and the radiation apparatus can be relatively movable, e.g., rotatable.

The basic principle of the arrangement contemplates to separate out the UV component by a UV mirror from the composite radiation received from the radiation source **9** before the radiation impinges on any IR filter or passes through the external or outer UV filter **10**. Thus, the UV portion cannot affect the IR filters and cause aging thereof and change of its filtering characteristics. The IR radiation passing through the UV mirror of the first mirror-filter combination **11** is influenced by the IR filter portion **13** thereof. This filter portion may be a KG filter. At least one window, formed between the first and second filter-mirror combination, permits emission only of UV radiation, which had been reflected by a UV mirror at least once. Separating the radiation within the arrangement into the UV component and the IR and visible light component permits filtering only after the respective spectral components have been separated. This permits independent filtering by filters having respective filter flanks or filter characteristics independently of each other. This arrangement, further, permits to obtain any desired precisely defined overall radiation curve, determined by the respective filter characteristics, and hence a precisely defined filtering curve for the overall apparatus while using commercially available filters. Aging effects are essentially avoided, and specifically aging effects of the UV-characteristics of the KG filters, that is, the IR filters, which are highly susceptible to changes in their characteristics when irradiated by UV radiation. The spectral distribution of radiation emitted by the apparatus remains constant, even after long use thereof. The apparatus, additionally, eliminates the use of IR mirrors. IR mirrors are available commercially only in limited spectral reflecting characteristics. The arrangement is highly efficient, since absorption losses are low.

Depending on the irradiation cycles, the illumination apparatus is surrounded by an even number of sections, alternating a UV filter **10** and a first mirror-filter combination **11**, so that samples S which are passing around the illumination device are alternately irradiated with UV radiation and, then, with visible and IR radiation, with the IR radiation being controlled in accordance with the respective IR filters being used.

In accordance with a preferred feature of the invention, the second mirror-filter combination **14** is so arranged that the respective UV filter is entirely in the shadow of the second mirror-filter combination **14** with respect to radiation emitted from any point of the light source. As an alternative, the second mirror-filter combination **414** (FIG. 4) can be so arranged that it is divided into two portions **25,26** which are placed at an angle with respect to each other, having an apex **24** located in a median range of the UV filter **410**. The lengths of the second mirror-filter combination **414** must have a length sufficiently great that the respective outer UV filter **410** is entirely in the shadow with respect to direct radiation from the source **9**.

The arrangement in accordance with FIG. 2 provides for only one window for the passage of UV radiation; in the arrangement of FIG. 4, radiation may pass through two windows as shown in FIG. 9 by beams **421′,421″**.

The specific arrangement and shape of the respective mirror-filter combination is variable. Thus, the outer UV filter **10** and the outer UV mirror-filter combination **11** may be cylindrical, see FIGS. **5,6**, or may surround the radiation source in form of a square, an equilateral triangle, an octagon, or the like. Each flat side—if a polygon is used—may be formed of a plurality of first mirror-filter combinations **11**, and UV-filters **10**. Preferably, however, any one side of any polygon should have only one UV filter **10** and the first mirror-filter combination **11**. The preferred arrangement is that of FIG. **2**, in which a single second mirror-filter combination **14** is used. The angle between the outer UV filter **10** and the second mirror-filter combination, shown at angle **18**, can be between 45° and 80°, preferably between 60° and 70°; smaller angles can be used, however. The arrangement is geometrically particularly desirable, and UV radiation is subjected only to few reflections on the respective UV mirrors before reaching one of the UV filters **10**. Consequently, reflection losses, which are unavoidable, are very low, resulting in a high-efficiency apparatus.

Various changes and modifications may be made and features described in connection with any one of the embodiments may be used with any of the others, within the scope of the inventive concept.

I claim:

1. Illumination system for material testing apparatus to test the resistance of a sample (S) to fading, weathering, aging and the like, by irradiation with light of controlled spectral distribution, having

a central light source (**9**) emitting radiation in the ultraviolet (UV), visible, and infrared (IR) spectral ranges,

the sample (S) being positioned spaced from the central light source in the path of light therefrom and for irradiation thereby; and

means for accurately controlling the radiation spectrum received by the sample, located between the light source (**9**) and the sample (S), said means including a structure defining a plurality of adjacent sections, the light source being located within said structure,

said means comprising, in accordance with the invention

a UV filter (**10, 310, 410, 510, 610**) located in a first section and forming a first outer filter;

a first mirror-filter combination (**11,311,411,511,611**) located in a second section, and including a first UV mirror (**12,312,412,512,612**) having its mirror surface directed toward the light source (**9**) and a first IR filter (**13,313,413,513,613**), essentially congruent with the first UV mirror, said first IR filter of the first mirror-filter combination forming a second outer filter; and

a second mirror-filter combination (**14,314,414,514,614**) including, in essentially congruent sandwich form, an inner UV mirror (**15**) having its mirror surface directed towards the light source (**9**), an outer UV mirror (**16**) having its mirror surface directed towards the outer filters and an intermediate IR filter (**17**) located between said inner and outer UV mirrors (**15,16**),

the UV filter (**10,310,410,510,610**) being positioned entirely within the optical shadow of the second mirror-filter combination (**14,314,414,514,614**);

and wherein the second mirror-filter combination (**14,314,414, 514,614**) is located spaced from the first mirror-filter combination (**11,311,411,511,611**) and positioned in the region of an end zone between the light source (**9**) and the first mirror-filter combination, and having an end zone positioned to