The apparatus of the invention preferably is used in conjunction with a method for irradiating a specimen with a beam of radiation, preferably ultraviolet radiation. In accordance with a preferred embodiment of the invention, the method comprises the steps of providing an integrating sphere in radiative communication with a source of radiation, and placing one or more specimens (for example specimens S, S_1 shown in FIG. **2**) in radiative communication with the integrating sphere. Preferably, the method is performed using the apparatus of the invention as hereinbefore described.

In a preferred embodiment of the invention, the method includes the step of measuring a change in one or more properties of the specimen. For example, when the property is one whose change may be observed on a molecular level, the step of measuring may comprise, for example, spectrographically analyzing the specimen. When the property is one whose change may be observed macroscopically, the change may be measured by observing a the change, such as, for example, by measuring the conductivity of the specimen, by weighing the specimen, by observing a color change in the specimen, or by evaluating the mechanical properties of the specimen. The length of time necessary to cause an observable change in the specimen will vary widely with the type of specimen and the radiation flux within the sphere. It is anticipated that the length of time may range from as short as a few seconds, to one hour, to twenty-four hours, to three days, to thirty days, to more than 100 days. When such apparatus is employed in conjunction with the method of the invention, a number of advantages are realized. For example, the apparatus allows great flexibility in the selection of a radiation source and the interchanging of specimens, and allows for one or more environmental conditions other than irradiance to be monitored and controlled. It is therefore seen that the foregoing general objects have been satisfied by the method and apparatus of the invention.

While particular embodiments of the invention have been shown, it will of course be understood that the invention is not limited thereto since modifications may be made by those skilled in the art, particularly in light of the foregoing teachings. It is, therefore, contemplated by the appended claims to cover any such modifications as incorporated in those features which constitute the essential features of these improvements within the true spirit and scope of the invention. All references cited herein are hereby incorporated by reference in their entireties.

What is claimed is:

1. A method for artificially weathering a specimen, comprising the steps of:

providing an integrating sphere and a radiation source in radiative communication with the interior of said integrating sphere, the radiation flux within said integrating sphere being uniform;

providing a specimen,

placing said specimen in radiative communication with said integrating sphere; and

irradiating said specimen for a length of time sufficient to cause a property of said specimen to measurably change and measuring said change.

2. A method according to claim **1**, wherein said integrating sphere includes an exit aperture for emitting radiation having a width and a substantially uniform radiance over said width; wherein said specimen is external to but in radiative communication with said aperture.

3. A method according to claim **1**, further comprising the steps of:

providing a specimen holder disposed externally with respect to said integrating sphere, said integrating sphere radiatively communicating with said specimen holder through a conduit external to said integrating sphere; and

placing a specimen in said holder prior to irradiating said specimen.

4. A method according to claim **1**, wherein said irradiating is with a radiation beam having an area and a substantially uniform radiance over said area.

5. Method according to any of claim **1**, wherein said radiation source is disposed externally with respect to said integrating sphere.

6. A method according to any of claim **1**, wherein said radiation comprises ultraviolet light.

7. A method according to any of claim **1**, wherein said length of time is at least 1 hour.

8. A method according to any of claim **1**, the method including the steps of irradiating plural specimens each with a beam of radiation.

9. A method for irradiating plural specimens each with a beam of radiation, the method comprising the steps of:

providing an integrating sphere having plural apertures including at least first and second aperture and providing a radiation source in radiative communication with the interior of said integrating sphere,

communicating radiation from said integrating sphere through said apertures, said radiation comprising first and second radiation beams communicated respectively from said first and second apertures, said radiation beams having a substantially uniform radiance from beam to beam, each of said radiation beams having a width and a substantially uniform radiance over said width;

providing at least two specimens;

placing a first specimen in radiative communication with said integrating sphere through said first aperture;

placing a second specimen in radiative communication with said integrating sphere through said second aperture;

irradiating said first specimen with at least a portion of said radiation communicated through said first aperture;

irradiating said second specimen with at least a portion of said radiation communicated through said second aperture; and,

measuring a change in at least one property of the specimens;

wherein said first specimen is disposed in a first specimen holder, said first specimen holder being disposed externally with respect to said integrating sphere and comprising a chamber substantially enclosing said first specimen, said integrating sphere radiatively communicating with said first specimen holder through a conduit external to said integrating sphere; and

wherein said second specimen is disposed in a second specimen holder, said second specimen holder being disposed externally with respect to said integrating sphere and comprising a chamber substantially enclosing said second specimen, said integrating sphere radiatively communicating with said second specimen holder through a conduit external to said integrating sphere.

10. A method according to claim **9**, wherein said conduit comprises a cylindrical channel.

11. A method according to claim **9**, wherein said conduit comprises a compound parabolic cone concentrator.