg (Standard configuration)
Temperature	+15°C to +35°C

Name	Type	Quantity	Note
Vacuum FT-IR spectrometer	ATP8900Ad	1	spectrometer
Anti-vibration oil-free pumps		1	accessory
Power adapters		1	accessory