

HYPERION Series

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HYPERION Series FT-IR Microscopes

The HYPERION is the culmination of more than 30 years of experience in FT-IR microscopy. Its high-quality design, including all optical, mechanical, and electronic components, provides high stability and reliability. Featuring many contrast enhancement tools, a wide variety of dedicated objectives, and chemical imaging, the HYPERION enables you to conduct the most sensitive microanalysis easily and efficiently. With its modular design, the HYPERION can be customized to the specific requirements of each application. Its field of use is extremely broad and includes materials research, polymers, chemicals, forensics, art conservation, and life sciences.

Sensitivity, Lateral resolution

The lateral resolution power of the HYPERION is only limited by diffraction of the incident light. Due to the high light-throughput a very high sensitivity is reached even at the highest lateral resolution.

The infrared beam path in the HYPERION is confocal. Apertures can be placed in conjugate image



Metal knife-edge apertures, iris apertures and aperture wheels are available as well as automatic, software-controlled knife-edge apertures.

Sampling flexibility

For FT-IR microscopic analysis in transmission, most samples must be optically thin and are typically cut in sections about 5–15 μm thick. If samples are deposited on reflective substrates, they are measured in reflection. As standard a 15x objective is used or as alternative for smaller samples more focussing objectives (20x, 36x) can be employed. However, because many samples are not transparent or reflective, they can be readily analyzed utilizing the attenuated total reflection (ATR) mode.

The dedicated ATR objective (20x) for the HYPERION combines a visual sample inspection without restrictions with highest sensitivity of the IR measurement. To be useful for samples ranging from soft to very hard, different pressures can be selected at the ATR objective. The internal pressure sensor reproducibly ensures optimal contact between the sample and the crystal even during automated ATR mapping measurements.

The measurement of very thin coatings on metallic surfaces often requires the grazing angle incidence reflection technique that enhances the interaction of the infrared light with the sample. Due to its patented design Bruker's grazing angle objective (GAO) achieves a very high sensitivity that even allows analyzing mono-molecular layer. Furthermore measurements with polarized light are possible.

Spectral Range

The spectral range of the HYPERION can be extended from the middle infrared to the near infrared (NIR), even to the visible (VIS, up to $25,000\text{cm}^{-1}$) and down to the far infrared (FIR, down to 80 cm^{-1}). To cover this extremely broad spectral range, many different detectors are available and can easily be exchanged by the user. The HYPERION can be equipped with up to two detectors in parallel, where the switching between positions is controlled by the software.

Software

The HYPERION is controlled by the [OPUS](#) software: an easy-to-use, powerful, all-in-one spectroscopy software. It includes the most comprehensive collection of data acquisition, processing, and evaluation functions. The software user interface can be customized for routine laboratory analysis as well as advanced R&D applications.

All resultant spectra, visual images, IR images, RGB and PCA plots, and annotations are stored within one file to ensure data integrity and make data manipulation straightforward.

Data acquisition using the HYPERION is very easy to accomplish, as it is guided by attractive wizards (OPUS 7.0). Many univariate and multivariate algorithms are implemented in OPUS to extract the relevant information out of the measured single or 3D data. Resulting IR images can be displayed in different 2D and 3D perspectives on top or beside the visible image.





INVENIO FT-IR Spectrometer with HYPERION 3000 FT-IR Microscope

Spectrometer Diagnostic

The HYPERION FT-IR microscope produces reliable data. The PerformanceGuard™ of the spectrometer includes permanent online diagnostics, realtime-display of the instrument status, and integrated automatic instrument tests (OQ, PQ). The OPUS software provides all options to perform the FT-IR analysis following the GMP and 21CFR-Part11 guidelines.

Flexible design

The HYPERION Series is a fully upgradeable microscope platform for conducting state-of-the-art optical and infrared analysis. The HYPERION 2000 includes all features found on the 1000 as does the 3000 with respect to the 2000.

HYPERION 1000: High performance infrared microscope with transmission and reflection capabilities, transparent knife-edge aperture and manual xy-stage. It is equipped with a nose piece with 15x cassegrain and 4x vis objective as well as binocular and video viewing.

HYPERION 2000: Fully automated microscope with motorized stage and an additional LCD screen on the microscope frame. All features of the HYPERION 1000 included.

HYPERION 3000: Fully automated FT-IR imaging microscope with modern focal plane array detector technology. The system includes also all features of the HYPERION 2000.

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