



OMNI-DIFF™

The Omni-Diff™ diffuse reflectance probe is designed to interface to virtually any spectrometer via fiber optics. This miniature accessory comes equipped with input and output SMA connectors that can be readily attached to a fiber optic coupler, such as the Harrick FiberMate2. It is ideal for diffuse reflectance analysis of samples up to 1.5 meters away from the spectrometer. The Omni-Diff™ measures primarily the radiation diffusely reflected from the sample. The specular component is deflected away from the collection optics. The Omni-Diff™ is offered with a selection of fiber optics for use in the Vis, NIR and mid-IR. A digital imaging system is also available for photographic documentation of the sample.

APPLICATIONS

- ▶ Analysis of rough surfaced solids which are too large to fit in the sample compartment for conventional analysis.
- ▶ Measurements of powders with no sample preparation required.
- ▶ Photographic documentation of samples undergoing diffuse reflectance measurements.

FEATURES

- ▶ Compact and convenient to use.
- ▶ Suitable for use from the UV to the IR. For best performance, an MCT detector is recommended in the mid-infrared.
- ▶ Maximizes the collection of the diffusely reflected light, while minimizing the specular component.
- ▶ Two standard 905 SMA connectors for connecting suitable fiber optic cables.
- ▶ Optical fiber optics available in 1.5m long sets:
 - ▶ Vis/Near-IR fiber optics for use from 350 nm to 2250 nm.
 - ▶ Near/Mid-IR fiber optics for use from 6500 cm⁻¹ to 2240 cm⁻¹ and 1700 cm⁻¹.
 - ▶ Mid-IR fiber optics for use from 2000cm⁻¹ to 600 cm⁻¹.
- ▶ Optional video imaging and illumination system (shown in lower photo):
 - ▶ Magnifies the image for easy viewing.
 - ▶ Directly views the sampling surface.
 - ▶ Includes software for illumination, real-time viewing and storing the images.
 - ▶ USB2 compatible.
 - ▶ CE marked.
- ▶ Optional reference materials for mid-IR and Vis/Near-IR studies.



INCLUDES

- ▶ Omni-Diff™ diffuse reflectance probe.
- ▶ Sets of two 1.5 m fibers must be ordered separately.
- ▶ Use with a fiber optic coupler, such as the Harrick FiberMate2.

ORDERING INFORMATION

Omni-Diff™	CATALOG No.
Vis/Near-IR Fiber Set (350 nm to 2250 nm).....	OMN-DIF
Near/Mid- IR Fiber Set (CIR fibers, 6500 cm ⁻¹ to 1700 cm ⁻¹).....	OMN-F-UVN
Mid-IR Fiber Set (PIR fibers, 2000 cm ⁻¹ to 600 cm ⁻¹).....	OMN-F-CIR
	OMN-F-PIR

OPTIONS AND REPLACEMENT PARTS

Digital Camera for the Omni-Diff™	OMN-CAM
Reference Fixture (includes an Au diffuse reference and a Spectralon™ reference).....	OMN-DIF-R
FiberMate2	FM2-XXX*

*XXX indicates spectrometer make and model

The Omni-Diff™ is an excellent tool for diffuse reflectance measurements of samples outside of the sample compartment. The Omni-Diff™ is a fiber optic probe that is designed for measurements of powders and rough-surface solids up to 1.5m away from the spectrometer. It interfaces to the spectrometer using two fiber optic cables and a fiber optic coupler, such as the Harrick FiberMate2. The Omni-Diff™ features all front-surface Al mirrors on its interior, allowing operation over a wide spectral range. It comes enclosed in a box, which serves as a light shield in the UV-Vis and a purge enclosure in the IR. Fibers are available for the UV-Vis, NIR, and mid-IR. However, an MCT detector is recommended for mid-IR applications.

The Omni-Diff™ is available with an optional digital camera for real-time viewing of the sample. This is a useful aid in positioning the accessory over small spots and for photographic documentation.

Figures 1 and 2 show the spectra recorded from several different locations on a granola bar box. Figure 3 shows the photographic images from those sites. Note that the Figure 3a has a bright section in the center. This photograph was taken with the visible source from the UV-Vis spectrometer on and it shows the actual area sampled. From the spectra, it is clear that the infrared mostly detects the glossy coating on the paper with a small contribution from the underlying cardboard on the outside of the box. The glossy coating and its characteristic peak around 3670 cm^{-1} is not observed from the inside of the box (blue spectra). From the UV-Vis spectra, it is clear that the sections sampled are different colors.

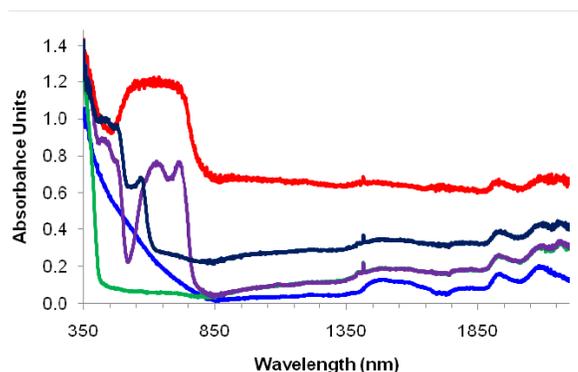


Figure 1. UV-VIS diffuse reflectance spectra of a Quaker Chewy Granola Bar box, recorded using the UV-Vis/NIR fibers.

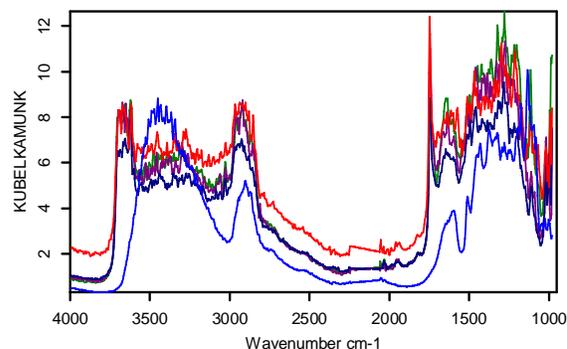


Figure 2. Infrared diffuse reflectance spectra of a Quaker Chewy Granola Bar box, recorded using the CIR fibers with a DTGS detector.

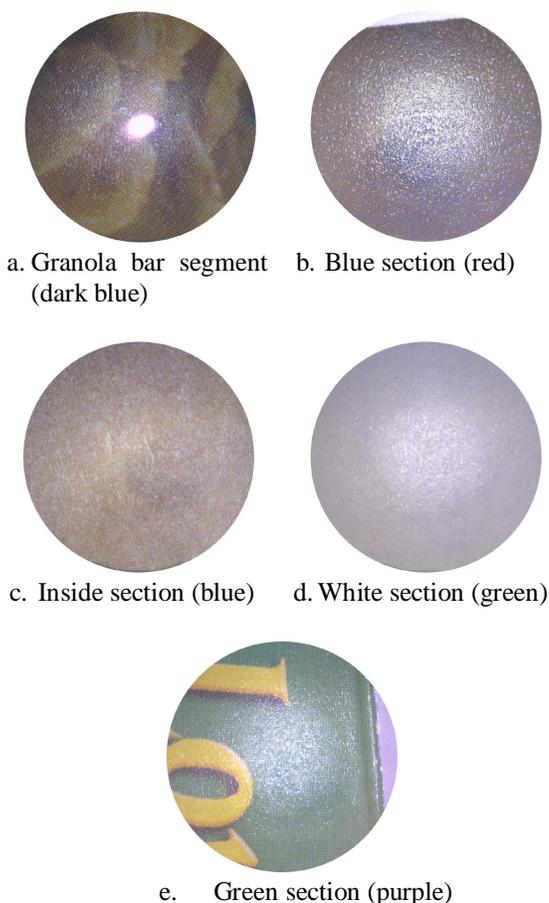


Figure 3. Photographs of the different sections of the Quaker Chewy Granola Bar box sampled. Shown with the color-code for the spectra in Figures 1 and 2.