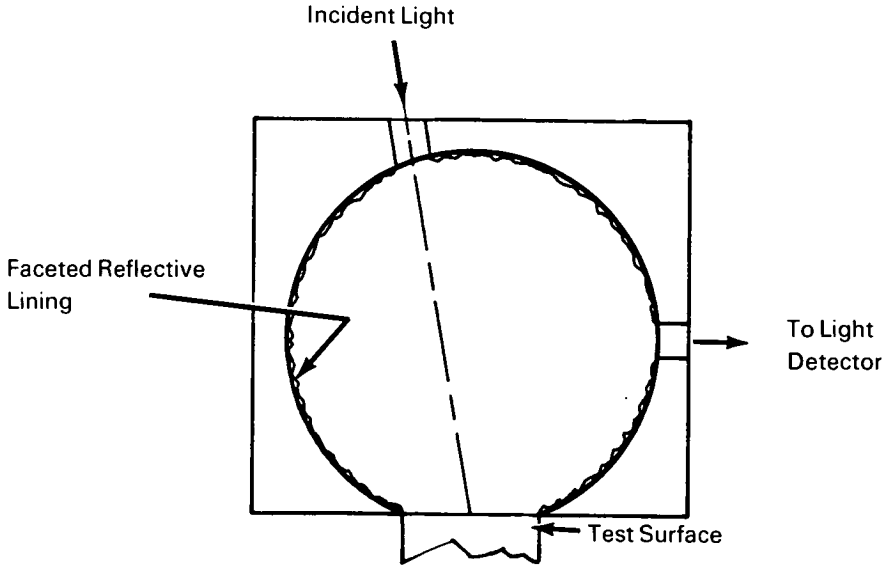
NASA TECH BRIEF

Optical Integrating Sphere Operates at Visible and Infrared Wavelengths



An optical integrating sphere with a faceted reflective lining on the inside surface will provide light randomization (mixing of diffusely and specularly reflected light) with relatively few reflections. The improved sphere has a sufficiently high reflectivity for both visible and infrared radiation so that it can be used for measuring the reflectivity of test surfaces over this spectral range. In the past, separate integrating spheres were required for measurements in the visible and infrared regions.

The faceted lining can be formed in a number of ways. One way is to fold and refold aluminum foil to obtain the proper texture and then shape the foil to conform to the internal surface of the integrating sphere. Another method is to grind or machine and polish the facets on the outside of a sphere and then make a split mold of the faceted sphere using plastic casting or electroforming. The inside of the resulting faceted sphere can be made highly reflective by vacuum deposition of a reflective metal or by application of a magnesium oxide coating.

Note:

Inquiries concerning this device may be directed to:
Technology Utilization Officer
Marshall Space Flight Center
Huntsville, Alabama 35812
Reference: B68-10126

Patent status:

No patent action is contemplated by NASA.

Source: S. Aisenberg
of Space Sciences Inc.
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