

thinkforward

Peak Performance:
Introducing the new
Bruker Optics
VERTEX 80
FT-IR spectrometer for
advanced R&D applications

vertex

ver-tex Pronunciation: (vür'teks), —n, —pl. -tex-es, -ti-ces
Pronunciation: (-tu-séz'), 1. the highest point; apex; summit;
top: the vertex of a mountain



VERTEX 80

- True aligned UltraScan™ high resolution interferometer
- Optical resolution better than 0.07 cm⁻¹
- Full spectral range coverage
- Easy beamsplitter exchange
- Air cooled internal and water cooled external sources
- Remotely selectable five exit and two input beam ports
- 2-channel 24 bit dynamic range ADC

The new Bruker Optics **VERTEX 80** FT-IR spectrometer is a new addition to the **VERTEX** series FT-IR spectrometers utilizing the UltraScan™ interferometer that provides spectral PEAK resolution by the advanced TrueAlignment™ technology. That innovative optics design results in the most powerful digital bench top purge spectrometer available.

The precise linear air bearing scanner and PEAK quality optics guarantee the unprecedented sensitivity and stability. The flexible optics bench is ideal for demanding experiments such as high resolution, ultra fast rapid-scan, step-scan, or UV spectral range measurements. Automatic sample compartment shutters enable the use of the sample compartment without windows offering improved throughput and transmittance accuracy.

The **VERTEX 80** optics design affords PEAK flexibility and at the same time PEAK instrument performance. Bruker Optics' unique DigiTect™ technology with 2-channel analog-to-digital conversion (ADC) prevents external signal disturbance, guarantees PEAK signal-to-noise ratio and allows easy and reproducible detector exchange by the instrument user.

The Bruker Artificial Intelligence Network BRAIN provides intelligent functions such as recognition of sampling accessories (AAR) and optical components (ACR), automatic set up and check of measurement parameters and the permanent online check (PerformanceGuard) of the spectrometer functionality which makes FT-IR spectroscopy easy, fast and reliable even for advanced R&D experiments.



Beamsplitters and sources are easy to exchange and stored inside the optics bench.



The pre-aligned dual DigiTect™ detectors allow accurate user exchange.



The large sample compartment accommodates virtually any FT-IR sampling accessory.



The Ethernet connectivity brings ease-of-use to demanding R&D infrared spectroscopy.



VERTEX 80 with bolometer detector and **RAM II** FT-Raman module

VERTEX 80

PEAK spectral range extension

The **VERTEX 80** can optionally be equipped with optical components to cover the spectral range from the far IR or terahertz, through the mid and near IR and up to the visible and ultra-violet spectral range. The pre-aligned optical components and the true aligned UltraScan™ interferometer, makes beamsplitter exchange, range extension and maintenance easy.

Automatic Component Recognition

Change an optical component and away you go. The sources, detectors and beamsplitters on the **VERTEX 80** are electronically coded to be recognized by the instrument and the experimental parameters are reconfigured immediately. The user doesn't need to know which parameter set to load; it's all done automatically. In addition, if two conflicting components are installed at the same time, the **VERTEX 80** will recognize this, inform you about the mismatch and offer you an alternative solution.

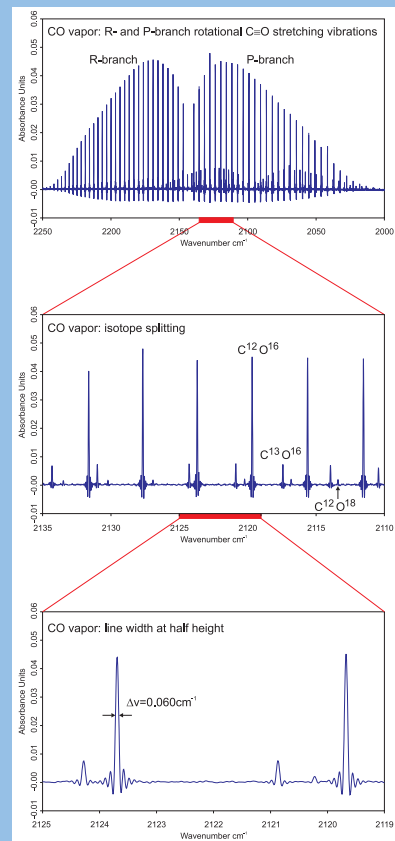
Optical PEAK resolution

The **VERTEX 80** standard configuration provides apodized better than 0.2 cm^{-1} spectral resolution which is sufficient for most ambient pressure gas phase studies and room temperature sample measurements.

For advanced low temperature work, such as crystalline semiconductor material and gas phase applications at lower pressure, a PEAK resolution of better than 0.07 cm^{-1} can be obtained with the **VERTEX 80**. This is the highest spectral resolution achieved with a commercial bench top FT-IR spectrometer in the market. High resolution spectra in the mid infrared spectral range demonstrating the outstanding optical resolution, excellent line shape and signal-to-noise ratio are shown on the right. In the visible spectral range, better than 300,000:1 resolving power $\nu/\Delta\nu$ can be achieved.

PEAK versatility

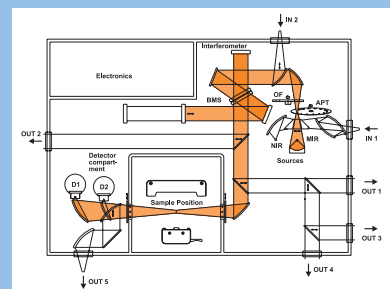
The innovative optics design results in the most flexible and expandable R&D FT-IR spectrometer available. Five beam exit ports on the right, front and left side and two beam input ports on the right and rear side of the optics bench are available. This allows simultaneous connection of, for example, a high power water cooled external light source using the rear side input port, the polarization modulation accessory **PMA 50** at the right side exit beam, a fibre optics coupling at the right front side port, a bolometer detector at the left front and the **HYPERION 3000** IR focal plane-array (FPA) imaging microscope at the left side exit beam.



Carbon Monoxide Vapour

This high resolution spectrum shows the fundamental vibrational band of CO split by rotational substructure and further split by isotopic modifications present in natural abundance. The measurement was performed at the highest spectral resolution in the mid infrared spectral range with a 10 cm path length gas cell and the CO vapour at a low pressure (few hPa). The achieved absorption band line width at half height was 0.06 cm^{-1}

VERTEX 80 optical beam path



CLASS 2 LASER PRODUCT, DO NOT STARE INTO BEAM

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