



# ALPHA

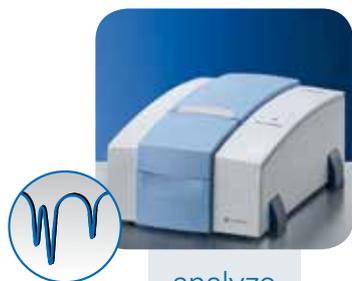
- The very compact and smart FT-IR spectrometer



About the foot-print of a laboratory notebook, ALPHA is a compact FT-IR spectrometer perfectly suited for the daily routine. Plug & play set-up, easy-to-use software, combined with QuickSnap™ sampling modules assure the powerful and reliable FT-IR analysis you expect from Bruker.

- Low-cost, small footprint FT-IR spectrometer
- Quality components with long lifetime
- Intuitive instrument and software design for maximum ease of use
- Flexibility: Easily exchangeable QuickSnap™ sampling modules for every analytical question
- Intelligence: Electronic coding of sampling modules and spectrometer components
- RockSolid™: Robust, high performance results with Bruker's well-proven interferometer design

# • ALPHA FT-IR Spectrometer



analyze



verify



quantify



identify

## More than just 'small'

The ALPHA is more than just a compact FT-IR spectrometer: Its modular design always provides the adequate configuration for your analytical question. The ALPHA unites Bruker's years of experience in infrared spectroscopy in a compact, rugged and intuitive design. Quality components and state-of-the-art technology ensure accurate and precise results within short measurement time. The ALPHA delivers excellent sensitivity, x-axis reproducibility and stability. Spectrometer components are continually monitored to ensure operation within their specification.

## Analysis where needed

The ALPHA is insensitive to vibrations, and can be placed almost anywhere; it can be moved easily and be immediately operational. Its exclusive RockSolid™ interferometer design, delivers the performance and reproducible results people expect from a Bruker FT-IR spectrometer.

A complete set of mobility options make the ALPHA an independent analyzer that can be used just where it is needed most: close to the sample to save you time and cost per sample. The ALPHA can be transported easily from lab to lab, can be used in mobile laboratories, can directly fit into the fume hood or a glove box.

## ALPHA mobility options:

- Wireless communication
- Battery operation (>8h)
- Car battery operation
- Touch screen operation
- Transport case



## • Extend Your Sampling Capabilities



QuickSnap™ module exchange

### QuickSnap™ sampling modules

The QuickSnap™ sampling modules for the ALPHA offer full sampling flexibility. They allow the analysis of almost any kind of sample (e.g. solids, liquids or gases) each with an perfectly matched instrument configuration.

With a touch of a button the exchange of the sampling modules is performed quickly and easily. The sampling modules and even ATR plates are electronically coded. Therefore appropriate measurement parameters can be provided automatically for the current configuration.

To match the requirements of different analytical questions Bruker offers various FT-IR sampling accessories for transmission, attenuated total reflection (ATR), external and diffuse reflection.

## ● QuickSnap™ accessories



### Universal sampling module

The universal sampling module enables you to analyze all kinds of samples: solids, liquids and gases. This transmission sample compartment with its 2x3" standard sample holder can house a variety of gas cells and liquid cells. Solid samples can be investigated in a standard pellet holder or using a magnetic film holder. Samples with a reflective surface are analyzed with a dedicated accessory for reflection measurements.



### Eco ATR

Attenuated Total Reflection (ATR) is an easy-to-use FT-IR sampling method that is ideal for both solids and liquids. Typically no sample preparation is required: The sample just has to be pressed on the ATR-crystal. The Eco ATR is a single reflection ATR sampling module with a very attractive cost/performance ratio. It is equipped with a versatile high light throughput ZnSe or Ge ATR crystal for the analysis of powders, solids, pastes and liquids.



### Platinum ATR

ALPHA's Platinum ATR is an extremely robust single reflection ATR module. Its diamond crystal is brazed into tungsten carbide hard metal. This assembly allows the application of exceptional high pressure so that even very hard samples can be measured. Furthermore, a high chemical resistance is achieved. The innovative design of the 360° rotatable one-finger pressure clamp provides free access for sampling and cleaning. A variety of sampling options for temperature-controlled measurements and liquid flow through analysis complete the versatility of the Platinum ATR. Additionally a Ge crystal option is available.



### Drift module

The DRIFT module is an economical option for the analysis of a broad variety of solid samples: powders, inorganic material, gem stones, papers, textiles and many others. The DRIFT module is designed for easy sampling and high light throughput. This results in an unmatched time-per-analysis for FT-IR diffuse reflection measurements.



### Module for external reflection

Dedicated reflection modules allow contactless and non-destructive FT-IR analysis of large samples like coated metal, paper or textile fabrics. For the measurement the samples are placed in front or on top of the instrument, depending on the chosen module. Large or immobile samples such as surfaces of cars, airplanes, mural paintings or artwork can easily be analyzed as the ALPHA is placed in front of the material/object. Optionally, an integrated video camera provides view of the sampling area.

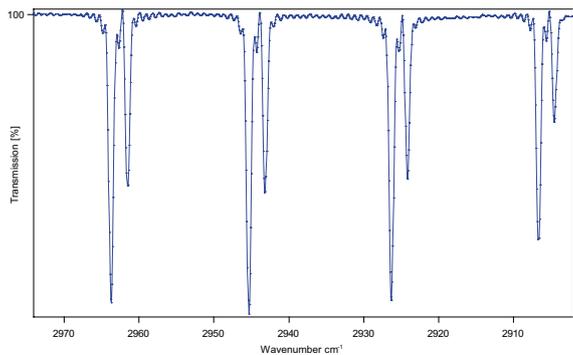
# • High Performance

## High-performance interferometer

Bruker's well-proven, permanently aligned RockSolid™ interferometer incorporates dual retroreflecting gold coated cube corner mirrors in an inverted double pendulum arrangement for maximum efficiency and sensitivity. A wear-free flexible pivot bearing is located at the center of mass which optically eliminates mirror tilt and mechanically prevents mirror shear. It is also resistant to vibrations and thermal effects, ensuring perfect stability and reliability when needed in process environments. The permanent alignment provides consistent high quality results, less downtime and outstanding stability.

Furthermore a durable diode laser is used. Due to patented technology a high wavenumber accuracy is ensured.

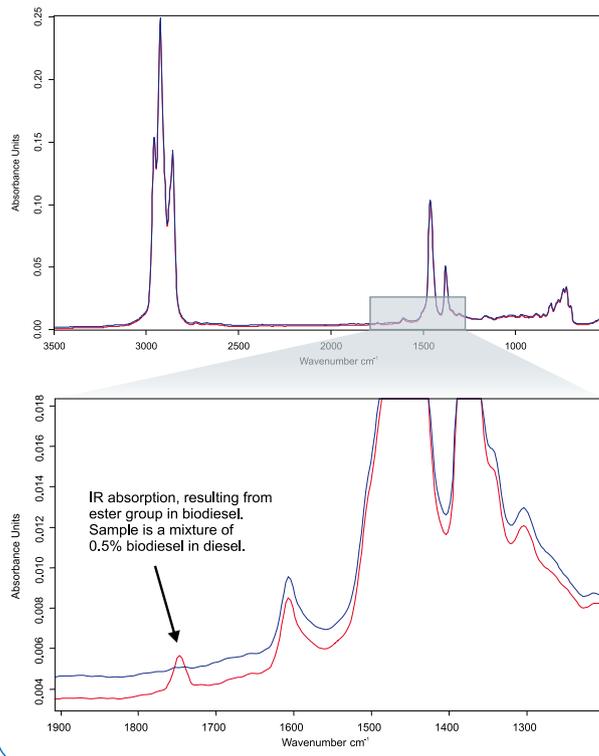
## Gas phase spectrum of HCl



With its high resolution, the ALPHA is ideal for gas analysis. In the FT-IR spectrum of the HCl the ro-vibrational lines are split due to the chlorine 35 and chlorine 37 natural isotopic ratio of 3:1.

## Power for routine applications

### 0.5% biodiesel in diesel with ATR



The high performance of the ALPHA results in short measurement times and low detection limits. Shown are the single reflection ATR spectra of diesel (blue) and 0.5% biodiesel in diesel after 60 sec measurement time.



ALPHA validation manual supports the full instrument qualification process IQ, QQ, PQ.

## • Low Cost Of Ownership

Fourier Transform Infrared (FT-IR) spectroscopy is a technique that has replaced many other expensive and time-consuming methods over the years. The ALPHA is designed to be used for many years with low running costs. Its housing is made from metal.

The ALPHA utilizes a modern diode laser with a lifetime of over 10 years. Its infrared source has been engineered for a lifetime of greater than 5 years and can be exchanged easily by the user after its end. The Platinum Diamond ATR module has a minimum lifetime of 10 years. These quality features are completed by the RockSolid™ interferometer with more than 10 years time of operation. Adding the low energy consumption these outstanding characteristics result in significant cost savings.

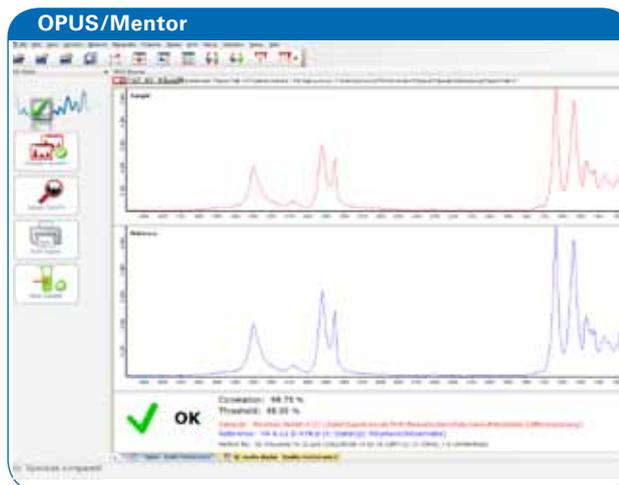
- **10 years warranty on Interferometer, laser and Diamond ATR module**
- **5 years warranty on IR source**

### Validation

Today's regulated laboratories must comply with extensive regulatory requirements. Bruker Optics offers a comprehensive system validation that provides the documentation and procedures needed for an effective compliance. The ALPHA is prepared to fully support your validation needs; from the design qualification (DQ) to daily performance qualification (PQ). Bruker's comprehensive system validation manual provides all related documentation and guides you through all the necessary steps of the validation procedures. Validation, instrument installation and annual certification are offered by Bruker's factory trained, certified service engineers thereby further reducing the cost of compliance. The ALPHA incorporates a certified reference standard for fully-automated instrument test routines.

### OPUS/Mentor software

The OPUS/Mentor software with its easy and intuitive user interface guides the operator through all the steps of an analysis. The user interface can easily be customized for dedicated applications or experiments.



With OPUS/Mentor your daily quality control routine is in few mouse clicks. The user is guided through the complete analysis.

### Quality control made easy

Quality control is one of the most important applications of the ALPHA. The predominant question in quality control is to verify that the sample meets its specifications. Consequently OPUS/Mentor provides the QuickCompare evaluation function as appropriate verification tool. The set-up of QuickCompare methods is effortless and the evaluation result is clear and safe.

Furthermore, the identification of unknown samples is of importance, e.g. of a contamination that caused a product failure. Identification results from an automated search of an analogue reference spectrum in spectral libraries.

# The Leader in FT-IR Spectroscopy

The ALPHA is the culmination of what Bruker Optics have pioneered and developed for infrared spectroscopy in over 30 years. Today, we offer the industry's most advanced FT-IR product line.

Our success stems from our commitment and dedication to provide you the proper analytical tool you require to solve a demanding research problem or run a daily quality control routine.



## Mobile-IR

- Portable FT-IR spectrometer for the identification of unknowns anywhere! With its IP65 rated case, rugged design, it is ready for the field use.

## LUMOS

- LUMOS is a stand-alone FT-IR microscope with full automation. It is designed to combine best performance for visible inspection and infrared spectral analysis with highest user comfort.



## TENSOR Series

- Entry level research FT-IR spectrometer that has one exit port for external accessories such as FT-IR microscopy, TGA interface, PM-IRRAS or the high-throughput screening accessories.

## VERTEX Series

- Research level FT-IR spectrometers that is fully customizable to meet your demanding requirements. Its vacuum option can eliminate atmospheric moisture absorptions for ultimate sensitivity and stability.



## TANGO

- An ergonomic and easy-to-use FT-NIR spectrometer which can be applied for qualitative and quantitative analysis in laboratory as well as production environments.

Technologies used are protected by one or more of the following patents:  
DE 102004025448; DE 19940981; US 5923422; DE 19704598

**Bruker Optics**  
is ISO 9001 certified.

Laser class 1

[www.brukeroptics.com](http://www.brukeroptics.com) ● **Bruker Optics Inc.**

Billerica, MA · USA  
Phone +1 (978) 439-9899  
Fax +1 (978) 663-9177  
info@brukeroptics.com

**Bruker Optik GmbH**

Ettlingen · Germany  
Phone +49 (7243) 504-2000  
Fax +49 (7243) 504-2050  
info@brukeroptics.de

**Bruker Hong Kong Ltd.**

Hong Kong  
Phone +852 2796-6100  
Fax +852 2796-6109  
hk@brukeroptics.com.hk