manner. The light source **12** diffusibly illuminates the specimen with the blinds **11s** preventing a direct illumination of the specimen and of the receiving optic **13**. The radiation reflected from the specimen is measured by the receiving optic **13** which detects the radiation only within a predetermined aperture **13a** as a consequence of its defined receiver surface **13f** and a diaphragm **13b**. The receiver surface **13f** can, for example, be the end face of a light conductor. A second receiving optic **14** is often provided as a reference receiving optic which detects the reflected radiation of a suitable location of the white coating of the Ulbricht sphere with the same aperture.

According to the invention, if the specimen **15** has a large surface structure, it is not placed on the measuring aperture **11m** as is conventional; instead, it is placed on a cylindrically-shaped tube **16** which is mirrored on its inner surface **16i** and whose axis **16a** is applied perpendicularly and centrally to the surface of the measuring aperture **11m**. The diameter **16d** and length **16k** of the cylindrically-shaped tube **16** are preferably so selected that the aperture predetermined by the receiving optic is not cropped.

As shown in FIG. **1** with the aid of a ray **17**, the angular distribution of the radiation incident upon the specimen surface does not change; that is, if the dimensions of the Ulbricht sphere correspond to a standard geometry, these dimensions are maintained even with the application of the cylindrically-shaped tube. On the other hand, it is seen from FIG. **1** that an increase of the effective measurement surface on the specimen can be twice and even more if the specimen is not seated on the measuring aperture **11m** as is conventional but is instead applied to the enlarged measuring aperture **16v**.

If the aperture is cropped, not only is the receiver signal reduced, but also the peripheral zones of the measurement surface are overemphasized. If the inner diameter of the cylindrically-shaped tube is made too large, specific angular regions of the radiation distribution are separated out and the radiation power is weakened. Such deviations from the optimal dimensions can, however, often be tolerated to a certain extent in dependence upon the measuring task to be performed. This applies especially to color difference measurements. The same applies to deviations from the cylindrical form for the reflecting inner surface **16i** with a slightly conically-shaped configuration as well as a polygonal cross section being possible.

In FIG. **2**, the measurement part of a reflectance apparatus having a directed illumination is shown. Reference numeral **22** identifies a ring lamp and in lieu thereof, a single or several light sources can be used which are arranged on a circle about the axis **10**. The specimen is placed at the measuring aperture **21m** of the housing **21** in the usual manner and is illuminated at a predetermined angle of for example 45° and most often through one or more diaphragms **22b** having a predetermined aperture. The radiation reflected from the specimen is measured by means of receiving optic **23** which, as a consequence of its definable receiving surface **23f** and an aperture **23b**, only detects the radiation within the predetermined aperture **23a**.

For the case wherein the specimen **15** has a large surface structure, a light-conducting device **26** is mounted between the specimen and the measuring aperture **21m**. For the embodiment shown in FIG. **2**, a light-conducting device **26** in the form of a massive, cylindrically-shaped tube made of glass or plastic is provided having an outer surface **26r** which is preferably mirrored and whose end surfaces (**26e**, **26v**) are advantageously uncoated. The diameter **26d** and length **26k** of the light-conducting device **26** are again preferably so selected that the aperture **23a** of the receiving optic **23** is just barely not cropped and the desired enlargement of the effective measurement surface of the specimen **15** is obtained. In this embodiment also, deviations from the optimal dimensions of the light-conducting device **26** as well as deviations from the cylindrical form are possible within a predetermined limit which is dependent upon the specimen to be investigated and the measuring precision required.

The specimen **15** does not have to be directly placed on the enlarged opening **26v** of the light-conducting device **26** and can instead be mounted at a defined distance therefrom.

The tube **16** of FIG. **1** can be used in the reflectance measuring apparatus shown in FIG. **2** and the massive cylinder **26** of FIG. **2** can be used in the apparatus of FIG. **1**.

It is understood that the foregoing description is that of the preferred embodiments of the invention and that various changes and modifications may be made thereto without departing from the spirit and scope of the invention as defined in the appended claims.

What is claimed is:

**1**. A reflectance measuring apparatus for measuring a specimen, the apparatus comprising:

a structure defining a measuring aperture having a center;

light source means for illuminating the specimen from which light radiation is reflected;

receiver means for detecting the radiation reflected from the specimen within a predetermined aperture;

a light-conducting device having a first longitudinal end placed on said measuring aperture and a second longitudinal end facing the specimen;

said light-conducting device having a configuration which is at least approximately cylinder-shaped and defining a longitudinal axis perpendicular to the area of said measuring aperture so as to extend through the center thereof; and,

said light-conducting device having a diameter and a length selected so as to not significantly change said predetermined aperture and so as to cause said second longitudinal end to define an enlarged measuring aperture for the specimen.

**2**. The reflectance measuring apparatus of claim **1**, said structure being a measuring head having said measuring aperture formed therein; and, a cable extending from said measuring head and adapted to be connected with another component of the apparatus.

**3**. The reflectance measuring apparatus of claim **1**, said structure being an Ulbricht sphere having said measuring aperture formed therein.

**4**. The reflectance measuring apparatus of claim **1**, said light-conducting device having a circularly-shaped cross section.

**5**. The reflectance measuring apparatus of claim **4**, said light-conducting device being a tube.

**6**. The reflectance measuring apparatus of claim **5**, said light-conducting device being a massive, light-transparent piece made of a material selected from the group consisting of glass and plastic.