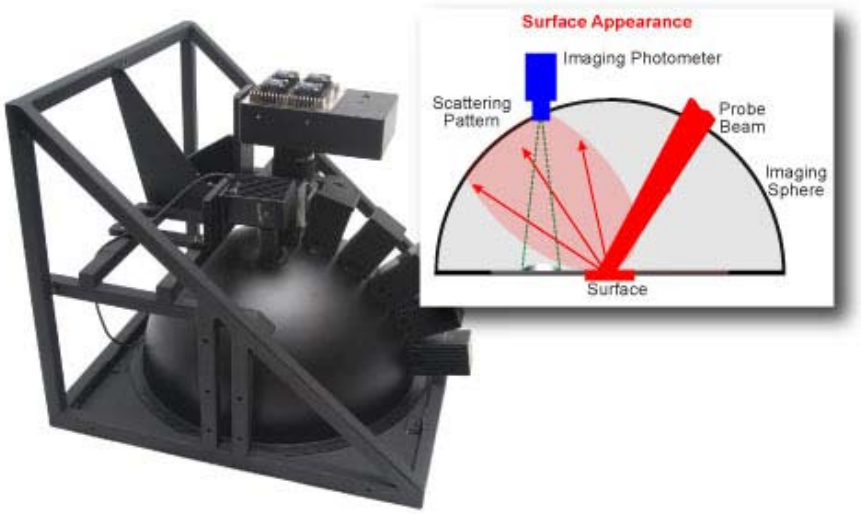
Imaging Sphere – Surface Appearance (IS-SA)

High speed, low cost, scatter and appearance measurement system for metal, paper, plastics and transmissive films



Radiant Imaging's new Imaging Sphere™ (IS-SA) utilizes scattered light measurement to rapidly and accurately characterize surface roughness and other imperfections in a wide range of reflective surfaces and transmissive films. System software automatically converts raw scatter measurements into commonly used surface parameters such as TIS (Total Integrated Scatter), RA (average surface roughness), BRDF and BTDF. Based on patented technology developed jointly with Royal Philips Electronics, the IS-SA acquires data over an entire 2π steradian in a single measurement, taking just seconds or less, which is a dramatic improvement over traditional scatter instruments. These utilize moving goniometers to slowly acquire a comprehensive data set, point by point, or else make higher speed measurements at only one or two fixed angles. The unique combination of high speed and high resolution makes the rugged IS-SA well suited for both R&D programs and production line QC/QA.

The turnkey IS-SA system consists of a 20" (508 mm) diameter, hemispherical measurement chamber, mated with our PM-1400 Series Imaging Colorimeter (with a 512x512 pixel detector). Other imagers offering different dynamic range and resolution are available as well. The IS-SA also incorporates a movable illuminator arm, equipped with a white LED light source. A wide variety of other light sources are available as options. The IS-SA includes a full software suite, which enables manual and fully automated control of all system hardware, as well as complete data analysis and display. Data can be displayed as isometric plots, cross-sectional graphs, radar plots, bit maps and color graphs. For technical or sales support contact us at sales@radiantimaging.com or call us at 425-844-0152.

IS-SA Advantages

- Many times faster than BRDF goniometers.
- More economical than other BRDF instruments.
- Operates in ambient light conditions.
- Characterizes both scattered light and specular reflections.
- Operates in both transmission and reflection modes.

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Performance Specifications

Maximum Sample Size	500 mm x unlimited
Standard Illumination Angle	0°, 10°, 20°, 30°, 40°, 50°, 60° and 70°
Standard Illumination Source	White LED
Illumination Area	2 - 10 mm (2 mm step)
Angular Resolution	0.5°
Dynamic Range	14 bits (16384 gray scale levels)
Sensitivity	
Minimum luminance	40 nits
Minimum Reflectivity	1%
System Accuracy	
Luminance	±5%
Chromaticity coordinates [x,y]	±0.005
Short term repeatability	
Luminance	±5%
Chromaticity coordinates [x,y]	±0.0006
Minimum measurement time	
Photopic	1 sec
Color	5 sec
Dimensions (LxWxH)	550 mm x 640 mm x 670 mm
Weight	30 kg
Optional Equipment	X,Y and Phi automated stage (material positioning) Near-field alignment camera

Testing Capabilities

TIS (Total Integrated Scatter)
RA (average surface roughness)
BRDF/BTDF
Materials

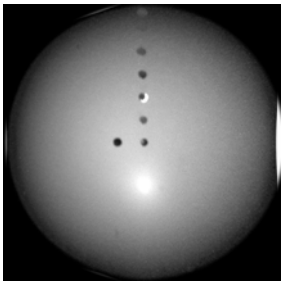
- Metal
- Paper
- Plastics
- Paints
- Films (BEF, Polarizer)
- Currency

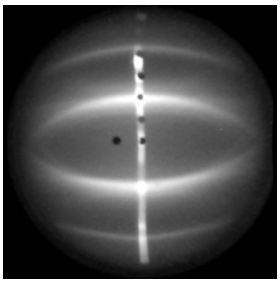
Host Computer Requirements

Pentium IV
512 MB RAM
Windows® 2000/XP
USB 2.0 Interface

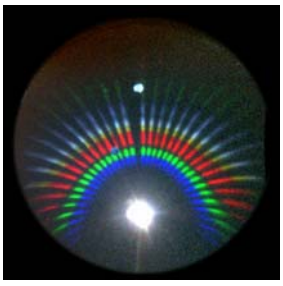
Imaging System Compatibility

The Imaging Sphere is normally configured with a Radiant Imaging PM-1400 series Imaging Colorimeter and a 512x512 detector. However, any of the Radiant Imaging PM Series™ Imaging Photometers and Colorimeters are compatible with the Imaging Sphere, offering the user an expanded range of performance and cost options. Contact the Radiant Imaging Sales staff for camera recommendations specific to your application.


Luminance Plot


Luminance Plot


Color Plot
(Euro hologram)


Color Plot
(Decorative foil)

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