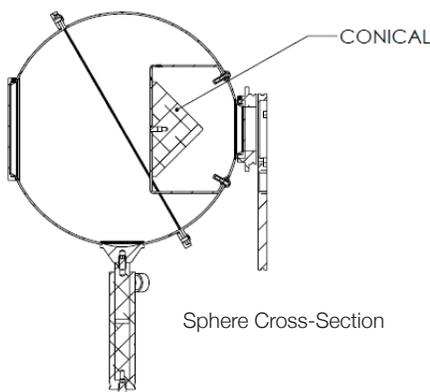
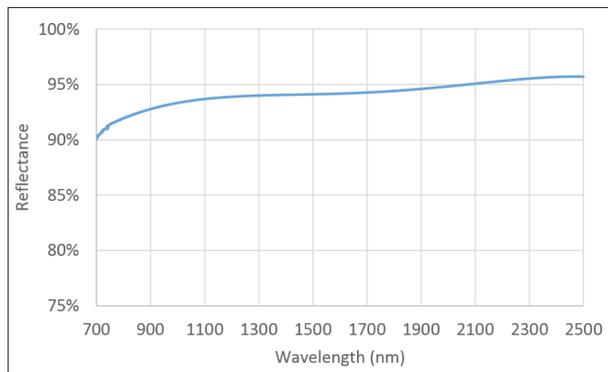


Infragold® Integrating Sphere with Filter Wheel



Typical Spectral Reflectance of Labsphere's Infragold



Technical Challenge

A client needed to uniformly illuminate a camera they were developing with infrared light (IR) for testing and calibration. They had already acquired the light source they needed. They wanted to illuminate their camera with certain wavelength bands, so it was necessary for the system to be compatible with multiple bandpass filters. Labsphere was asked for just an integrating sphere.

Labsphere's Solution

IR light waves do not reflect off Labsphere's standard Optical Grade Spectralon® with near-Lambertian uniformity, as visible light does. Our Infragold material is designed specifically for diffusely reflecting IR waves, and exhibits >94% reflectance above 1000 nm. This data is traceable to the National Institute of Standards and Technology (NIST). Infragold's effective range is between .7 and 20 μm , which covers much of the NIR and MIR bands.

The 8 inch Infragold sphere was designed to incorporate the filters as smoothly and simply as possible. Four filters were ordered - two sets of different diameters and two wavelength bands. The filter wheel positioned at the 2 inch entrance port could fit filters of both one and two inches, allowing both sets of filters to be installed. It had five positions, so it could fit the four bandpass filters and still have an open port for unfiltered measurements. Inside the sphere, there was a conical baffle separating the entrance port and the 4 inch exit port. This shielded the camera from viewing the light source directly while maximizing uniformity in the output. Port covers were also provided for both ports to protect the interior during shipping and when the sphere is not in use.

Benefits

- The filter wheel makes it fast and easy to switch between filters, greatly facilitating the testing process
- The client was able to attain a reliable sphere system that matched their in-house components and the filters they needed
- The 4 inch standing post beneath the sphere is compatible with a 1/4"-20 optical breadboard, allowing the client to integrate the system easily into their testing environment
- The high IR reflectivity of Labsphere's Infragold ensures high uniformity and accurate test results