

## Compact, portable, and handheld FTIR solutions for solid and liquid analysis

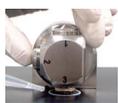


### 5500 Series FTIR analyzers

#### Robust performance in a compact design

The Agilent 5500 Series FTIR analyzers are designed for one purpose — to provide you with great results rapidly and reliably — day after day. The combination of great performing optics, innovative sampling interfaces and intuitive software provides information on liquid and solid samples faster and easier than ever before. Available in dedicated configurations.

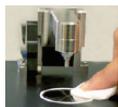
#### Features and benefits



- **5500 DialPath:** Instantly select one of three factory-calibrated, fixed pathlengths between 30 and 250  $\mu\text{m}$  — ideal for qualitative and quantitative analysis.



- **5500t:** Single window set, 100  $\mu\text{m}$  pathlength for specialized oil analysis applications. As easy to use as ATR.



- **5500a:** Single and multi-reflection diamond and ZnSe ATRs are available, depending on the application. Single reflection diamond ATR ideal for solids and liquids identification. Multi-reflection ZnSe ATR suited to quantitative liquid analysis.



### 4500 Series portable FTIR analyzers

#### Rugged and easy-to-use

These portable FTIR analyzers support efforts associated with at-site analysis of incoming materials and outgoing finished products in the chemical, petrochemical, food and polymer industries. They are also ideal for proactive maintenance programs of high-value equipment and machinery in construction and power production industries. Extremely compact, easy-to-use and rugged, the 4500 Series is a perfect match for applications that require high quality answers quickly. The combination of optics designed for reliability in non-lab environments, innovative sampling interfaces and fit-for-purpose software provides answers for liquid and solid samples at the sample site.

#### Features and benefits



- **4500 DialPath:** Provides the longer pathlength capabilities of transmission spectroscopy in a format as easy to use as ATR.



- **4500t:** Quick cleanup by simply wiping the two windows to prepare the device for the next sample.



- **4500a:** One, three or nine reflection diamond ATRs and multi-reflection ZnSe ATRs are available, depending on the application.
- Portable and rugged.
- Reliable high quality answers in non-lab environments.



# Handheld FTIR solutions

## 4100 ExoScan handheld FTIR

### Interchangeable sampling interfaces

The 4100 ExoScan FTIR is a one module, 6.5 lb system that is equally at home in the lab or at-site. The system is as versatile as it is rugged and features a choice of interchangeable sampling interfaces that make the 4100 ExoScan a highly useful handheld mid-IR spectrometer. You can choose diffuse, grazing angle, specular reflection or spherical ATR sampling interfaces, all of which can be changed in seconds with no realignment necessary. Thus, the 4100 ExoScan can handle a range of sample types including infrared absorbing and scattering surfaces, reflective metal surfaces with coatings and films, as well as analysis of bulk materials including powders and granules.



## 4100 ExoScan FTIR docking station

The 4100 ExoScan FTIR Docking Station provides a solid benchtop support for the handheld 4100 ExoScan. It provides an easy means to measure samples in a fixed location. Originally designed as a way to measure calibration samples, the Docking Station allows the handheld 4100 ExoScan analyzer to function as a fixed, benchtop spectrometer.



## 4200 FlexScan handheld FTIR

### Designed for dedicated field applications

The 4200 FlexScan handheld FTIR is a dual module system — the 3 lb optical module is connected to the 4 lb electronics module by a 4 ft power cable. The electronics module can be worn on a belt or in a shoulder pack. The 4200 FlexScan analyzer uses the same interferometer and optics as the 4100 ExoScan FTIR and thus has identical performance. The 4200 FlexScan is for dedicated field applications and has a fixed sampling interface that is specified when the system is ordered. The light weight of the handheld optics and sampling module make it well suited to repetitive infrared analyses over a large area.



## Sampling interfaces for the 4100 ExoScan and 4200 FlexScan Series handheld FTIR

Note: Sampling interfaces are interchangeable on the 4100 ExoScan. Sampling interfaces are dedicated on the 4200 FlexScan.

### Spherical diamond ATR

ATR is a surface technique, where the sample is brought into contact with the window for direct analysis and only the top 2–3 microns are measured. The ATR interface is ideal for the analysis of solids, liquids, pastes and gels. The interface comprises a diamond window, which makes it impervious to corrosion and scratching.



### Diffuse reflectance

The diffuse reflectance sampling capability enables you to tackle a variety of samples including artwork, soils, rocks and minerals, composites, rough plastics, fabrics and corrosion on metal surfaces. In general, if the sample reflects little light, the diffuse reflectance interface will be the sampling method of choice. In many cases, the diffuse reflectance provides the easiest to use sampling interface for the handheld FTIR.



### External reflectance

The specular reflectance interface enables the analysis of films and coatings on reflective metal surfaces such as aluminum or steel. The angle of incidence is 45 degrees. The infrared energy passes through the film, reflects off the steel, passes back through the film and is collected by the specular reflectance interface. In addition, it can be used for the analysis of smooth, opaque samples where infrared light reflects off the surface.



### Grazing angle reflectance

The grazing angle specular reflectance interface is similar in concept to the specular reflectance interface. It differs in the angle of incidence. The grazing angle interface has an angle of incidence of 82 degrees making it ideal for the analysis of very thin (sub-micron) films. The increased angle of incidence causes more interaction of the infrared energy with the thin sample and has the secondary benefit of increasing the pathlength of the sample. It is ideal for looking at trace contamination on reflective metal surfaces such as cleaning validation studies.



### Germanium ATR

The germanium ATR interface is ideal for the analysis of highly absorbing solids and liquids. The surface of the sample is analyzed by bringing it into contact with the germanium crystal. Only the top 0.5 to 2 micrometers is measured, making this technique ideal for strongly absorbing samples such as carbon filled elastomers and rubbers.

