



## Video Meridian™

The Video Meridian™ combines the advantages of our Meridian™ diamond micro-ATR with video imaging and force sensing capabilities, making it the *ultimate* accessory for sampling small, hard, corrosive or irregularly shaped samples. The Video Meridian™ features a convenient horizontal sampling surface with an active sampling area less than 500 μm in diameter on its monolithic diamond crystal. The video system images through the crystal, providing a magnified real-time picture of the sample that can be easily captured for a permanent record. The samples themselves are compressed against the sample using a force-sensing pressure applicator with an adjustable alarm that conveniently delivery reproducible contact pressure. The Video Meridian™ is perfect for routine analysis of samples as small as a single fiber or bead, as well as extremely hard samples, abrasive powders, corrosive materials, liquids, solids and pastes.

### APPLICATIONS

- ▶ Extremely hard samples; highly corrosive liquids; minerals; slightly curved samples; fibers; nanoliters of liquids and pastes; and defects on large panels.
- ▶ Forensic and combinatorial chemistry samples.
- ▶ Samples requiring archival storage of the images as well as the spectra.

### FEATURES

- ▶ Monolithic Type IIA Diamond ATR Prism provides:
  - ▶ The most chemically inert, durable and cleanable ATR crystal available.
  - ▶ Small sampling area - less than 500 μm in diameter.
  - ▶ Operates from 45,000 cm<sup>-1</sup> to the FIR; limited S/N in the 2300 cm<sup>-1</sup> to 1800 cm<sup>-1</sup> region.
  - ▶ Concentrated pressure application due to its unique crown design.
- ▶ Pressure applicator for optimal contact between the ATR crystal and hard samples includes:
  - ▶ Force sensor with digital display of applied force.
  - ▶ LED indicator that activates when the user set alarm point is reached.
- ▶ Video imaging and illumination system:
  - ▶ Magnifies the image for easy viewing.
  - ▶ Directly views the sampling surface *through* the ATR crystal.
  - ▶ Integrates with your computer for real-time viewing and long-term storage of sampled images.
  - ▶ Optional LCD display provides a 44X magnification of the image.
- ▶ Minimal stray light due to the small sampling area.
- ▶ High sample throughput, since little or no sample preparation is required.
- ▶ Generally retains sample integrity.
- ▶ High energy throughput with DTGS detectors.
- ▶ Harrick's patented PermaPurge™ allows rapid sample and crystal exchange without interrupting the purge of the system.



### INCLUDES

- ▶ Sampling accessories: one diamond ATR holder, one external reflection sample holder and an alignment mirror.
- ▶ USB adapter and software for video image capturing, compatible with Windows 98/350MHz or higher computers.
- ▶ Mating hardware for the specified spectrometer.

### ORDERING INFORMATION

	CATALOG NO.		CATALOG NO.		CATALOG NO.
Video Meridian™	MEV-XXX	Liquid Cell	UNS-LCF	Powder Retainer	UNS-PSC
Optional 4" LCD Display	MEV-LCD	Liquid Cell O-Ring	ORV-0015	Powder Retainer O-Ring	ORV-012
Mounted Diamond	UNS-ATR-1W				

This accessory integrates advantages of our Meridian™ diamond micro-ATR with video imaging and force sensing capabilities, making the Video Meridian™ the accessory for analyzing small, hard, corrosive or irregularly shaped samples.

The Video Meridian™ can be configured for either ATR or external reflectance, simply by changing the sample holder. In its ATR mode, it features a sample holder with a monolithic hemispherical diamond ATR crystal for operation from 45,000  $\text{cm}^{-1}$  to the FIR. The sampling surface on the diamond is less than 500  $\mu\text{m}$  in diameter and is horizontally oriented for convenient sampling. A video system images through the crystal, providing a magnified real-time picture of the true sampling surface. This image can be viewed on the optional LCD display or a computer screen. Software is included to capture the image for a permanent record. For analysis, the samples are compressed against the sample using a force-sensing pressure applicator. This pressure applicator is equipped with an adjustable alarm, to easily deliver repeatable and reproducible contact pressures. For external reflectance and re-alignment, the Video Meridian™ features a removable sample holder and reference mirror. The Video Meridian™ is enclosed in a purgable box for rapid sample exchange without interrupting the purge of the system.

Optional accessories for the Video Meridian™ include:

- An LCD display with a 4" monitor. The display provides a 44X magnification of the image and can be affixed to the front of the accessory or rested on its stand nearby.
- A liquid cell which seals to the crystal holder with an o-ring and features two luer fittings for flow or static applications.
- A powder retainer that o-ring seals to the crystal holder and contains powders during analysis

Representative spectra recorded with the Video Meridian™ are shown in Figures 1 through 4. All spectra were recorded with 32 scans and 8  $\text{cm}^{-1}$  resolution with a DTGS detector.

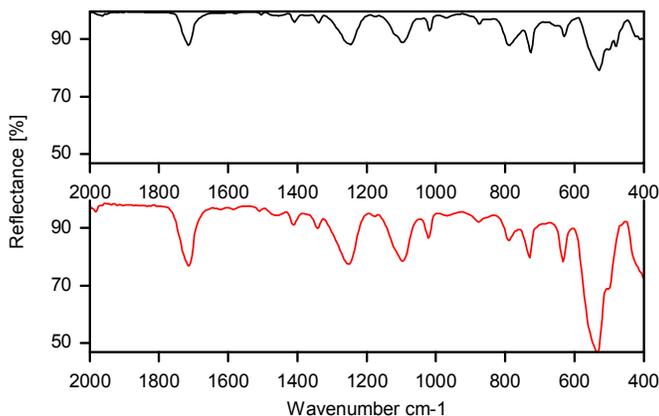


Figure 1. ATR Spectra of a 20  $\mu\text{m}$  PET Fiber compressed with 20 (top) and 302 (bottom) units of pressure.

Figures 1 and 2 show spectra and photographs of a 20  $\mu\text{m}$  diameter PET fiber compressed with different contact

pressures. The photographs clearly show how much the fiber was flattened during pressure application.



Figure 2. Photographs of the 20  $\mu\text{m}$  PET Fiber compressed with 20 (left) and 302 (right) units of pressure.

Figure 3 shows spectra of two pulverized rocks. The spectra show that the white rock is composed mostly of quartz and the brown rock has a significant amount of chromite. The inserts show the differences between the two in texture and color.

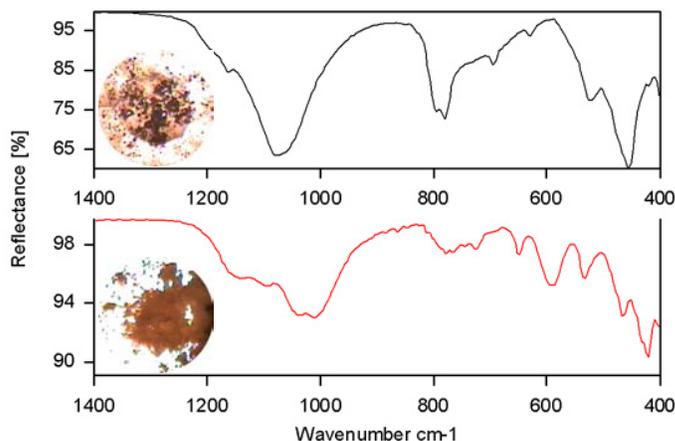


Figure 3. ATR Spectra of White (top) and Brown (bottom) Rocks.

For Figure 4, spectra were measured from the exposed side and underside of a paint chip. The two surfaces have different chemical compositions, and the spectra indicating that the top surface is an alkyd resin while the bottom is mostly cellulose.

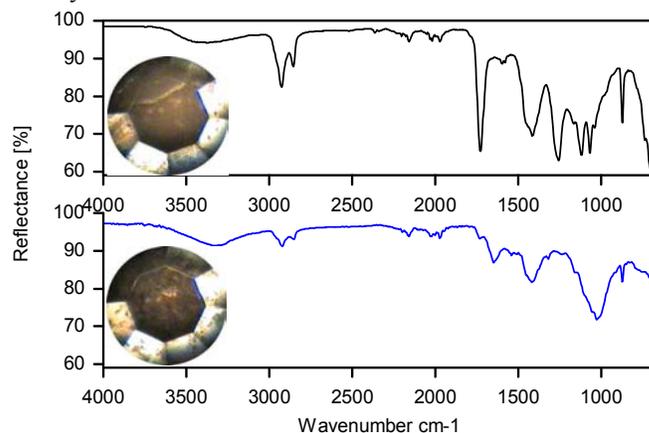


Figure 4. ATR Spectrum of the Bottom (lower) and Top (upper) Surface of a Gray Floor Paint Chip.

As demonstrated by the above examples, the Video Meridian™ is a versatile sampling tool for examining a wide range of solids, liquids and pastes.