

The following illustrations are presented in order to further bring out the features of the invention but are not to be construed as limiting the same in any manner. Thus, for illustrative purposes, it is pointed out that a good lens in accordance with the invention may have a contact angle of 60° for the concave inner surface thereof and a contact angle of 30° for the convex outer surface thereof. On the other hand, a lens according to the invention which is adequate for use may have a contact angle of 75° for the concave inner surface thereof and a contact angle of 65° for the convex outer surface thereof.

It may be pointed out that a lens in accordance with the invention favorably, but not necessarily, comprises or consists essentially of a hydrophilic silicone elastomer. An advantageous embodiment of the invention contemplates a lens containing silicone rubber and silicon dioxide as a filler.

The following Example is intended to further illustrate the invention and is not intended to limit the invention in any manner. This Example describes the treatment of a silicone elastomer-containing lens in accordance with a method such as described in applicants' above-referenced prior applications.

EXAMPLE

A contact lens having a thickness of 5 millimeters and a diameter of 20 millimeters contains organopolysiloxane elastomer which has been cross-linked with benzoyl peroxide. The lens is placed upon an electrically conducting carrier which is connected with a source of electrical current. The convex surface of the lens, that is, the surface which is adapted to face the eyelid of a user, faces outwardly of the carrier and is exposed whereas the concave surface of the lens, that is, the surface of the lens which is adapted to face the cornea of the eye, is not exposed. An electrically conducting plate, which is likewise connected with the source of electrical current, is positioned opposite the carrier. The carrier and the plate form the electrodes of a glow discharge arrangement and are arranged in a suitable vessel. The distance between the carrier and the plate is approximately 25 centimeters. In operation, the vessel is evacuated. After a pressure of about 10^{-2} torr has been reached, the vessel is purged with pure oxygen. Subsequently, the oxygen present in the vessel by virtue of the purging procedure is evacuated and pure oxygen is again admitted into the vessel until atmospheric pressure has been reached once more. Thereafter, the vessel is again evacuated and the pressure in the vessel is adjusted to approximately 10^{-1} torr. Upon the application of a potential, a glow is immediately obtained. The current density is about 1 milliampere per square centimeter and, after two minutes at this current density, the treatment is stopped. The convex surface of the thus-treated contact lens is found to have good wettability and is resistant to mechanical stress such as is obtained, for instance, by rubbing with the fingertips for cleaning purposes. Medical experiments show that there is no reduction in physiological compatibility. Subsequent to the treatment of the convex surface of the lens, the lens is turned around so that the concave surface thereof is exposed. The concave surface of the lens is then subjected to the same treatment as the convex surface thereof using the identical parameters. The only difference resides in that the concave surface of the lens is treated for a period of 15 seconds instead of two min-

utes. Such a lens is worn by an experimental person without a foreign body sensation.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of articles differing from the types described above.

While the invention has been illustrated and described as embodied in a contact lens having at least one hydrophilic surface, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention.

What is claimed as new and desired to be protected by Letters Patent is set forth in the appended claims.

1. A contact lens, comprising a body which includes a silicone elastomer and silicon dioxide as a filler, said body having a concave surface adapted to face the cornea of an eye, and said body having a convex surface adapted to face the eyelid, said convex surface possessing hydrophilic characteristics, and the contact angle for said convex surface being smaller than the contact angle for said concave surface, said contact angles being measured with distilled water, and said contact angle for said concave surface having a value such that said body is movable relative to the cornea of an eye when said body is positioned on the cornea, said convex surface having been made hydrophilic by a treatment which included subjecting said convex surface to the action of activated gas ions in an atmosphere consisting at least predominantly of oxygen when said convex surface had an outer layer of said silicon elastomer, and said gas ions having impinged first regions of said outer layer and having had an energy such that said outer layer was destroyed at said first regions and the silicon dioxide filler of said body was exposed at said first regions, said gas ions also having impinged second regions of said outer layer and having had an energy such that said outer layer transformed to silicon dioxide at said second regions, and said convex surface having undergone an improvement in the hydrophilic characteristics thereof due to the exposure of the silicon dioxide filler at said first regions and the transformation to silicon dioxide at said second regions.

2. A lens as defined in claim 1, said impingements imparting a roughened texture to said convex surface; and wherein said treatment is carried out in such a manner that substantially the entire surface area of the convex surface of said body has a roughened texture.

3. A lens as defined in claim 1, wherein said concave surface has been subjected to said treatment.

4. A lens as defined in claim 3, impingements imparting a roughened texture to said surfaces; and wherein said treatments of said convex and concave surfaces are carried out in such a manner that substantially the entire surface areas of the concave and convex surfaces of said body have roughened textures.

5. A lens as defined in claim 1, wherein said ions are formed and activated by gaseous discharge and comprise oxygen ions.

6. A lens as defined in claim 1, said silicon elastomer including a silicon-oxygen and a silicon-carbon bond;