



MPA

- Multi Purpose Analyzer

Discover the Flexibility of FT-NIR Spectroscopy



The MPA is the result of almost 40 years of experience in the engineering and production of FT-IR and FT-NIR spectrometers. Designed to provide maximum flexibility and high performance, the MPA sets new standards in FT-NIR analysis. It is a powerful tool for developing sophisticated methods for your laboratory or process needs, yet an easy to use QA/QC instrument for routine work.

● MPA Multi Purpose Analyzer

Unrivalled Flexibility

Choosing the best possible sampling method is crucial when solving a specific analysis task. With the MPA, you have a complete solution at hand for your daily QA/QC work, but also for sophisticated method development studies. Initially it is often not obvious which sampling method is the best. With the MPA, simply try out several methods choose the best option for you.

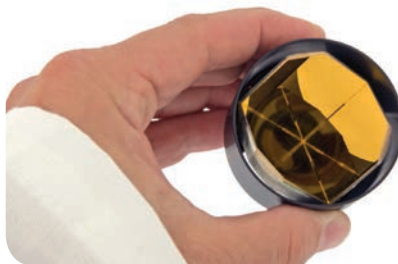
- Liquid samples can be measured in the sample compartment using disposable vials or cuvettes, but also directly in their container using the fiberoptic probe.
- Compare the composition of pharmaceutical substances in bulk form with the fiber optic probes or fill them in vials and use the integrating sphere.
- Analyze the manufactured tablets using the external transmission unit and sample wheel.
- Test your food products, solid or paste-like, with the integrating sphere or external transmission unit.

The possibilities are endless, and due to the modular design of the MPA, the instrument can easily be adapted to your needs.

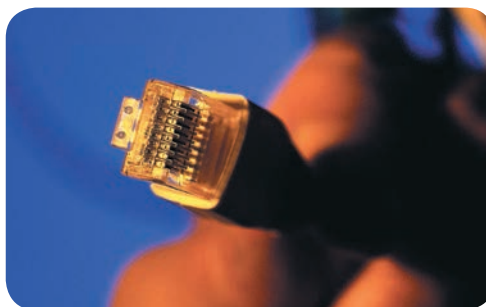
The robustness of the instrument allows it to be used in the laboratory and factory floor. The MPA can be connected to your laptop via Plug & Play Ethernet connection and can even be placed on a utility cart for mobile applications.

State-of-the-Art Technology

The MPA incorporates state-of-the-art optics for outstanding performance and stability. The heart of the instrument is Bruker Optics' permanently aligned RockSolid™ interferometer, which is equipped with gold-coated cube-corner mirrors. The permanent alignment provides consistent high quality results, less downtime and highest stability, a precondition for successful calibration transfer and low detection limits.



The MPA utilizes retro-reflecting cube-corner mirrors for optimum performance.



Standard ethernet connection allows communication protocol and network access for the MPA.

Hassle-Free Maintenance

MPA spectrometers are designed to be easily maintained by the user, thereby decreasing downtime and maintenance costs. Consumable items such as the laser and the light source are designed for a long life, but if they need to be replaced, the system automatically informs the user of the failure and offers online help for the replacement procedure. The consumables are prealigned and can be easily and quickly changed.

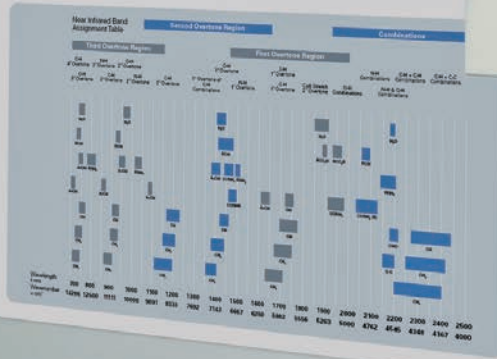
Moreover, the Ethernet access to the MPA allows remote control and diagnostics of the spectrometer via your intranet or the World Wide Web.

PerformanceGuard™

All optical components installed in the MPA are permanently monitored by the online diagnostic system, PerformanceGuard™, which makes sure that your spectrometer operates correctly. Whenever a component is out of specification, the user is notified immediately.

Understanding Spectra, Improving Processes

Near Infrared Band Assignment Table



MPA Multi Purpose Analyzer

Easy Operation

Customizable workspaces, easy measurement modes and wizards to guide you through the setup of analytical methods are standard in the OPUS spectroscopy software.

The smart display informs the user about the instrument status and indicates whether the measurement passed or failed. These factors make the operation of the instrument and the software so easy that even untrained personnel can operate the MPA spectrometer from day one.



The display indicates the instrument status and whether your measurement result passed or failed.

User-friendly Software

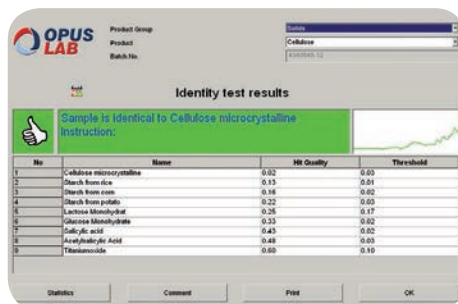
OPUS is an easy-to-use, but powerful, all-in-one spectroscopy software. It includes the most comprehensive collection of data acquisition, processing, and evaluation functions and can be completely configured to meet your needs. With extended user settings and user management features, user access rights in OPUS is completely customizable.

OPUS/LAB is an intuitive and easy-to-use software interface for conducting routine analysis tasks. It can be used by untrained personnel from the production line as well as by your experienced laboratory staff.

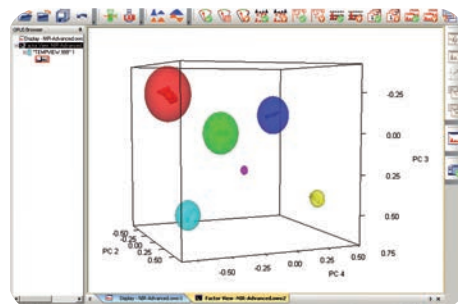
OPUS/IDENT offers reliable product identification with hierarchical libraries. Setup, validation and use of identification libraries, including statistical evaluation can be performed in few easy steps.

The OPUS/QUANT software finds the best possible calibration automatically, making your method development less time consuming. It is based on the multivariate algorithm PLS (Partial Least Squares).

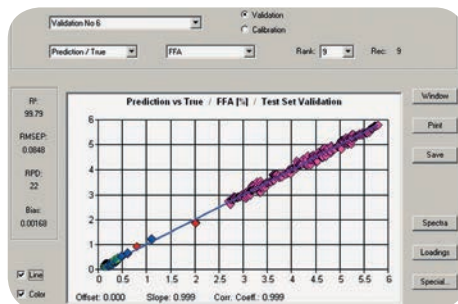
All methods created are fully reproducible and transferable to other comparably equipped Bruker Optics spectrometers - even for online applications - due to the superior mechanical precision and outstanding stability of our instruments.



The user-friendly OPUS/LAB software is ideal for the daily routine analysis, even by untrained personnel.



OPUS/IDENT is a powerful software package for the identification of substances, using hierarchical libraries.



OPUS/QUANT an easy-to-use software for the quantitative analysis of complex mixtures with automated method development.

● **MPA** Multi Purpose Analyzer



Sample Compartment, with optional sample heater and automated background capability, allows easy measurements of liquids in cuvettes or disposable vials without having to open drawers.



Integrating Sphere for measuring solids and pastes in diffuse reflection. An optional sample rotator assures a high reproducibility for heterogeneous samples.



Fiber Optic Probes for measuring samples directly in containers, e.g. in the warehouse. Up to two different probes can be connected.



Transmission Unit with optional sample wheel, e.g. for the automated analysis of vials or solid samples such as tablets in transmission and reflection. This unit is also used for the analysis of food products.



The MPA brings flexibility to FT-NIR spectroscopy; optional extension modules are available for various sample types and applications.



A wide range of vials and cuvettes are available for measurements of liquid samples in transmission. Larger vials are also available for analyzing solids in reflection on the integrating sphere.



Various types of high quality quartz flow cells are available for the automated measurement of liquid samples like milk.



When measuring heterogeneous samples, the use of sample rotators significantly increases the accuracy of the results. Bruker Optics offers a wide range of accessories, including adapters for glass beakers, and petri dishes.



For the measurement of small samples like single seeds in reflection, a set of accessories is available which is manufactured exactly to the size and shape of your sample.



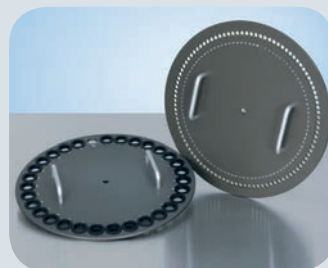
Handheld fiber optic probes are ideal for analyzing solid materials in the laboratory or the incoming raw materials control area. Reflection probes are available in different lengths and can be used for various sizes of containers.



For measurements of liquid samples, the fiber optic transmission probes are ideal. Depending on the type of sample to be analyzed, the probes can be manufactured in various path lengths.



When measuring tablets, a well fitting tablet holder increases the accuracy and reproducibility of the measurements. Bruker Optics manufactures customized tablet holders for all shapes and sizes according to your needs.



The use of automated sample wheels dramatically increases the throughput and effectiveness by measuring up to 90 samples unattended. Customized samples wheels are available.



● Validation

The MPA FT-NIR spectrometer is equipped with an automated filter wheel which houses standard materials and filters for testing instrument performance. Included in the OPUS software is OVP (Optics Validation Program), an instrument test program which executes a series of performance tests using the standards in the filter wheel. This program evaluates the instrument performance and determines if the spectrometer is operating within specifications.

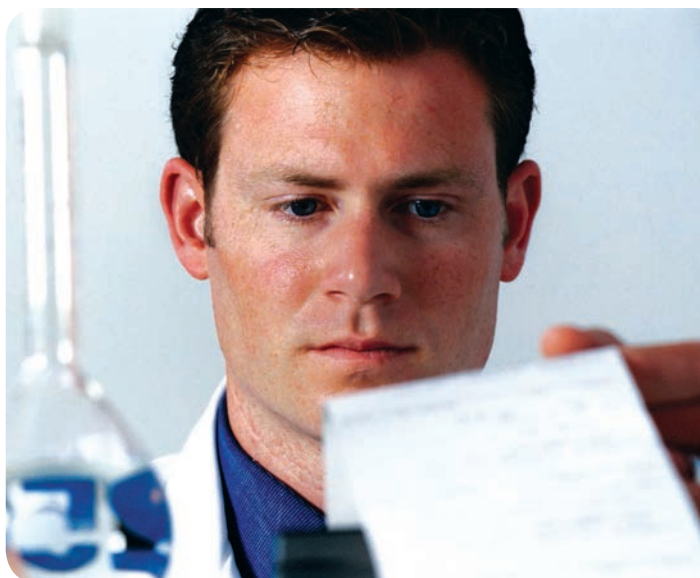
In addition, Bruker's Validation Program provides the user with a complete package of qualification routines that meet the demands of validation such as USP, Ph.Eur, FDA and ASTM standards. OPUS allows a customized setup to satisfy your individual validation requirements and the status is always indicated to the user.

Full GMP and 21 CFR Part 11 compliance

OPUS spectroscopy software comes equipped with the necessary routines to assist laboratories that must conform to GMP standards. Extensive user management with multiple security levels, non-editable data files and complete audit trails are some of the many features of this comprehensive spectroscopy software. OPUS fully supports the demands of the 21 CFR Part 11 regulation (Electronic Records, Electronic Signatures) issued by the FDA.

Certification

Bruker Optics' products and services meet all quality standards, such as the ISO 9001, successfully audited by several pharmaceutical corporations and regarded as a fully approved hardware and software supplier. Each customer receives a full set of certificates with the instrument.



The Internal Validation Unit (IVU) ensures the correct measurement performance of the MPA at any time.

• Applications •



Food and Feed Industry

FT-NIR spectroscopy has largely replaced a number of wet chemical analysis methods. It is a fast and precise tool for the non-destructive analysis of liquids, solids and paste-like materials, saving costs by reducing time and reagent use.

With the MPA integrating sphere, even heterogeneous materials can be analyzed without sample preparation in diffuse reflection. The use of easy-to-clean sample cups, beakers, Petri dishes or even plastic bags enable an efficient sample throughput at low cost.

The sample compartment is ideal for all sorts of liquid samples like edible oils, alcohols, milk, cream or molasses. An optional temperature control can be used in order to achieve more stable results.

The major application areas in the food and feed industry include dairy and meat, beverages, bakery ingredients and condiments as well as grains, seeds, feed and forage. Here, parameters like protein, fat, starch, moisture or dry matter can be analyzed as well as more specific parameters like alcohol or nitrogen content.

The MPA is a complete solution for your quality control needs. The identification and qualification of your raw materials and the quantitative analysis of finished products can be performed in a matter of seconds to ensure the highest product quality and consumer safety.

Chemical Industry

For many years NIR technology has been used in a wide variety of chemical industries. The high information content in NIR spectra, measured in only a few seconds, allows the simultaneous analysis of many different components and system parameters with high precision.

Some of the many applications are:

Chemistry: hydroxyl value, acid number, saponification value, iodine number, moisture content, homogeneity,...

Petrochemistry: octane- and cetane number, distillation-, flash- and cloud point, aromatic content, PIONA analysis, ...

Polymer chemistry: density, viscosity, cross-link density, end group analysis, stabilizer or monomer content, ...

Paper industry: cellulose content, fillers, glues and wet strength resins, silicon content, grammage, degree of wet expansion, ...

The content of highly complex mixtures can be determined simultaneously. It does not matter if the samples are solid or liquid and sample preparation is not necessary. The MPA allows the non-destructive analysis of large quantities at the push of a button. Hence, it is an ideal tool to meet the requirements of the modern quality control laboratories.





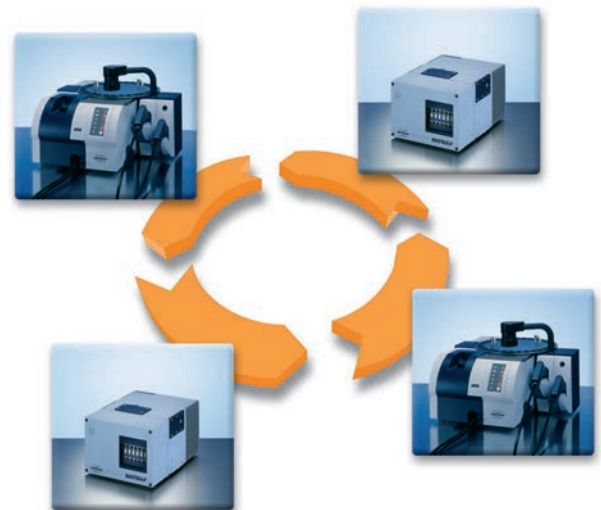
Pharmaceutical and Cosmetic Industry

FT-NIR technology is a fast and precise tool to effectively and cost efficiently solve a huge variety of application tasks in the pharmaceutical and cosmetics industry. In the receiving dock, raw material identities can be checked with hand held probes. Mis-labeled raw material deliveries can be detected and their quality checked to prevent product failures.

Tablets can be tested for content uniformity, residual moisture, potency, levels of excipient and hardness. This can be performed on individual tablets and through a blister pack. Due to its exceptional throughput and high measurement precision, even tablets with a low active ingredient content can be analyzed with the MPA.

The analysis of creams, ointments and pastes is carried out using the integrating sphere. The large measurement spot enables an examination of heterogeneous material. Easy-to-clean sample cups or alternatively disposable Petri dishes can be used.

A multitude of measurement tasks in process control, like monitoring of reactions, can be solved with FT-NIR spectroscopy. Due to the high precision of the MPA, methods which were created in the laboratory can easily be transferred to the respective process spectrometer.



Calibration Transfer

As an exhaustive method development may be both time and resource intensive, the main prerequisite of the instrument is the transferability of the calibration methods to other instruments. This can only be guaranteed if the highest precision, stability and sensitivity are combined, as they are in the MPA.

Changing optical components or even the complete instrument does not effect the validity of the calibration. A calibration transfer to other Bruker FT-NIR spectrometers is always possible without any additional manipulation of the data.

Methods created with the MPA can therefore not only be employed on other laboratory spectrometers but also on all Bruker Optics process instruments. The step from the laboratory to the production line has never been easier.

• Service and Support

Bruker Optics is staffed by expert scientists and engineers that have an in-depth knowledge of instrumentation and applications. Our product specialists are available to assist you with method development either remotely or in your lab. FT-NIR application scientists will assist you in the selection and use of sampling accessories, choice of optical components and software operation. We offer customized instruction and support packages to fit your needs.

Bruker Optics spectrometers are designed to provide years of dependable trouble-free operation, but should a problem occur a network of Bruker companies and representatives throughout the world are ready to promptly respond to your needs. Professional installations, comprehensive applications support as well as high standard of post-delivery service are commitments Bruker Optics makes to each of its customers.



Technologies used are protected by one or more of the following patents:
US 7034944; US 5923422; DE 19704598

Bruker Optics
is ISO 9001 certified.

Laser class 1 product.

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