

TABLE 3

Average Stress Relaxations of Photocrosslinked Formulations 4A to 4F measured at 35° C.						
Average stress relaxation	4A	4B	4C	4D	4E	4F
Before swelling-disc1	No result		4.9	3.4	No result	Not measurable
Before swelling-disc2	9.3		15.5	10.9	29.4	
After swelling-disc1			21.4	17.4		
After swelling-disc2	19.1		19.0	13.0	12.4	Not measurable

Swelling Test Method

Samples discs from formulations 4A through 4F were weighed, immersed in water for 24 hours at 20° C., dried, and reweighed. Table 4 compares the water absorbed by each formulation on a percentage basis.

TABLE 4

Percentage water absorbed at 25° C. by photocrosslinked gels						
Water absorbed (wt %)	4A	4B	4C	4D	4E	4F
Disc1			222	191		Not measurable
Disc2	130	219	230	172	255	Not measurable

It was observed that upon irradiation with blue light, the formulation prepared without a crosslinker (4F) did not gel and that no discs suitable for any measurements were formed. Satisfactory discs were prepared from other formulations and stress relaxation results and the water absorption results were in agreement with the sequence: most highly crosslinked 4A>4C<4E least highly crosslinked.

What is claimed is:

1. Macromolecular photocrosslinker having the general formula $(A)_n(B)_m(C)_p$ wherein

(i) units A, B and C are siloxane monomer units of the general formula $-R_aR_bSiO-$ wherein R_a and R_b in units A and B are lower substituted or unsubstituted alkyl groups, aryl groups or arylalkyl groups;

(ii) C carries a photoactive acyl or aroyl phosphine oxide group; and

(iii) $n=0-98$ mole %, $m=0-98$ mole %, $n+m=50-98$ mole % and $p=0.5-50$ mole %;

wherein said photoactive groups, when exposed to light of wavelength above 305 nm, are adapted to generate radicals which are retained on the macromolecular photocrosslinker and react to form a crosslinked network structure.

2. Macromolecular photocrosslinker according to claim 1, wherein at least one of R_a and R_b is an aryl or arylalkyl-group.

3. Macromolecular photocrosslinker according to claim 2, wherein at least one of R_a and R_b is substituted with one or more fluorine atoms.

4. Macromolecular photocrosslinker having the general formula $(A)_n(B)_m(C)_p$ wherein

(i) A is $-\text{Si}(\text{R}^1\text{R}^2)-\text{O}-$, B is $-\text{Si}(\text{R}^1\text{R}^3)-\text{O}-$ and C is $-\text{Si}-(\text{R}^1\text{R}^4)-\text{O}-$, wherein R^1 is C_1 to C_6 alkyl; R^2 is C_1 to C_6 alkyl or phenyl; R^3 is R^1 , R^2 or C_1 to C_6 fluoroalkyl; R^4 is $-\text{R}^5\text{R}^6\text{C}(\text{O})\text{P}(\text{O})\text{R}^7\text{R}^8$ or $-\text{R}^5\text{R}^6\text{P}(\text{O})\text{R}^7\text{OC}(\text{O})\text{R}^8$, wherein R^5 is a spacing group; and R^6 , R^7 and R^8 are the same or different aryl groups and comprise phenyl, methylphenyl, dimethylphenyl, trimethylphenyl, methoxyphenyl, dimethoxyphenyl, trimethoxyphenyl, methylolphenyl, dimethylolphenyl, trimethylolphenyl or styryl radicals;

(ii) C carries photoactive groups; and

(iii) $n=0-98$ mole %, $m=0-98$ mole %, $n+m=50-98$ mole % and $p=0.5-50$ mole %;

wherein said photoactive groups, when exposed to light of wavelength above 305 nm, are adapted to generate radicals which are retained on the macromolecular photocrosslinker and react to form a crosslinked network structure.

5. Macromolecular photocrosslinker according to claim 4, wherein R^5 is an aliphatic spacing group comprising from one to ten carbon atoms.

6. Macromolecular photocrosslinker according to claim 5, wherein said spacing group is $(-\text{CH}_2)_n$, wherein n is from 1 to 10.

7. Macromolecular photocrosslinker according to claim 4, wherein R^1 is methyl; R^2 is methyl or phenyl; and R^3 is R^1 , R^2 or $-\text{CH}_2\text{CH}_2\text{CF}_3$.

8. Macromolecular photocrosslinker according to claim 4, having functional acrylic groups in its terminal ends.

9. A method of forming a macromolecular crosslinked network from a composition comprising a photocrosslinker according to claim 1, comprising irradiating the composition with light exceeding a wavelength of 305 nm for a time sufficient to form a solid article.

10. A method according to claim 9, wherein said composition further comprises a polymer provided with functional vinylic, acrylic or methacrylic groups.

11. A method according to claim 10, wherein said polymer is a polysiloxane.

12. A method according to claim 9, wherein an ophthalmic lens is produced.

13. A method according to claim 12, wherein the ophthalmic lens is an intraocular lens produced in the capsular bag of the eye.

14. A method of forming a macromolecular crosslinked network from a composition comprising a photocrosslinker according to claim 4, comprising irradiating the composition with light exceeding a wavelength of 305 nm for a time sufficient to form a solid article.

15. A method according to claim 14, wherein said composition further comprises a polymer provided with functional vinylic, acrylic or methacrylic groups.

16. A method according to claim 15, wherein said polymer is a polysiloxane.

17. A method according to claim 14, wherein an ophthalmic lens is produced.

18. A method according to claim 17, wherein the ophthalmic lens is an intraocular lens produced in the capsular bag of the eye.

19. An ophthalmically acceptable composition comprising a photocrosslinker according to claim 1 and having a refractive index greater than about 1.39 and a viscosity such that said composition can be injected through standard cannula having a needle of 15 Gauge or finer.

20. An ophthalmically acceptable composition comprising a photocrosslinker according to claim 2 and having a refractive index greater than about 1.39 and a viscosity such that said composition can be injected through standard cannula having a needle of 15 Gauge or finer.