CLAIMS

1. An ophthalmic lens device with a variable optic insert having an optical zone and a non-optical zone comprising:

a variable optic insert comprising at least a portion within the optical zone and comprising an insert front curve piece and an insert back curve piece, wherein a back surface of the front curve piece and a front surface of the back curve piece have differing radii of surface curvature at least in the portion within the optical zone;

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

the variable optic insert comprising a layer of liquid crystal material.

2. The ophthalmic lens device of Claim 1 wherein the lens is a contact lens.

3. The ophthalmic lens device of Claim 2 further comprising :

a first layer of electro-conductive material proximate to the back surface of the front curve piece; and

a second layer of electro-conductive material proximate to the front surface of the back curve piece.

4. The opthlamic lens device of Claim 3 wherein the layer of liquid crystal material varies its effective index of refraction affecting a ray of light traversing the layer of liquid crystal material when an electric potential is applied across the first layer of electrode material and the second layer of electrode material.

5. The ophthalmic lens device of Claim 4 wherein the variable optic insert alters a focal characteristic of the lens.

6. The ophthalmic lens device of Claim 3 further compromises a processor.

7. The ophthalmic lens device of Claim 4 further comprising an electrical circuit, wherein the electrical circuit controls the flow of electrical energy from the energy source to the first and second electrode layers.

8. The ophthalmic lens device of Claim 7 further comprising a polarizing element.

9. The ophthalmic lens device of Claim 7 wherein incident light comprising two orthogonal polarized components is focused with differing focal characteristics for the two components.

10. An ophthalmic lens device with a variable optic insert having an optical zone and a non-optical zone comprising:

a variable optic insert comprising at least a portion within the optical zone, and comprising an insert front curve piece, an intermediate curve piece and an insert back curve piece, wherein a back surface of the front curve piece and a front surface of the intermediate curve piece have differing radii of curvature at least in the portion within the optical zone;

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

the variable optic insert comprising at least a first and second layer of liquid crystal material.

11. The ophthalmic lens device of Claim 10 wherein the lens is a contact lens.

12. The ophthalmic lens device of Claim 11 further comprising:

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

a second layer of electrode material proximate to the front surface of the intermediate curve piece; and

wherein the first layer of liquid crystal material is between the first layer of electrode material and the second layer of electrode material.

13. The ophthalmic lens device of Claim 12 wherein the layer of first liquid crystal material varies its index of refraction affecting a ray of light traversing the first layer of 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 ophthalmic lens device of Claim 13 wherein the variable optic insert alters a focal characteristic of the lens.

15. The ophthalmic lens device of Claim 10 wherein the intermediate curve piece is a combination of two curved pieces which have been joined together.

16. The ophthalmic lens device of claim 12 further comprising an electrical circuit, wherein the electrical circuit controls the flow of electrical energy from the energy source to the first and second electrode layers.

17. The ophthalmic lens device of claim 16 wherein the electrical circuit comprises a processor.

18. An ophthalmic lens device with a variable optic insert having an optical zone and a non-optical zone comprising:

a variable optic insert comprising at least a portion within the optical zone, and comprising an insert front curve piece, an intermediate curve piece and an insert back curve piece, wherein a back surface of the front curve piece and a front surface of the intermediate curve piece have differing radii of curvature at least in the portion within the optical zone;

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

the variable optic insert comprising at least a first layer of liquid crystal material and a polarizing element.

19. The ophthalmic lens device of Claim 18 wherein the lens is a contact lens.

20. The ophthalmic lens device of Claim 19 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 intermediate curve piece.

CLAIMS

1. A contact lens with a variable optic insert having an optical zone and a non-optical zone comprising:

a variable optic insert comprising at least a portion within the optical zone and comprising an insert front curve piece and an insert back curve piece, wherein a back surface of the front curve piece and a front surface of the back curve piece have differing radii of surface curvature at least in the portion within the optical zone;

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

the variable optic insert comprising a layer of liquid crystal material;

a first layer of electro-conductive material proximate to the back surface of the front curve piece; and

a second layer of electro-conductive material proximate to the front surface of the back curve piece;

wherein the layer of liquid crystal material varies its effective index of refraction affecting a ray of light traversing the layer of liquid crystal material when an electric potential is applied across the first layer of electrode material and the second layer of electrode material and further comprising an electrical circuit, that controls the flow of electrical energy from the energy source to the first and second electrode layers and wherein incident light comprising two orthogonal polarized components is focused with differing focal characteristics for the two components.

2. The contact lens of Claim 1 wherein the variable optic insert alters a focal characteristic of the lens.

3. The contact lens of Claim 1 further compromises a processor.

4. The contact lens of Claim 1 further comprising a polarizing element.

5. The contact lens of Claim 1 further comprising:

an intermediate curve piece wherein the back surface of the front curve piece and a front surface of the intermediate curve piece have differing radii of curvature at least in the portion within the optical zone.

6. The contact lens of Claim 5 wherein the variable optic insert further comprises at least a second layer of liquid crystal material.

7. The contact lens of Claim 6 wherein the intermediate curve piece is a combination of two curved pieces which have been joined together.