MATRIX-MF FT-IR Spectrometers

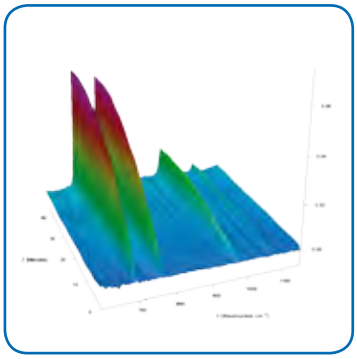
The MATRIX-MF is the mid-infrared (FT-IR) version of the award winning MATRIX process spectrometers series. MATRIX-MF is a rugged and a compact spectrometer that can be fiber optically coupled to measure chemical reactions in laboratory and/or process environments.

- Non-destructive analysis in seconds
- Ideal for in-line process measurements
- Built-in 6-port multiplexer
- Multiple components per measurement
- Support for industry standard communication protocols

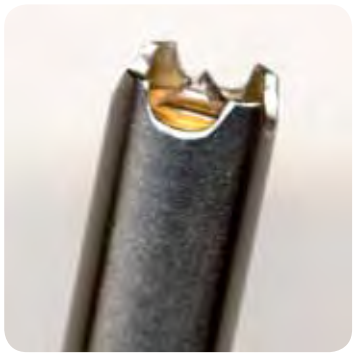
The MATRIX-MF expands the proven MATRIX series product line utilizing the information rich mid-IR region for use in both laboratory and process environments. The MATRIX-MF is a process ready FT-IR spectrometer that is ideal for real-time monitoring and analysis of chemical and biological reactions.

The MATRIX series' award winning design protects the optics in a dedicated sealed compartment. The permanently aligned RockSolid™ interferometer and Digitect detector electronics ensure high quality spectra, even in the harshest environments. Although the instrument is designed for a process environment, its small footprint can also make it an ideal instrument for laboratory-based applications.

Automated 6-port multiplexer with Bruker's proprietary quick connector (BQC)



Realtime 3D display of the mid-IR spectra showing the trans-stilbene concentration



IN350-T Diamond ATR Probe head.

Fiber Optic Probes

The combination of the ATR (attenuated total reflection) sampling technique and the light guiding fiber optics enhances the use of infrared spectroscopy. Fiber optic probes enable in-situ measurements, which helps fully utilize the benefits of the information rich mid-IR spectroscopy.

A wide range of probe adaptations, including Bruker's patented IN350-T diamond ATR probe, can be attached to the unit for in-situ analysis. Patented IN350-T combines a two reflection diamond ATR probe head with the excellent performance of MIR-silver halide fibers.

Bruker Quick Connect

The MATRIX-MF offers Bruker's proprietary quick connector design (BQC) ensuring easy and reproducible fiber optic probe exchange, providing reproducible results. Utilizing the automated built-in multiplexer up to 6 reactions can be monitored by a single instrument.

Easy Process Integration

The MATRIX-MF can be used as a standalone system in your lab. Its small footprint allows it to fit into standard 19 inch racks in process enclosures. The system can be controlled by wide range of industry standard communication protocols and interfaces (such as 4-20 mA, OPC, Modbus, Profibus DP etc.) which makes integration into a process system simple.

Maintenance and Validation

The OPUS Validation Program (OVP) can execute a series of performance tests utilizing the built-in automated filter wheel. The hardware performance and the consumables are monitored to determine the operation within desired specifications. The MATRIX series is designed for reliability and easy maintenance; individual consumable components are on pre-aligned mounts and can be quickly exchanged by the user without any realignment of the optics.

Silver Halide Fibers

Silver halide fibers are made from AgClBrI solid solutions. The production methods for crystal - line silver halide fibers differ fundamentally from those used for fabrication of silica fibers. Core clad silver halide fibers are manufactured by direct or inverse hot extrusion of a composed bullet under compressed condition. Optimized parameter for the fiber extrusion combined with special crystal preparation technologies lead to a significant increase in fiber quality. Optical losses, in former times especially caused by micro voids, silver clusters, colloids and residual impurities are minimized by new technologies. These technolo - gies start from ultra pure silver halide single crystalline material offering nowadays best optical and mechanical properties for polycrystalline silver halide fibers. These silver halide fibers show significantly better mechani - cal properties than the often used brittle chalcogenide glass fibers. They are more flexible and non-brittle to even liquid nitrogen temperature.Although the theoretical estimations of minimum fundamental optical losses in silver halides are 0.4 to 0.04 dB/km lower than in current silica glass fibers, the nowadays crystalline silver halide material show real optical losses some order of magnitude higher but less than 1 dB/m in the wave - length range from 4µm to 18µm, excellent for use with fiber length up to a few meters.

Technologies used are protected by one or more of the following patents:
US 5923422; DE 19704598; DE 10200505222

Bruker Optics
is ISO 9001 certified.

Laser class 1 product.

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