CLAIMS

1. A contact lens device with a variable optic insert positioned within at least a portion of an optical zone of the contact lens device, wherein the variable optic insert comprises:

a curved front surface and a curved back surface, wherein the front surface and the back surface are configured to bound at least a portion of one chamber;

an energy source embedded in the variable optic insert in at least a region comprising a non-optical zone; and

a layer containing liquid crystal material positioned within the at least one chamber, wherein the layer includes regions of liquid crystal material aligned in a pattern across at least a first portion of the variable optic insert that varies with a cycloidal pattern.

2. The contact lens device of Claim 1 wherein locations of orientations in liquid crystal orientation aligning with a radial axis across at least a first portion of the optic insert has a parabolic dependence on a radial dimension.

3. The contact lens device of Claim 1 wherein the layer containing liquid crystal material and varying with the cycloidal pattern assumes a curved shape.

4. The contact lens device of Claim 3 wherein the lens includes a polarizing component.

5. The contact lens device of Claim 3 further comprising :
a first layer of electrode material proximate to the curved back surface; and
a second layer of electrode material proximate to the curved front surface.

6. The contact lens device of Claim 5 wherein at least a portion of the layer containing liquid crystal material varies its index of refraction affecting a ray of light traversing the layer containing liquid crystal material when an electric potential is applied across the first layer of electrode material and the second layer of electrode material.

7. The contact lens device of Claim 6 wherein the variable optic insert alters a focal characteristic of the lens.

8. The contact lens device of Claim 7 further comprising an electrical circuit, wherein the electrical circuit controls a flow of electrical energy from the energy source to the first and second electrode layers.

9. The contact lens device of claim 8 wherein the electrical circuit comprises a processor.

10. A contact lens device with a variable optic insert positioned within at least a portion of an optical zone of the contact lens device, wherein the variable optic insert comprises:

a curved first front surface and a curved first back surface wherein the first front surface and the first back surface are configured to bound at least a portion of a first chamber;

a curved second front surface and a curved second back surface wherein the second front surface and the second back surface are configured to bound at least a portion of a second chamber;

a layer containing liquid crystal material positioned within the at least one chamber, wherein the layer includes regions of liquid crystal material aligned in a pattern across at least a first portion of the variable optic insert that varies with a cycloidal pattern; and

an energy source embedded in the insert in at least a region comprising a non-optical zone.

11. The contact lens device of Claim 10 wherein locations of orientations in liquid crystal orientation aligning with a radial axis across at least a first portion of the optic insert has a parabolic dependence on a radial dimension.

12. The contact lens device of Claim 11 wherein the layer containing liquid crystal material that varies with the cycloidal pattern assumes a curved shape.

13. The contact lens device of Claim 12 wherein the lens includes a polarizing component.

14. The contact lens device of Claim 12 further comprising:

a first layer of electrode material proximate to the first curved back surface; and

a second layer of electrode material proximate to the curved first front surface.

15. The contact lens device of Claim 14 wherein the layer containing liquid crystal material varies its index of refraction affecting a ray of light traversing the layer containing liquid crystal material when an electric potential is applied across the first layer of electrode material and the second layer of electrode material.

16. The contact lens device of Claim 15 wherein the variable optic insert alters a focal characteristic of the lens.

17. The contact lens device of Claim 16 further comprising an electrical circuit, wherein the electrical circuit controls a flow of electrical energy from the energy source to the first and second electrode layers.

18. The contact lens device of claim 17 wherein the electrical circuit comprises a processor.

19. A contact lens device with a variable optic insert positioned within at least a portion of an optical zone of the contact lens device, wherein the variable optic insert comprises:

a curved first front surface and a curved first back surface wherein the first front surface and the first back surface are configured to form at least a first chamber;

a first layer of electrode material proximate to the curved first front surface;

a second layer of electrode material proximate to the curved first back surface;

a first layer containing liquid crystal material positioned within the first chamber, wherein the layer includes regions of liquid crystal material aligned in a pattern across at least a first portion of the variable optic insert that varies with a cycloidal pattern, and wherein the first layer containing liquid crystal material varies its first index of refraction affecting a ray of light traversing the first layer containing liquid crystal material when an electric potential is applied across the first layer of electrode material and the second layer of electrode material;

a curved second front surface and a curved second back surface wherein the second front surface and the second back surface are configured to form at least a second chamber;

a third layer of electrode material proximate to the curved second front surface;

a fourth layer of electrode material proximate to the curved second back surface;

a second layer containing liquid crystal material positioned within the second chamber, wherein the second layer filters out a circular polarization component of incident light;

an energy source embedded in the insert in at least a region comprising a non-optical zone; and

an electrical circuit comprising a processor, wherein the electrical circuit controls a flow of electrical energy from the energy source to one or more of the first, second, third or fourth electrode layers; and

wherein the variable optic insert alters a focal characteristic of the contact lens device.

20. A contact lens device with a variable optic insert positioned within at least a portion of an optical zone of the contact lens device, wherein the variable optic insert comprises:

a layer containing liquid crystal material positioned within the variable optic insert, wherein the layer includes regions of liquid crystal material aligned in a pattern across at least a first portion of the variable optic insert that varies with a cycloidal pattern; and

wherein at least a first surface of the layer containing liquid crystal material is curved.

21. A contact lens device with a variable optic insert positioned within at least a portion of an optical zone of the contact lens device, wherein the variable optic insert comprises:

a front curve piece and a back curve piece, wherein a back surface of the front curve piece has a first curvature and a front surface of the back curve piece has a second curvature;

an energy source embedded in the insert in at least a region comprising a non-optical zone; and

a layer containing liquid crystal material, wherein the layer includes regions of liquid crystal material aligned in a pattern wherein wherein the layer

includes regions of liquid crystal material aligned in a pattern across at least a first portion of the variable optic insert that varies with a cycloidal pattern.

22. The contact lens device of Claim 21 wherein locations of orientations in liquid crystal orientation aligning with a radial axis across at least a first portion of the optic insert has a parabolic dependence on a radial dimension.

23. The contact lens device of Claim 22 wherein the layer containing liquid crystal material that varies with the cycloidal pattern assumes a curved shape.

24. The contact lens device of Claim 23 wherein the first curvature is approximately the same as the second curvature.

25. The contact lens device of Claim 24 wherein the lens includes a polarizing component.

26. The contact lens device of Claim 25 further comprising:
a first layer of electrode material proximate to the back surface of the front curve piece; and
a second layer of electrode material proximate to the front surface of the back curve piece.

27. The contact lens device of Claim 26 wherein the layer containing liquid crystal material varies its index of refraction affecting a ray of light traversing the layer containing liquid crystal material when an electric potential is applied across the first layer of electrode material and the second layer of electrode material.

28. The contact lens device of Claim 27 wherein the variable optic insert alters a focal characteristic of the lens.

29. The contact lens device of Claim 28 further comprising an electrical circuit, wherein the electrical circuit controls a flow of electrical energy from the energy source to the first and second electrode layers.

30. The contact lens device of claim 29 wherein the electrical circuit comprises a processor.

31. A contact lens device with a variable optic insert positioned within at least a portion of an optical zone of the contact lens device, wherein the variable optic insert comprises:

a front curve piece, at least a first intermediate curve piece and a back curve piece, wherein a back surface of the front curve piece has a first curvature and a front surface of the first intermediate curve piece has a second curvature ;

an energy source embedded in the insert in at least a region comprising a non-optical zone; and

the variable optic insert comprising a layer containing liquid crystal material, wherein the layer includes regions of liquid crystal material aligned in a pattern across at least a first portion of the variable optic insert that varies with a cycloidal pattern.

32. The contact lens device of Claim 31 wherein locations of orientations in liquid crystal orientation aligning with a radial axis across at least a first portion of the optic insert has a parabolic dependence on a radial dimension.

33. The contact lens device of Claim 32 wherein the first curvature is approximately the same as the second curvature.

34. The contact lens device of Claim 33 wherein the lens includes a polarizing component.

35. The contact lens device of Claim 34 further comprising:

a first layer of electrode material proximate to the front curve piece; and

a second layer of electrode material proximate to one or more of the intermediate curve piece and the back curve piece.

36. The contact lens device of Claim 34 further comprising :

a first layer of electrode material proximate to the front curve piece; and

a second layer of electrode material proximate to the intermediate curve piece.

37. The contact lens device of Claim 36 wherein the layer containing liquid crystal material varies its index of refraction affecting a ray of light traversing the layer containing liquid crystal material when an electric potential is applied across the first layer of electrode material and the second layer of electrode material.

38. The contact lens device of Claim 37 wherein the variable optic insert alters a focal characteristic of the lens.

39. The contact lens device of Claim 38 further comprising an electrical circuit, wherein the electrical circuit controls a flow of electrical energy from the energy source to the first and second electrode layers.

40. The contact lens device of claim 39 wherein the electrical circuit comprises a processor.

41. An intraocular lens device with a variable optic insert positioned within at least a portion of an optical zone of the intraocular lens device, wherein the variable optic insert comprises:

a curved front surface and a curved back surface, wherein the front surface and the back surface are configured to bound at least a portion of one chamber;

an energy source embedded in the variable optic insert in at least a region comprising a non-optical zone; and

a layer containing liquid crystal material positioned within the at least one chamber, wherein the layer includes regions of liquid crystal material aligned in a pattern across at least a first portion of the variable optic insert that varies with a cycloidal pattern.

42. The intraocular lens device of Claim 41 wherein locations of orientations in liquid crystal orientation aligning with a radial axis across at least a first portion of the optic insert has a parabolic dependence on a radial dimension.

43. The intraocular lens device of Claim 41 wherein the layer containing liquid crystal material and varying with the cycloidal pattern assumes a curved shape.

44. The intraocular lens device of Claim 43 wherein the lens includes a polarizing component.

45. The intraocular lens device of Claim 43 further comprising:
a first layer of electrode material proximate to the curved back surface; and
a second layer of electrode material proximate to the curved front surface.

46. The intraocular lens device of Claim 45 wherein at least a portion of the layer containing liquid crystal material varies its index of refraction affecting a ray of light traversing the layer containing liquid crystal material when an electric potential is applied across the first layer of electrode material and the second layer of electrode material.

47. The intraocular lens device of Claim 46 wherein the variable optic insert alters a focal characteristic of the lens.

48. The intraocular lens device of Claim 47 further comprising an electrical circuit, wherein the electrical circuit controls a flow of electrical energy from the energy source to the first and second electrode layers.

49. The intraocular lens device of claim 48 wherein the electrical circuit comprises a processor.

50. An intraocular lens device with a variable optic insert positioned within at least a portion of an optical zone of the intraocular lens device, wherein the variable optic insert comprises:

a curved first front surface and a curved first back surface wherein the first front surface and the first back surface are configured to bound at least a portion of a first chamber;

a curved second front surface and a curved second back surface wherein the second front surface and the second back surface are configured to bound at least a portion of a second chamber;

a layer containing liquid crystal material positioned within the at least one chamber, wherein the layer includes regions of liquid crystal material aligned in a pattern across at least a first portion of the variable optic insert that varies with a cycloidal pattern; and

an energy source embedded in the insert in at least a region comprising a non-optical zone.

51. The intraocular lens device of Claim 50 wherein locations of orientations in liquid crystal orientation aligning with a radial axis across at least a first portion of the optic insert has a parabolic dependence on a radial dimension

52. The intraocular lens device of Claim 51 wherein the layer containing liquid crystal material that varies with the cycloidal pattern assumes a curved shape.

53. The intraocular lens device of Claim 52 wherein the lens includes a polarizing component.

54. The intraocular lens device of Claim 52 additionally comprising :

a first layer of electrode material proximate to the first curved back surface; and

a second layer of electrode material proximate to the curved first front surface.

55. The intraocular lens device of Claim 54 wherein the layer containing liquid crystal material varies its index of refraction affecting a ray of light traversing the layer containing liquid crystal material when an electric potential is applied across the first layer of electrode material and the second layer of electrode material.

56. The intraocular lens device of Claim 55 wherein the variable optic insert alters a focal characteristic of the lens.

57. The intraocular lens device of Claim 56 further comprising an electrical circuit, wherein the electrical circuit controls a flow of electrical energy from the energy source to the first and second electrode layers.

58. The intraocular lens device of claim 57 wherein the electrical circuit comprises a processor.

59. An intraocular lens device with a variable optic insert positioned within at least a portion of an optical zone of the intraocular lens device, wherein the variable optic insert comprises:

a curved first front surface and a curved first back surface wherein the first front surface and the first back surface are configured to form at least a first chamber;

a first layer of electrode material proximate to the curved first front surface;

a second layer of electrode material proximate to the curved first back surface;

a first layer containing liquid crystal material positioned within the first chamber, wherein the layer includes regions of liquid crystal material aligned in a pattern across at least a first portion of the variable optic insert that varies with a cycloidal pattern, and wherein the first layer containing liquid crystal material varies its first index of refraction affecting a ray of light traversing the first layer containing liquid crystal material when an electric potential is applied across the first layer of electrode material and the second layer of electrode material;

a curved second front surface and a curved second back surface wherein the second front surface and the second back surface are configured to form at least a second chamber;

a third layer of electrode material proximate to the curved second front surface;

a fourth layer of electrode material proximate to the curved second back surface;

a second layer containing liquid crystal material positioned within the second chamber, wherein the second layer filters out a circular polarization component of incident light;

an energy source embedded in the insert in at least a region comprising a non-optical zone; and

an electrical circuit comprising a processor, wherein the electrical circuit controls a flow of electrical energy from the energy source to one or more of the first, second, third or fourth electrode layers; and

wherein the variable optic insert alters a focal characteristic of the intraocular lens device.

60. An intraocular lens device with a variable optic insert positioned within at least a portion of an optical zone of the intraocular lens device, wherein the variable optic insert comprises:

a layer containing liquid crystal material positioned within the variable optic insert, wherein the layer includes regions of liquid crystal material aligned in a pattern across at least a first portion of the variable optic insert that varies with a cycloidal pattern; and

wherein at least a first surface of the layer containing liquid crystal material is curved.

61. An intraocular lens device with a variable optic insert positioned within at least a portion of an optical zone of the intraocular lens device, wherein the variable optic insert comprises:

a front curve piece and a back curve piece, wherein a back surface of the front curve piece has a first curvature and a front surface of the back curve piece has a second curvature ;

an energy source embedded in the insert in at least a region comprising a non-optical zone; and

a layer containing liquid crystal material, wherein the layer includes regions of liquid crystal material aligned in a pattern wherein wherein the layer includes regions of liquid crystal material aligned in a pattern across at least a first portion of the variable optic insert that varies with a cycloidal pattern.

62. The intraocular lens device of Claim 61 wherein locations of orientations in liquid crystal orientation aligning with a radial axis across at least a first portion of the optic insert has a parabolic dependence on a radial dimension.

63. The intraocular lens device of Claim 62 wherein the layer containing liquid crystal material that varies with the cycloidal pattern assumes a curved shape.

64. The intraocular lens device of Claim 63 wherein the first curvature is approximately the same as the second curvature.

65. The intraocular lens device of Claim 64 wherein the lens includes a polarizing component.

66. The intraocular lens device of Claim 65 further comprising:
a first layer of electrode material proximate to the back surface of the front curve piece; and
a second layer of electrode material proximate to the front surface of the back curve piece.

67. The intraocular lens device of Claim 66 wherein the layer containing liquid crystal material varies its index of refraction affecting a ray of light traversing the layer containing liquid crystal material when an electric potential is applied across the first layer of electrode material and the second layer of electrode material.

68. The intraocular lens device of Claim 67 wherein the variable optic insert alters a focal characteristic of the lens.

69. The intraocular lens device of Claim 68 further comprising an electrical circuit, wherein the electrical circuit controls a flow of electrical energy from the energy source to the first and second electrode layers.

70. The intraocular lens device of claim 69 wherein the electrical circuit comprises a processor.

71. An intraocular lens device with a variable optic insert positioned within at least a portion of an optical zone of the intraocular lens device, wherein the variable optic insert comprises:

a front curve piece, at least a first intermediate curve piece and a back curve piece, wherein a back surface of the front curve piece has a first curvature and a front surface of the first intermediate curve piece has a second curvature ;

an energy source embedded in the insert in at least a region comprising a non-optical zone; and

the variable optic insert comprising a layer containing liquid crystal material, wherein the layer includes regions of liquid crystal material aligned in a pattern across at least a first portion of the variable optic insert that varies with a cycloidal pattern.

72. The intraocular lens device of Claim 71 wherein locations of orientations in liquid crystal orientation aligning with a radial axis across at least a first portion of the optic insert has a parabolic dependence on a radial dimension.

73. The intraocular lens device of Claim 72 wherein the first curvature is approximately the same as the second curvature.

74. The intraocular lens device of Claim 73 wherein the lens includes a polarizing component.

75. The intraocular lens device of Claim 74 further comprising:

a first layer of electrode material proximate to the front curve piece; and

a second layer of electrode material proximate to one or more of the intermediate curve piece and the back curve piece.

76. The intraocular lens device of Claim 74 further comprising:

a first layer of electrode material proximate to the front curve piece; and

a second layer of electrode material proximate to the intermediate curve piece.

77. The intraocular lens device of Claim 76 wherein the layer containing liquid crystal material varies its index of refraction affecting a ray of light traversing the layer containing liquid crystal material when an electric potential is applied across the first layer of electrode material and the second layer of electrode material.

78. The intraocular lens device of Claim 77 wherein the variable optic insert alters a focal characteristic of the lens.

79. The intraocular lens device of Claim 78 further comprising an electrical circuit, wherein the electrical circuit controls a flow of electrical energy from the energy source to the first and second electrode layers.

80. The intraocular lens device of claim 79 wherein the electrical circuit comprises a processor.

CLAIMS

1. A contact lens device with a variable optic insert positioned within at least a portion of an optical zone of the contact lens device, wherein the variable optic insert comprises:

a curved front surface and a curved back surface, wherein the front surface and the back surface are configured to bound at least a portion of one chamber;

an energy source embedded in the variable optic insert in at least a region comprising a non-optical zone; and

a layer containing liquid crystal material positioned within the at least one chamber, wherein the layer includes regions of liquid crystal material aligned in a pattern across at least a first portion of the variable optic insert that varies with a cycloidal pattern

wherein locations of orientations in liquid crystal orientation aligning with a radial axis across at least a first portion of the optic insert has a parabolic dependence on a radial dimension.

2. The contact lens device according to Claim 1, wherein the layer containing liquid crystal material and varying with the cycloidal pattern assumes a curved shape.

3. The contact lens device according to Claim 2, wherein the lens includes a polarizing component.

4. The contact lens device according to Claim 2, further comprising:

a first layer of electrode material proximate to the curved back surface; and

a second layer of electrode material proximate to the curved front surface.

5. The contact lens device according to Claim 4, wherein at least a portion of the layer containing liquid crystal material varies its index of refraction affecting a ray of light traversing the layer containing liquid crystal material when an electric potential is applied across the first layer of electrode material and the second layer of electrode material.

6. The contact lens device according to Claim 5, wherein the variable optic insert alters a focal characteristic of the lens.

7. The contact lens device according to Claim 6, further comprising an electrical circuit, wherein the electrical circuit controls a flow of electrical energy from the energy source to the first and second electrode layers.

8. The contact lens device according to Claim 7, wherein the electrical circuit comprises:

a processor.

9. A contact lens device with a variable optic insert positioned within at least a portion of an optical zone of the contact lens device, wherein the variable optic insert comprises:

a curved first front surface and a curved first back surface wherein the first front surface and the first back surface are configured to bound at least a portion of a first chamber;

a curved second front surface and a curved second back surface wherein the second front surface and the second back surface are configured to bound at least a portion of a second chamber;

a layer containing liquid crystal material positioned within the at least one chamber, wherein the layer includes regions of liquid crystal material aligned in a pattern across at least a first portion of the variable optic insert that varies with a cycloidal pattern; and

an energy source embedded in the insert in at least a region comprising a non-optical zone

wherein locations of orientations in liquid crystal orientation aligning with a radial axis across at least a first portion of the optic insert has a parabolic dependence on a radial dimension.

10. The contact lens device according to Claim 9, wherein the layer containing liquid crystal material that varies with the cycloidal pattern assumes a curved shape.

11. The contact lens device according to Claim 10, wherein the lens includes a polarizing component.

12. The contact lens device according to Claim 10, further comprising:

a first layer of electrode material proximate to the first curved back surface; and

a second layer of electrode material proximate to the curved first front surface.

13. The contact lens device according to Claim 12, wherein the layer containing liquid crystal material varies its index of refraction affecting a ray of light traversing the layer containing liquid crystal material when an electric potential is applied across the first layer of electrode material and the second layer of electrode material.

14. The contact lens device according to Claim 13, wherein the variable optic insert alters a focal characteristic of the lens.

15. The contact lens device according to Claim 14, further comprising an electrical circuit, wherein the electrical circuit controls a flow of electrical energy from the energy source to the first and second electrode layers.

16. The contact lens device according to Claim 15, wherein the electrical circuit comprises:

a processor.

17. A contact lens device with a variable optic insert positioned within at least a portion of an optical zone of the contact lens device, wherein the variable optic insert comprises:

a front curve piece and a back curve piece, wherein a back surface of the front curve piece has a first curvature and a front surface of the back curve piece has a second curvature;

an energy source embedded in the insert in at least a region comprising a non-optical zone; and

a layer containing liquid crystal material, wherein the layer includes regions of

liquid crystal material aligned in a pattern wherein the layer includes regions of liquid crystal material aligned in a pattern across at least a first portion of the variable optic insert that varies with a cycloidal pattern

wherein locations of orientations in liquid crystal orientation aligning with a radial axis across at least a first portion of the optic insert has a parabolic dependence on a radial dimension.

18. The contact lens device according to Claim 17, wherein the layer containing liquid crystal material that varies with the cycloidal pattern assumes a curved shape.

19. The contact lens device according to Claim 18, wherein the first curvature is approximately the same as the second curvature.

20. The contact lens device according to Claim 19, wherein the lens includes a polarizing component.

21. The contact lens device according to Claim 20, further comprising:

a first layer of electrode material proximate to the back surface of the front curve piece; and

a second layer of electrode material proximate to the front surface of the back curve piece.

22. The contact lens device according to Claim 21, wherein the layer containing liquid crystal material varies its index of refraction affecting a ray of light traversing the layer containing liquid crystal material when an electric potential is applied across the first layer of electrode material and the second layer of electrode material.

23. The contact lens device according to Claim 22, wherein the variable optic insert alters a focal characteristic of the lens.

24. The contact lens device according to Claim 23, further comprising an electrical circuit, wherein the electrical circuit controls a flow of electrical energy from the energy source to the first and second electrode layers.

25. The contact lens device according to Claim 24, wherein the electrical circuit comprises:

a processor.

26. A contact lens device with a variable optic insert positioned within at least a portion of an optical zone of the contact lens device, wherein the variable optic insert comprises:

a front curve piece, at least a first intermediate curve piece and a back curve piece, wherein a back surface of the front curve piece has a first curvature and a front surface of the first intermediate curve piece has a second curvature;

an energy source embedded in the insert in at least a region comprising a non-optical zone; and

the variable optic insert comprising a layer containing liquid crystal material, wherein the layer includes regions of liquid crystal material aligned in a pattern across at least a first portion of the variable optic insert that varies with a cycloidal pattern

wherein locations of orientations in liquid crystal orientation aligning with a radial axis across at least a first portion of the optic insert has a parabolic dependence on a radial dimension.

27. The contact lens device according to Claim 26, wherein the first curvature is approximately the same as the second curvature.

28. The contact lens device according to Claim 27, wherein the lens includes a polarizing component.

29. The contact lens device according to Claim 28, further comprising:

a first layer of electrode material proximate to the front curve piece; and

a second layer of electrode material proximate to one or more of the intermediate curve piece and the back curve piece.

30. The contact lens device ~~of~~ according to Claim 28, further comprising:

a first layer of electrode material proximate to the front curve piece; and

a second layer of electrode material proximate to the intermediate curve piece.

31. The contact lens device according to Claim 30, wherein the layer containing liquid crystal material varies its index of refraction affecting a ray of light traversing the layer contain-ing liquid crystal material when an electric potential is applied across the first layer of electrode material and the second layer of electrode material.

32. The contact lens device according to Claim 31, wherein the variable optic insert alters a focal characteristic of the lens.

33. The contact lens device according to Claim 32, further comprising an electrical circuit, wherein the electrical circuit controls a flow of electrical energy from the energy source to the first and second electrode layers.

34. The contact lens device ~~of~~ according to Claim 33, wherein the electrical circuit comprises:

a processor.

35. An intraocular lens device with a variable optic insert positioned within at least a portion of an optical zone of the intraocular lens device, wherein the variable optic insert comprises:

a curved front surface and a curved back surface, wherein the front surface and the back surface are configured to bound at least a portion of one chamber;

an energy source embedded in the variable optic insert in at least a region comprising a non-optical zone; and

a layer containing liquid crystal material positioned within the at least one chamber, wherein the layer includes regions of liquid crystal material aligned in a pattern across at least a first portion of the variable optic insert that varies with a cycloidal pattern

wherein locations of orientations in liquid crystal orientation aligning with a radial axis across at least a first portion of the optic insert has a parabolic dependence on a radial dimension.

36. The intraocular lens device according to Claim 35, wherein the layer containing liquid crystal material and varying with the cycloidal pattern assumes a curved shape.

37. The intraocular lens device according to Claim 36, wherein the lens includes a polarizing component.

38. The intraocular lens device according to Claim 36, further comprising:

a first layer of electrode material proximate to the curved back surface; and

a second layer of electrode material proximate to the curved front surface.

39. The intraocular lens device according to Claim 38, wherein at least a portion of the layer contain-ing liquid crystal material varies its index of refraction affecting a ray of light traversing the layer containing liquid crystal material when an electric potential is applied across the first layer of electrode material and the second layer of electrode material.

40. The intraocular lens device according to Claim 39, wherein the variable optic insert alters a focal characteristic of the lens.

41. The intraocular lens device according to Claim 40, further comprising an electrical circuit, wherein the electrical circuit controls a flow of electrical energy from the energy source to the first and second electrode layers.

42. The intraocular lens device according to Claim 41, wherein the electrical circuit

comprises:

a processor.

43. An intraocular lens device with a variable optic insert positioned within at least a portion of an optical zone of the intraocular lens device, wherein the variable optic insert comprises:

a curved first front surface and a curved first back surface wherein the first front surface and the first back surface are configured to bound at least a portion of a first chamber;

a curved second front surface and a curved second back surface wherein the second front surface and the second back surface are configured to bound at least a portion of a second chamber;

a layer containing liquid crystal material positioned within the at least one chamber, wherein the layer includes regions of liquid crystal material aligned in a pattern across at least a first portion of the variable optic insert that varies with a cycloidal pattern; and

an energy source embedded in the insert in at least a region comprising a non-optical zone

wherein locations of orientations in liquid crystal orientation aligning with a radial axis across at least a first portion of the optic insert has a parabolic dependence on a radial dimension.

44. The intraocular lens device according to Claim 43, wherein the layer containing liquid crystal material that varies with the cycloidal pattern assumes a curved shape.

45. The intraocular lens device according to Claim 44, wherein the lens includes a polarizing component.

46. The intraocular lens device according to Claim 44, additionally comprising:

a first layer of electrode material proximate to the first curved back surface; and

a second layer of electrode material proximate to the curved first front surface.

47. The intraocular lens device according to Claim 46, wherein the layer containing liquid crystal material varies its index of refraction affecting a ray of light traversing the layer contain-ing liquid crystal material when an electric potential is applied across the first layer of electrode material and the second layer of electrode material.

48. The intraocular lens device according to Claim 47, wherein the variable optic insert alters a focal characteristic of the lens.

49. The intraocular lens device according to Claim 48, further comprising an electrical circuit, wherein the electrical circuit controls a flow of electrical energy from the energy source to the first and second electrode layers.

50. The intraocular lens device according to Claim 49, wherein the electrical circuit comprises:

a processor.

51. An intraocular lens device with a variable optic insert positioned within at least a portion of an optical zone of the intraocular lens device, wherein the variable optic insert comprises:

a front curve piece and a back curve piece, wherein a back surface of the front curve piece has a first curvature and a front surface of the back curve piece has a second curvature ;

an energy source embedded in the insert in at least a region comprising a non-optical zone; and

a layer containing liquid crystal material, wherein the layer includes regions of liquid crystal material aligned in a pattern wherein the layer includes regions of liquid crystal material aligned in a pattern across at least a first portion of the variable optic insert that varies with a cycloidal pattern

wherein locations of orientations in liquid crystal orientation aligning with a radial

axis across at least a first portion of the optic insert has a parabolic dependence on a radial dimension.

52. The intraocular lens device according to Claim 51, wherein the layer containing liquid crystal material that varies with the cycloidal pattern assumes a curved shape.

53. The intraocular lens device according to Claim 52, wherein the first curvature is approximately the same as the second curvature.

54. The intraocular lens device according to Claim 53, wherein the lens includes a polarizing component.

55. The intraocular lens device according to Claim 54, further comprising:

a first layer of electrode material proximate to the back surface of the front curve piece; and

a second layer of electrode material proximate to the front surface of the back curve piece.

56. The intraocular lens device according to Claim 55, wherein the layer containing liquid crystal material varies its index of refraction affecting a ray of light traversing the layer containing liquid crystal material when an electric potential is applied across the first layer of electrode material and the second layer of electrode material.

57. The intraocular lens device according to Claim 56, wherein the variable optic insert alters a focal characteristic of the lens.

58. The intraocular lens device according to Claim 57, further comprising:

an electrical circuit, wherein the electrical circuit controls a flow of electrical energy from the energy source to the first and second electrode layers.

59. The intraocular lens device according to Claim 58, wherein the electrical circuit

comprises:

a processor.

60. An intraocular lens device with a variable optic insert positioned within at least a portion of an optical zone of the intraocular lens device, wherein the variable optic insert comprises:

a front curve piece, at least a first intermediate curve piece and a back curve piece, wherein a back surface of the front curve piece has a first curvature and a front surface of the first intermediate curve piece has a second curvature;

an energy source embedded in the insert in at least a region comprising a non-optical zone; and

the variable optic insert comprising a layer containing liquid crystal material, wherein the layer includes regions of liquid crystal material aligned in a pattern across at least a first portion of the variable optic insert that varies with a cycloidal pattern

wherein locations of orientations in liquid crystal orientation aligning with a radial axis across at least a first portion of the optic insert has a parabolic dependence on a radial dimension.

61. The intraocular lens device according to Claim 60, wherein the first curvature is approximately the same as the second curvature.

62. The intraocular lens device according to Claim 61, wherein the lens includes a polarizing component.

63. The intraocular lens device according to Claim 62, further comprising:

a first layer of electrode material proximate to the front curve piece; and

a second layer of electrode material proximate to one or more of the intermediate curve piece and the back curve piece.

64. The intraocular lens device according to Claim 62, further comprising:

a first layer of electrode material proximate to the front curve piece; and

a second layer of electrode material proximate to the intermediate curve piece.

65. The intraocular lens device according to Claim 64, wherein the layer containing liquid crystal material varies its index of refraction affecting a ray of light traversing the layer containing liquid crystal material when an electric potential is applied across the first layer of electrode material and the second layer of electrode material.

66. The intraocular lens device according to Claim 65, wherein the variable optic insert alters a focal characteristic of the lens.

67. The intraocular lens device according to Claim 66, further comprising an electrical circuit, wherein the electrical circuit controls a flow of electrical energy from the energy source to the first and second electrode layers.

68. The intraocular lens device according to claim 67, wherein the electrical circuit comprises

a processor.