

thinkforward

Peak Performance:
Introducing the new
Bruker Optics
VERTEX 80v FT-IR
spectrometer for leading
research 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 80v

- Bench top vacuum optics
- Optical resolution of $<0.07 \text{ cm}^{-1}$
- Full spectral range coverage
- Actively aligned UltraScan™ high resolution interferometer
- Air-cooled internal and water cooled external sources
- Remotely selectable five exit and two input beam ports
- True 24 bit dynamic range ADC

When we set the bar for research FT-IR spectrometers, we knew that someday we would feel obliged to raise it. Bruker Optics is proud to introduce the new **VERTEX 80v**, which is the culmination of everything we have pioneered and developed in over 30 years.

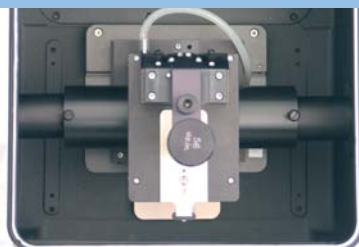
The new **VERTEX 80v** vacuum FT-IR spectrometer is based on the actively aligned UltraScan™ interferometer, which provides PEAK spectral resolution. The precise linear air bearing scanner and PEAK quality optics guarantees the ultimate sensitivity and stability. The rugged and stable cast aluminum optics bench enables demanding experiments such as high resolution, ultra fast rapid-scan, step-scan, or UV spectral range measurements.

The **VERTEX 80v** evacuated optics eliminates atmospheric moisture absorptions and provides PEAK sensitivity and stability, especially in the far IR and terahertz spectral regions. The two optional external detector ports accommodate the liquid He dewars of bolometer and/or hot electron detectors. In combination with the external water cooled high power Hg-arc source, the recently discovered terahertz spectral range is accessible.

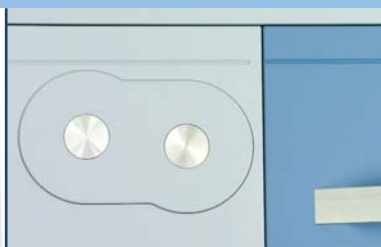
The **VERTEX 80v** optics design allows PEAK flexibility and at the same time PEAK instrument performance. The unique Bruker Optics DigiTect™ technology prevents external signal disturbance, guarantees PEAK signal-to-noise ratio and allows easy and reproducible detector exchange by the instrument user.



Easy and quick access to the beamsplitter and its storage position is provided by a unique rotary opening.



The large sample compartment accommodates virtually all commercial sampling accessories on QuickLock™ base plates.



Two internal room temperature and/or liquid N₂ cooled DigiTect™ detectors are remotely selectable under software control.



PerformanceGuard indicates the instrument status on a LED panel for vacuum level, HeNe laser signal and optics activity.



VERTEX 80v coupled to HYPERION 2000 FT-IR microscope

VERTEX 80v

PEAK spectral range extension

The **VERTEX 80v** 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 visible and up to the ultraviolet spectral range. With its pre-aligned optical components and the actively aligned UltraScan™ interferometer, range change and maintenance are easy.

Optical PEAK resolution

The **VERTEX 80v** standard configuration provides apodized spectral resolution of better than 0.2 cm^{-1} , which is sufficient for most ambient pressure gas phase studies and room temperature sample measurements. For advanced low temperature work, e. g. on crystalline semiconductor materials or gas phase measurements at lower pressure, a PEAK resolution of better than 0.07 cm^{-1} is available. This is the highest spectral resolution achieved using a commercial bench top FT-IR spectrometer. High resolution spectra in the visible spectral range demonstrate a resolving power of better 300,000:1 (see right side of this page).

PEAK versatility

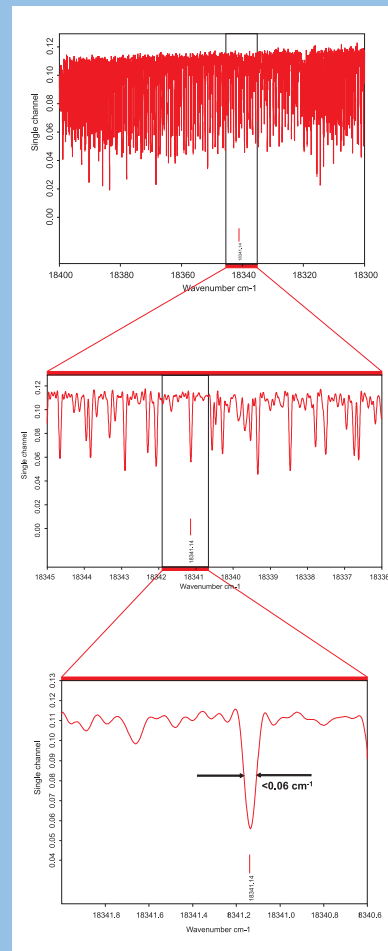
The innovative optics design results in the most flexible and expandable R&D vacuum FT-IR spectrometer available. With the evacuated optics bench, PEAK sensitivity in the

mid-, near- and far IR regions is obtained without the fear of masking very weak spectral features by air water vapor absorptions. Outstanding results, e.g. in the area of nanoscience research down to less than 10^3 monolayers, can be obtained with the **VERTEX 80v** vacuum FT-IR spectrometer.

There are virtually no limitations with respect to flexibility. 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 synchrotron light source using the rear side input port, the **PMA 50** polarization modulation accessory at the right side exit beam, a fiber optics coupling at the right front side port, a bolometer detector at the left front and the **HYPERION** series FT-IR microscope at the left side exit beam.

BRAIN: Bruker Artificial Intelligence Network

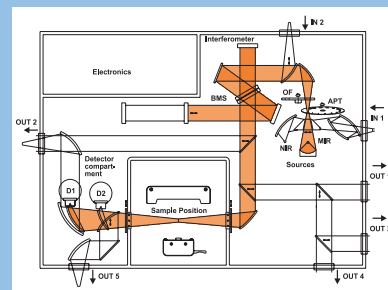
A network of intelligent functions such as recognition of sampling accessories (AAR) and optical components (ACR), automatic set-up and check of measurement parameters and the permanent online checking (PerformanceGuard) of the spectrometer functionality makes FT-IR spectroscopy easy, fast and reliable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



Iodine Vapor

High resolution measurement showing electronic band transitions in the visible spectral range, with a typical absorption band width of less than 0.06 cm^{-1} . The demonstrated resolving power is better than 300,000:1.

VERTEX 80v optical beam path



CLASS 2 LASER PRODUCT, DO NOT STARE INTO BEAM

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