CLAIMS

What is claimed is:

1. An intraocular lens system comprising:

a front curve lens comprising a front curve lens exterior surface and a front curve lens interior surface;

a back curve lens comprising a back curve lens interior surface and a back curve lens exterior surface said back curve lens positioned proximate to said front curve lens such that said front curve lens interior surface and said back curve lens interior surface form a cavity therebetween and forming a lens assembly, said front curve lens and back curve lens of suitable size and shape to replace an intraocular lens in a human eye;

a volume of oil and a volume of saline solution contained within the cavity with a meniscus formed between said oil and said saline solution, wherein said meniscus comprises an optical characteristic;

a conductive coating on at least a portion of one or both of said front curve lens interior surface and said back curve lens interior surface, said portion comprising a perimeter area of said front curve lens interior surface and said back curve lens interior surface, and

a power source for supplying an electrical charge to the conductive coating, wherein the application of the electrical charge is sufficient to cause a change of an optical characteristic of said meniscus.

2. The intraocular lens system of Claim 1 additionally comprising a processor positioned proximate to the front curve lens and the back curve lens, said processor in electrical communication to control the application of the electrical charge to the conductive coating.

3. The intraocular lens system of Claim 1 or claim 2 additionally comprising an adhesive securing said front curve lens in the position proximate to the back curve lens, wherein at least one of said front curve lens exterior surface and said back curve lens exterior surface comprise an arcuate shape.

4. The intraocular lens system of Claim 3 wherein both of said front curve lens exterior surface and said back curve lens exterior surface comprise an arcuate shape

5. The intraocular lens system of any of the preceding claims wherein the power source comprises a lithium ion battery.

6. The intraocular lens system of any of the preceding claims additionally comprising a wireless transmitter for communicating logic to and from the processor.

7. The intraocular lens system of Claim 6 wherein the communicated logic modifies a focus of the optical characteristic formed by the meniscus.

8. The intraocular lens system of any of the preceding claims wherein the volume of oil is less than the volume of saline solution contained within the cavity.

9. The intraocular lens system of claim 8 wherein the volume of oil comprises about 66% or more by volume as compared to an amount of saline solution.

10. The intraocular lens system of claim 8 wherein the volume of oil comprises about 90% or less by volume as compared to an amount of saline solution.

11. The intraocular lens system of any of the preceding claims wherein the conductive coating extends from an area interior to the cavity to an area external to the cavity.

12. The intraocular lens system of claim 11, wherein the area of conductive coating external to the cavity forms an electrical terminal for providing an electrical charge to the conductive coating based upon a signal from the processor.

13. The intraocular lens system of claim 12 wherein the electrical charge comprises a direct current.

14. The intraocular lens system of claim 13 wherein the electrical charge comprises about 20.0 volts.

15. The intraocular lens system of claim 13 wherein the electrical charge comprises between about 18.0 volts to 22.0 volts.

16. The intraocular lens system of claim 13 wherein the electrical charge comprises about 5.0 volts.

17. The intraocular lens system of claim 13 wherein the electrical charge comprises between about 3.5 volts to about 7.5 volts.

18. The intraocular lens system of any of the preceding claims wherein the front curve lens exterior surface comprises an optical power other than about 0.

19. The intraocular lens system of any of the preceding claims wherein the front curve lens interior surface comprises an optical power other than about 0.

20. The intraocular lens system of any of the preceding claims wherein the back curve lens interior surface comprises an optical power other than about 0.

21. The intraocular lens system of any of the preceding claims additionally comprising a channel through one or both of the front curve lens and the back curve lens and a conductive material filling the channel.

22. The intraocular lens system of claim 21 additionally comprising a terminal in electrical communication with the conductive material filling the channel.

23. The intraocular lens system of claim 22 wherein application of an electrical charge to the terminal causes a change in the shape of the meniscus.

24. The intraocular lens system of any of the preceding claims additionally comprising an insulator coating along at least a portion of the interior surface of the front curve lens, wherein the insulator coating comprises an electrical insulator.

25. The intraocular lens system of claim 24, wherein the insulator comprises one of Parylene C and Teflon AF.

26. The intraocular lens system of claim 24 or claim 25 wherein the insulator comprises a boundary area to maintain separation between the conductive coating and a saline solution contained in the cavity between the front curve lens and the back curve lens.

Claims

1. An intraocular lens system comprising:

a front curve lens comprising a front curve lens exterior surface and a front curve lens interior surface;

a back curve lens comprising a back curve lens interior surface and a back curve lens exterior surface, wherein said back curve lens is positioned proximate to said front curve lens such that said front curve lens interior surface and said back curve lens interior surface form a cavity;

a volume of oil and a volume of saline solution contained within the cavity with a meniscus formed therebetween, wherein said meniscus comprises an optical characteristic;

a conductive coating on at least a portion of one or both of said front curve lens interior surface and said back curve lens interior surface;

a power source for supplying an electrical charge to the conductive coating, wherein the application of the electrical charge is sufficient to cause a change of the optical characteristic of said meniscus; and

a processor positioned proximate to the front curve lens and the back curve lens, wherein said processor is in electrical communication with said power source to control application of the electrical charge to the conductive coating.

2. The intraocular lens system of Claim 1 additionally comprising an adhesive for securing said front curve lens in the position proximate to the back curve lens, wherein at least one of said front curve lens exterior surface and said back curve lens exterior surface comprises an arcuate shape.

3. The intraocular lens system of Claim 2 wherein both of said front curve lens exterior surface and said back curve lens exterior surface comprise an arcuate shape.

4. The intraocular lens system of Claim 1 wherein the power source comprises a lithium ion battery.

5. The intraocular lens system of any of the preceding claims additionally comprising a wireless transmitter for communicating logic to and from the processor.

6. The intraocular lens system of Claim 5 wherein the communicated logic modifies a focus of the optical characteristic of the meniscus.

7. The intraocular lens system of any of the preceding claims wherein the volume of oil is less than the volume of saline solution contained within the cavity.

8. The intraocular lens system of claim 7 wherein the volume of oil is 66% or more as compared to the volume of saline solution.

9. The intraocular lens system of claim 7 wherein the volume of oil is 90% or less as compared to the volume of saline solution.

10. The intraocular lens system of any of the preceding claims wherein the conductive coating extends from an area internal to the cavity to an area external to the cavity.

11. The intraocular lens system of claim 10 wherein the area of conductive coating external to the cavity forms an electrical terminal for providing an electrical charge to the conductive coating based upon a signal from the processor.

12. The intraocular lens system of claim 11 wherein the electrical charge comprises a direct current.

13. The intraocular lens system of claim 12 wherein the electrical charge comprises about 20.0 volts.

14. The intraocular lens system of claim 12 wherein the electrical charge comprises between about 18.0 volts to 22.0 volts.

15. The intraocular lens system of claim 12 wherein the electrical charge comprises about 5.0 volts.

16. The intraocular lens system of claim 12 wherein the electrical charge comprises between about 3.5 volts to about 7.5 volts.

17. The intraocular lens system of any of the preceding claims wherein the front curve lens exterior surface comprises an optical power other than about 0 diopters.

18. The intraocular lens system of any of the preceding claims wherein the front curve lens interior surface comprises an optical power other than about 0 diopters.

19. The intraocular lens system of any of the preceding claims wherein the back curve lens interior surface comprises an optical power other than about 0 diopters.

20. The intraocular lens system of any of the preceding claims additionally comprising a channel through one or both of the front curve lens and the back curve lens and a conductive material filling the channel.

21. The intraocular lens system of claim 20 additionally comprising a terminal in electrical communication with the conductive material filling the channel.

22. The intraocular lens system of claim 21 wherein the application of the electrical charge to the terminal causes a change in the shape of the meniscus.

23. The intraocular lens system of any of the preceding claims additionally comprising an insulator coating along at least a portion of the front curve lens interior surface, wherein the insulator coating comprises an electrical insulator.

24. The intraocular lens system of claim 23 wherein the electrical insulator comprises one of Parylene C and Teflon AF.

25. The intraocular lens system of claims 23 or 24 wherein the electrical insulator provides separation between the conductive coating and the volume of saline solution contained in the cavity.