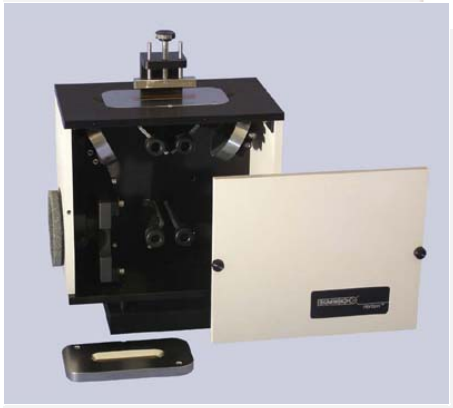
Horizon™



The Horizon™ multiple reflection ATR accessory is well suited for rapid analysis of liquids, pastes, powders, and thick films by infrared spectroscopy. Its unique design takes advantage of the astigmatism inherent in spherical mirrors to shape the FT-IR beam to match the aperture of the ATR crystal and to keep the radiation away from the edges of the crystal. This eliminates spectral interference from the adhesive used to mount the crystal and results in higher throughput. The Horizon™ also features a horizontal sampling surface (HATR) for easy sample positioning and PermaPurge for rapid sample and crystal exchange without interrupting the purge of the FT-IR system.

Applications

- Multiple reflection ATR spectroscopy.
- Useful for examining liquids, pastes, powders and other soft surface solids.
- Perfect for quality control and other situations that require rapid sample exchange.

− VIEW FEATURES, AND INCLUDES

Features

- Top loading.
- Unobstructed, horizontal sampling surface (HATR).
- Thirteen reflections from the sample.
- Readily exchangeable sampling plates
  - Solid sampling plate includes pressure plate for analyzing powders and solids.
  - Gasket-sealed trough for measurements of liquids and pastes. User replaceable ATR crystal.
- Rapid sample and crystal exchange without interrupting the purge.
- Utilizes astigmatism to match the beam shape to that of the ATR crystal, creating insensitive edges within the crystal, minimizing spectral inference from the adhesive or gasket used to mount the crystal.
- High spectral contrast.
- High throughput (25-40%).
- PermaPurge™ permits crystal exchange with minimal interrupting of the purge of the FT-IR system.
- Wire grid polarizer available separately.
- Optional adapters for injection, flow-through, and temperature controlled applications.

Includes

- One mounted ZnSe 50x10x2mm SPT 45° ATR crystal
- Solid or liquid sampling plate. Solid sampling plate includes a pressure plate and clamp; the liquid sampling plate has a trough to contain the liquid.

- Mating hardware for the specified FT-IR spectrometer.

+ VIEW ORDERING INFORMATION

− VIEW ADDITIONAL INFORMATION

Additional Information

The Horizon™ multiple multiple reflection ATR accessory is a powerful tool for examining liquids, pastes, powders, and soft surface solids by infrared spectroscopy.

The unobstructed, horizontal sampling surface of the Horizon™ makes analysis easy. Samples of various sizes may be simply placed on top of the ATR crystal. For high quality spectra without atmospheric interference, this HATR accessory features PermaPurge™. This permits sample and crystal exchange while maintaining the purge through the FT-IR spectrometer and the accessory. This is ideal for quality control and other applications, which require rapid sample exchange.

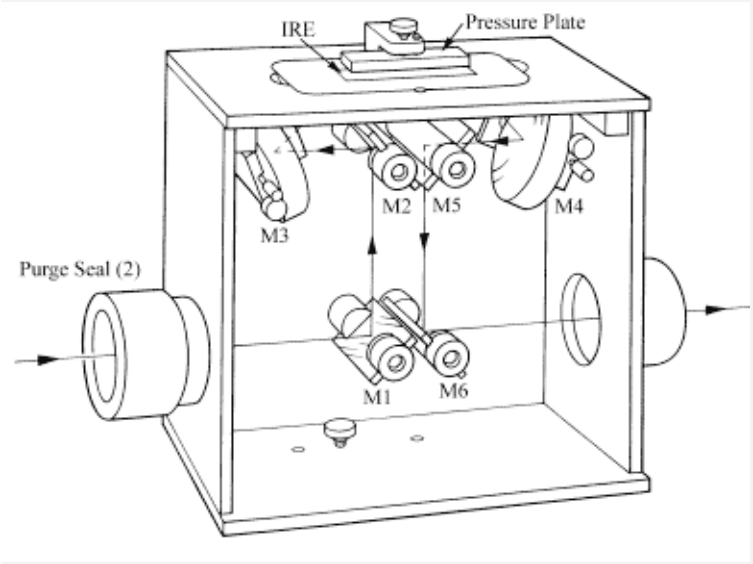


Figure 1. The Horizon™ Solid Sampler.

The Horizon™ is shown in Figure 1. Mirrors M1 and M2 direct the incident infrared beam to mirror M3. This spherical mirror focuses the beam and, due to its off-axis orientation, elongates the beam to match the rectangular entrance aperture of the ATR crystal. The beam is internally reflected along the length of the crystal, where it interacts with the sample, and then exits the ATR crystal. The beam, which has interacted with the sample, is then reflected from spherical mirror M4 to mirror M5. Mirror M5 reflects the beam to mirror M6 and onto the detector of the FT-IR spectrometer.

The ATR crystal is positioned relative the focal points of the two spherical mirrors so that the beam shape is elongated to match the aperture of the crystal at both its entrance and exit (see Figure 2).

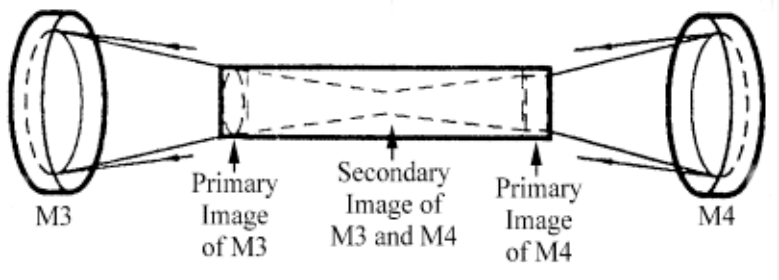


Figure 2. Schematic of the Infrared Beam Profile of the Horizon

as the Beam Passes through the ATR crystal.

Upon entering the crystal, the light continues converging in the direction parallel to the width of the crystal. When it reaches the center of the crystal, it starts diverging. Thus within the crystal, the radiation is kept away from the edges of the crystal. This eliminates spectral interference from the adhesive used to seal the crystal onto the mounting plate. This optical design results in a highly efficient multiple reflection ATR accessory.

Representative infrared spectra obtained using the Horizon are shown in Figures 3 through 6.

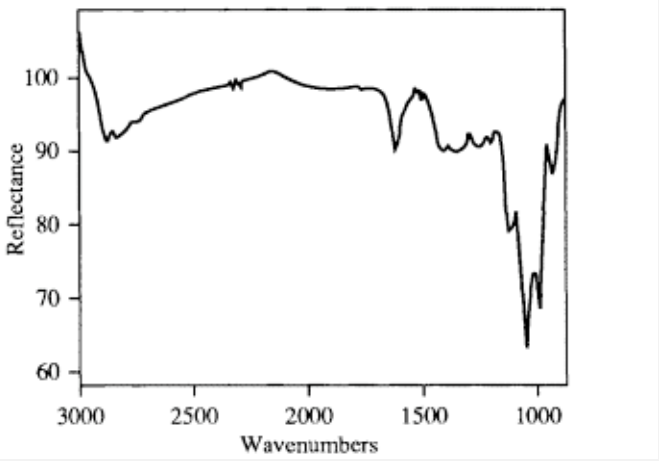


Figure 3. ATR Spectrum of
Sweetened Coffee (without Milk) Relative to Water.

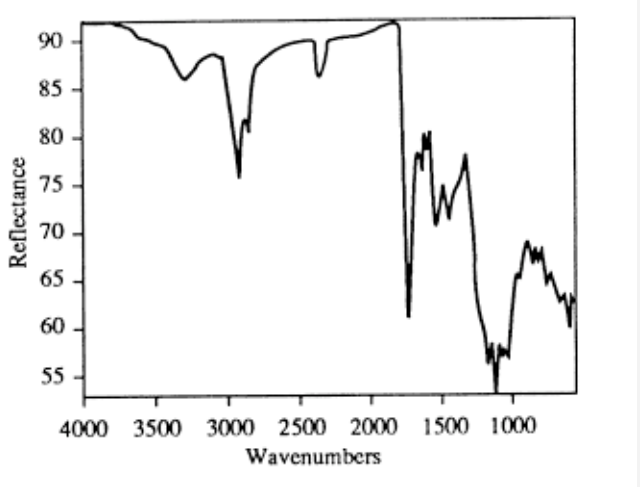


Figure 4. ATR Spectrum of an Adhesive on Paper.

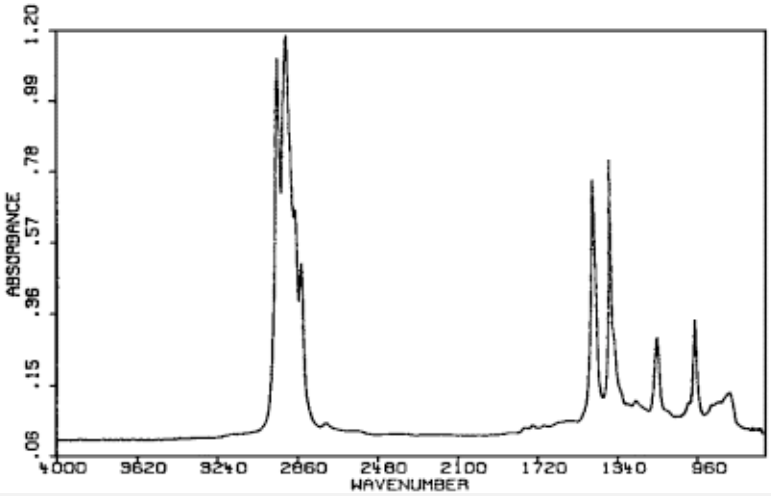


Figure 5. ATR Spectrum of Anhydrous Maleic Acid in Molten Polypropylene Recorded at 185°C.

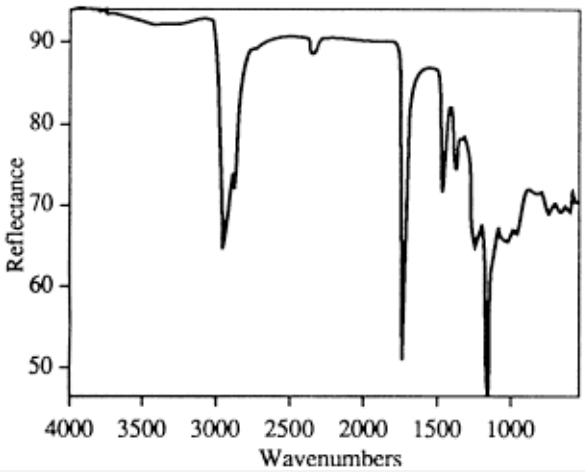


Figure 6. ATR Spectrum of Black Foam Packing Material.

Email this page Printer-friendly version

141 Tompkins Ave, 2nd Floor, PO Box 277, Pleasantville, NY 10570 | P: 914-747-7202 | F: 914-747-7209