CLAIMS

1. A contact 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 containing liquid crystal material, wherein the layer is comprised of droplets of liquid crystal material;

wherein the droplets of liquid crystal material are all of a similar size with an average diameter less than approximately 1 micron in size; and

wherein within the layer comprised of droplets of liquid crystal material the density of the droplets is spatially varied such that the variation is capable of causing an optical effect supplementary to the effect of the different radii of insert surfaces.

2. The device according to Claim 1, wherein within the layer comprised of droplets of liquid crystal material the region comprising the droplets is a subset of the layer comprising liquid crystal material and has a shaped profile capable of causing an optical effect supplementary to the effect of the different radii of insert surfaces.

3. The device according to Claim 1, 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.

4. The device according to Claim 3, wherein the layer of liquid crystal material varies its

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 device according to Claim 4, wherein the variable optic insert alters a focal characteristic of the lens.

6. The device according to Claim 5, 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.

7. The device according to Claim 6, wherein the electrical circuit comprises a processor.

CLAIMS

1. A contact 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 containing liquid crystal material, wherein the layer is comprised of droplets of liquid crystal material;

wherein the droplets of liquid crystal material have an average diameter less than approximately 1 micron in size; and

wherein within the layer comprised of droplets of liquid crystal material the density of the droplets is spatially varied such that the variation is capable of causing an optical effect supplementary to the effect of the different radii of insert surfaces.

2. The device according to Claim 1, wherein within the layer comprised of droplets of liquid crystal material the region comprising the droplets is a subset of the layer comprising liquid crystal material and has a shaped profile capable of causing an optical effect supplementary to the effect of the different radii of insert surfaces.

3. The device according to Claim 1, 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.

4. The device according to Claim 3, wherein the layer of liquid crystal material varies its

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 device according to Claim 4, wherein the variable optic insert alters a focal characteristic of the lens.

6. The device according to Claim 5, 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.

7. The device according to Claim 6, wherein the electrical circuit comprises a processor.