THE REFRACTOR2™

The Refractor2™ is a unique attachment for grazing incidence specular reflectance studies. The Refractor2™ incorporates two SuperCharged™ wedged windows to refract the beam to and from the sample. It also includes a pre-mounted, internal Si polarizing plate for enhanced spectral contrast. This unique design results in a compact attachment and avoids the energy losses associated with the plane mirrors typically employed.

APPLICATIONS

- Ideal for recording spectra of thin films on metal and semiconductor substrates.
- Well suited for laboratory and QC applications.

FEATURES

- Low cost.
- Unobstructed, horizontal sampling surface for high sample throughput.
- Fixed 75° incident angle and built-in, removable polarizer provides high spectral sensitivity.
- Two SuperCharged™ ZnSe wedged windows refract the beam to and from the sample. KRS-5 windows available on special order.
- Compact.
- SuperCharged™ for optimal energy throughput.
- Easy to align and use.
- PermaPurge™ for rapid sample exchange without interrupting the purge.
- Removable PermaPurge™ assembly - accommodates samples up to 4.75” wide when installed and even larger when removed.

INCLUDES

- Two SuperCharged™ ZnSe wedged windows.
- Si polarizing plate.
- Alignment mirror.
- Mating hardware for the specified spectrometer.

ORDERING INFORMATION

	CATALOG NO.
Refractor2™	RG2-XXX

REPLACEMENT PARTS

Silicon Polarizing Plate	RGA-000
SuperCharged™ ZnSe Wedged Window	RGA-001

Harrick Scientific Products, Inc.
141 Tompkins Ave, 2nd floor, Pleasantville NY 10570
Ph: 800-248-3847, FAX: 914-727-7209, web site: www.harricksci.com, e-mail: info@harricksci.com

The Refractor2™ is a simple, low cost, in-line grazing incidence attachment. It is ideal for recording spectra of thin films on metal substrates. The angle of incidence is fixed at 75°. Excellent spectral contrast results. Large panel samples can be easily analyzed, since the sampling surface is above all of the optical components.

Conventional in-line grazing incidence attachments have two major drawbacks. First, the short plane mirrors employed do not totally intercept the beam of the spectrometer, resulting in a significant loss in optical throughput. Second, an external polarizer is typically required. Such an external polarizer is expensive. Both of these drawbacks are overcome with the Refractor2™.

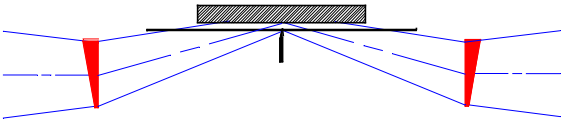

Figure 1. The Optical Drawing of the Refractor2™

In the Refractor2™, the optical beam is deflected to and from the sample via wedged ZnSe windows (see Figure 1). This design results in a compact accessory with optimal throughput. The two ZnSe windows are SuperCharged™, which nearly doubles the performance of the Refractor2™. A single Brewster's angle silicon polarizer plate is located below the sampling plane to provide the required parallel polarization.

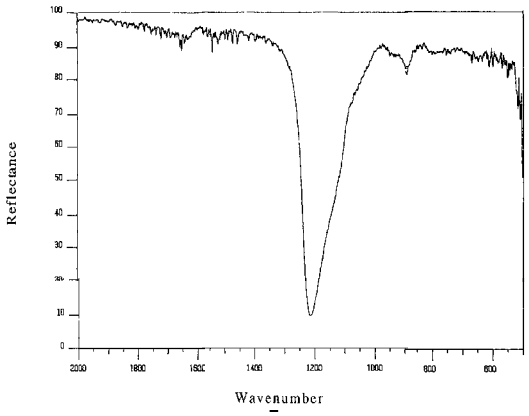

Figure 2. Spectrum of SiO_2 on an Al Substrate

Figure 2 shows the spectrum of a silicon dioxide film, approximately 500Å thick, on an aluminum substrate. In Figure 3, the spectrum of a 100Å layer of silicone lubricant on an aluminum substrate is given. Here, an external wire-grid polarizer is used in place of the internal silicon polarizer.

The Refractor2™ is supplied with all mounting hardware required to install it directly in the spectrometer and is compatible with most FTIR instruments. Alignment is fast and simple. For analyses that require spectral information at

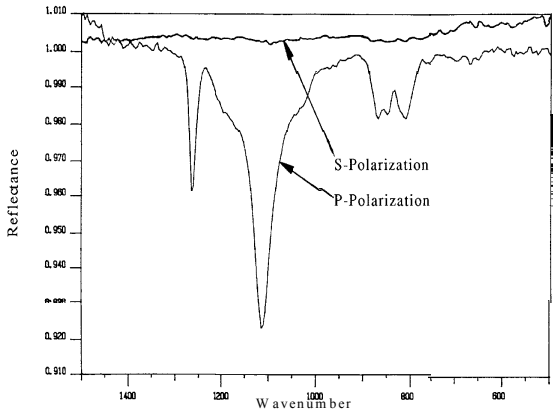

Figure 3. Spectra of Silicone Lubricant on an Al Substrate.

frequencies below 500 cm^{-1}, replacement KRS-5 windows are available on a special order. A reaction chamber model of the Refractor2™ is also available, on special order, for analysis of samples in a vacuum or pressurized environment.