



REFLECTANCE REFERENCE

The reflectance reference provides a method for calculating the reflectivity of a material from a measured spectrum of a sample. The experimental measurement is obtained in a particular wavenumber region for s-, p- or mixed polarization. The mid-infrared reflectance reference is suitable for use from 5000 cm^{-1} to 400 cm^{-1} .

APPLICATIONS

- ▶ Absolute reflectance measurements of materials.
- ▶ Ideal for coatings on mirrors and reflective substrates.

FEATURES

- ▶ Ge reflectance reference.
- ▶ Unique design collects only front-surface reflectance.
- ▶ Suitable for use from 5000 cm^{-1} to 400 cm^{-1} .
- ▶ Designed for operation with the Seagull, Variable Angle Reflection Accessory, Near-Normal Reflectance Accessory and External Specular Reflection Accessory.
- ▶ CD with an Excel spreadsheet configured to:
 - ▶ Calculate the reflectivity of the reference at various incident angles, polarizations and wavenumbers.
 - ▶ Extract the reflectivity of the sample from experimental data.



INCLUDES

- ▶ Ge reflectance reference.
- ▶ Comes equipped to mount into the Seagull, Variable Angle Reflection Accessory, Near-Normal Reflectance Accessory and External Specular Reflection Accessory
- ▶ Instruction manual.
- ▶ CD with reflectance data and formulas in an Excel spreadsheet.

ORDERING INFORMATION

Mid-Infrared Reflectance Reference (Ge).....

CATALOG NO.
RRF-00J

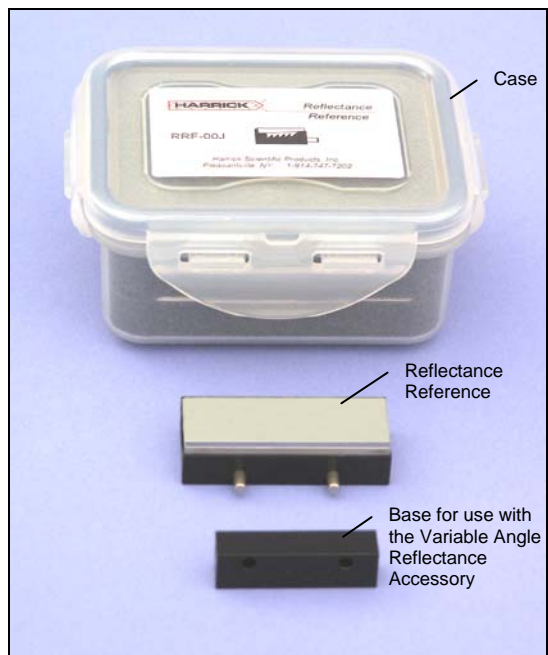


Figure 1. The Reflectance Reference.

The reflectivity of a material can be measured in one of two ways: directly, using VW absolute reflectance equipment, or indirectly, using relative reflectance equipment. The VW configuration is highly sensitive to the alignment of both the accessory and the spectrometer.

The other method is less direct. The sample spectrum is recorded relative to a reference with a well-known reflectivity under controlled experimental conditions and the reflectivity of the sample is then calculated from the experimental spectrum and the reflectivity of the reference.

Harrick's Reflectance Reference (see Figure 1) includes a specially designed optical element which provides only front-surface specular reflectance. The Reflectance Reference comes with the hardware needed to adapt it to Harrick reflection accessories and software to calculate the reflectivity of the substrate for incident angles over the useable wavelength range of the material for the s-, p- or mixed polarization. The software also can be used to extract the reflectivity of the sample from the experimental data.

Sample reflectivity data for the reference are shown in Figures 2 and 3. Figure 4 shows the reflectance spectrum of ZnSe measured relative to the reflectance reference and the resulting calculated absolute reflectance of ZnSe. The experimental data were collected at an 8cm^{-1} resolution using the Seagull at a 30° incident angle with a wire grid polarizer.

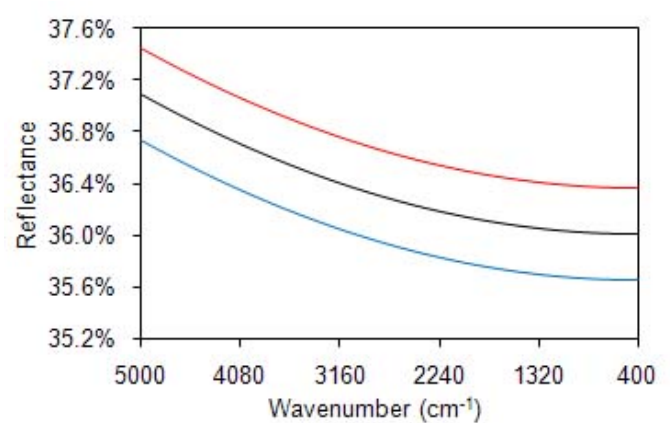


Figure 2. Theoretical Reflectivity of Ge at a near-normal (8°) incident angle for s (red), p (blue) and mixed (black) polarization.

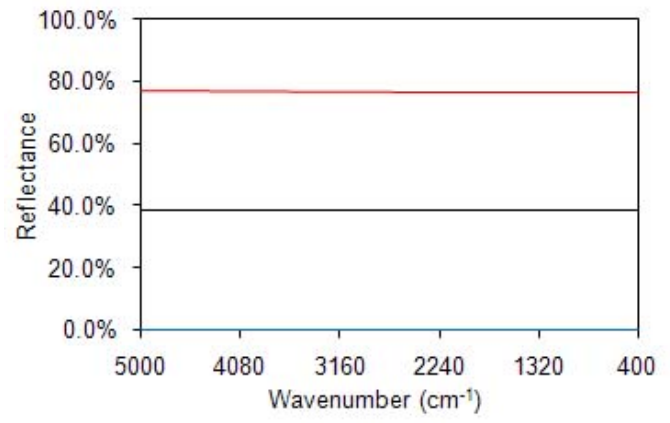


Figure 3. Theoretical Reflectivity of Ge at a grazing (75°) incident angle for s (red), p (blue) and mixed (black) polarization.

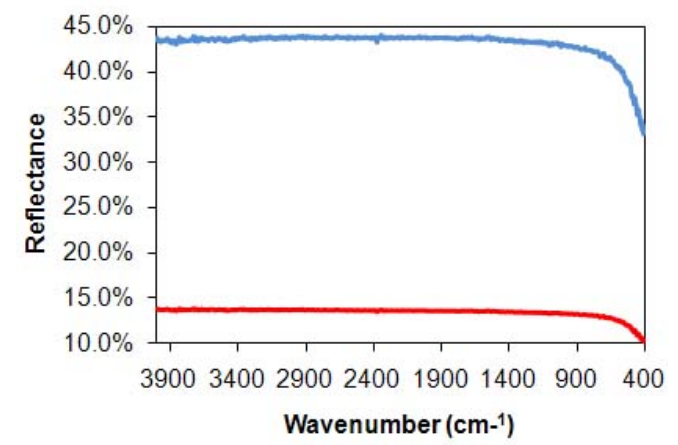


Figure 4. The reflectance of ZnSe extracted (red) from an experimental spectrum (blue) at a 30° incident angle with p-polarization.