WHAT IS CLAIMED IS:

1. A powered ophthalmic device, the powered ophthalmic device comprising:

a lens having an optic zone and a peripheral zone surrounding the optic zone;

an insert positioned within the lens and occupying at least a portion of the optic zone;

one or more interconnection structures mounted to the insert; and

one or more flexible flaps connected to the one or more interconnection structures, the one or more flaps configured as mounting and support structures for one or more electronic components.

2. The powered ophthalmic device according to Claim 1 further comprising a skirt zone surrounding the peripheral zone.

3. The powered ophthalmic device according to Claim 2 further comprising one or more stability features positioned in at least one of the peripheral zone and the skirt zone.

4. The powered ophthalmic device according to Claim 1, wherein the lens comprises a contact lens.

5. The powered ophthalmic device according to Claim 4, wherein the contact lens comprises a soft contact lens.

6. The powered ophthalmic device according to Claim 1, wherein the lens comprises an intraocular lens.

7. The powered ophthalmic device according to Claim 1, wherein the insert is a rigid structure.

8. The powered ophthalmic device according to Claim 7, wherein the rigid insert comprises a variable focusing element.

9. The powered ophthalmic device according to Claim 1, wherein the insert is a hybrid structure.

10. Interconnection structures for a powered ophthalmic device, the interconnection structures comprising:

    a flexible insulating substrate deployed along the circumference of an ophthalmic device having an optic zone, a peripheral zone surrounding the optic zone, and a skirt zone surrounding the peripheral zone, wherein the flexible insulating substrate occupying at least a portion of the peripheral zone and the skirt zone; and

    at least one attachment point formed on the flexible insulating substrate.

11. The interconnection structures according to Claim 10, wherein the flexible insulating substrate comprises thin flexible polymer.

12. The interconnection structures according to Claim 10, wherein the flexible insulating substrate comprises polyimide film.

13. The interconnection structures according to Claim 10, wherein the flexible insulating substrate comprises flexible metallized polyimide film.

14. The interconnection structures according to Claim 10, wherein the interconnection structures further comprises one or more flexible electrical trace.

15. The interconnection structures according to Claim 14, wherein the flexible electrical trace comprises a single wire.

16. The interconnection structures according to Claim 14, wherein the flexible electrical trace comprises a multi-conductor cable.

17. The interconnection structures according to Claim 14, wherein the flexible electrical trace comprises a metallized polyimide film.

18. The interconnection structures according to Claim 10, wherein the interconnection structures further comprises one or more flexible mechanical interconnect.

19. The interconnection structures according to Claim 10, wherein the interconnection structures further comprises one or more interconnection nodes.

20. Flaps for a powered ophthalmic device, the flaps comprising:

a surface region deployed along the circumference of an ophthalmic device having an optic zone, a peripheral zone surrounding the optic zone, where in the surface region is occupying at least a portion of the peripheral zone of the ophthalmic device;

one or more interconnection structures are connected to the surface region; and

one or more flexible electrical components are mounted on top of the surface region.

21. The flaps according to Claim 20, wherein the surface region comprises a flexible insulating substrate.

22. The flaps according to Claim 20, wherein the surface region comprises flexible thin polymer.

23. The flaps according to Claim 20, wherein the surface region comprises a polyimide film.

24. The flaps according to Claim 20, wherein the surface region comprises a metallized polyimide film.

25. The flaps according to Claim 20, wherein the surface region is planar.

26. The flaps according to Claim 20, wherein the surface region is non-planar.

27. The flaps according to Claim 26, wherein the non-planar surface region extend with variation in both a radial direction of the ophthalmic device and in a tangential direction of the ophthalmic device.

28. The flaps according to Claim 20, further comprising a skirt zone surrounding the peripheral zone.

29. The flaps according to Claim 28, wherein the flaps occupy at least a portion of the skirt zone.

30. The flaps according to Claim 20, wherein one or more interconnection structures further comprise one or more flexible mechanical interconnects.

31. The flaps according to Claim 20, wherein one or more interconnection structures further comprise one or more thin flexible electrical traces.

32. The flaps according to Claim 20, wherein one or more interconnection structures further comprise one or more interconnection nodes.

33. The flaps according to Claim 20, wherein a portion of the surface region is perforated.

34. A powered ophthalmic device, the powered ophthalmic device comprising:

an encapsulating and shaping hydrogel layer forming a lens having a front curve and a back curve, the lens comprising an optic zone, a peripheral zone surrounding the optic zone, and a skirt zone surrounding the peripheral zone;

one or more flaps positioned within the lens and occupying at least a portion of the peripheral zone; and

one or more interconnection structures attached to one or more flaps occupying at least a portion of the peripheral zone.

35. The powered ophthalmic device according to Claim 34, wherein the one or more interconnection structures attached to the one or more flaps are concentrically arranged.

36. The powered ophthalmic device according to Claim 34, wherein the one or more flaps are non-planar.

37. The powered ophthalmic device according to Claim 36, where in the non-planar flaps extend with variation in both a radial direction of the ophthalmic device and in a tangential direction of the ophthalmic device.

38. The powered ophthalmic device according to Claim 34, wherein the one or more flaps are planar.

39. The powered ophthalmic device according to Claim 34, wherein one or more interconnection structures further comprise one or more flexible mechanical interconnects.

40. The powered ophthalmic device according to Claim 34, wherein one or more interconnection structures further comprise one or more thin flexible electrical traces.

41. The powered ophthalmic device according to Claim 34, wherein one or more interconnection structures further comprise one or more interconnection nodes.

CLAIMS

1. A powered ophthalmic device comprising:

a lens having an optic zone and a peripheral zone surrounding the optic zone;

an insert positioned within the lens and occupying at least a portion of the optic zone;

one or more interconnection structures mounted to the insert; and

one or more flexible flaps connected to the one or more interconnection structures, the one or more flaps configured as mounting and support structures for one or more electronic components;

and wherein, the or each interconnection structure comprises:

a flexible insulating substrate deployed along the circumference of an ophthalmic device having an optic zone, a peripheral zone surrounding the optic zone, and a skirt zone surrounding the peripheral zone, wherein the flexible insulating substrate occupying at least a portion of the peripheral zone and the skirt zone; and

at least one attachment point formed on the flexible insulating substrate.

2. The device according to Claim 1, further comprising a skirt zone surrounding the peripheral zone.

3. The device according to Claim 2, further comprising one or more stability features positioned in at least one of the peripheral zone and the skirt zone.

4. The device according to Claim 1, wherein the lens is a contact lens.

5. The device according to Claim 4, wherein the contact lens is a soft contact lens.

6. The device according to Claim 1, wherein the lens is an intra-ocular lens.

7. The device according to Claim 1, wherein the insert is a rigid structure.

8. The device according to Claim 7, wherein the rigid structure comprises a variable focusing element.

9. The device according to Claim 1, wherein the insert is a hybrid structure.

10. A powered ophthalmic device comprising:

an encapsulating and shaping hydrogel layer forming a lens having a front curve and a back curve, the lens comprising an optic zone, a peripheral zone surrounding the optic zone, and a skirt zone surrounding the peripheral zone;

one or more flaps positioned within the lens and occupying at least a portion of the peripheral zone; and

one or more interconnection structures attached to one or more flaps occupying at least a portion of the peripheral zone.

and wherein, the or each interconnection structure comprises:

a flexible insulating substrate deployed along the circumference of an ophthalmic device having an optic zone, a peripheral zone surrounding the optic zone, and a skirt zone surrounding the peripheral zone, wherein the flexible insulating substrate occupying at least a portion of the peripheral zone and the skirt zone; and

at least one attachment point formed on the flexible insulating substrate.

11. The device according to Claim 10, wherein the one or more inter-connection structures attached to the one or more flaps are concentrically arranged.

12. The device according to Claim 10, wherein the one or more flaps are non-planar.

13. The device according to Claim 12, where in the non-planar flaps extend with variation in both a radial direction of the ophthalmic device and in a tangential direction of the ophthalmic device.

14. The device according to Claim 10, wherein the one or more flaps are planar.

15. The device according to Claim 10, wherein one or more interconnection structures further comprise one or more flexible mechanical interconnects.

16. The device according to Claim 10, wherein one or more interconnection structures further comprise one or more thin flexible electrical traces.

17. The device according to Claim 10, wherein one or more interconnection structures further comprise one or more interconnection nodes.

18. The device according to any one of the preceding Claims 18, wherein the flexible insulating substrate of the or each interconnection structure comprises thin flexible polymer.

19. The device according to any one of Claims 1-17, wherein the flexible insulating substrate of the or each interconnection structure comprises polyimide film.

20. The device according to any one of Claims 1-17, wherein the flexible insulating substrate of the or each interconnection structure comprises flexible metallized polyimide film.

21. The device according to any one of Claims 1-17, wherein the or each interconnection structures further comprises one or more flexible electrical trace.

22. The device according to Claim 21, wherein the flexible electrical trace comprises a single wire.

23. The device according to Claim 21, wherein the flexible electrical trace comprises a multi-conductor cable.

24. The device according to Claim 21, wherein the flexible electrical trace comprises a metallized polyimide film.

25. The device according to any one of Claims 1-17, wherein the or each interconnection structure further comprises one or more flexible mechanical interconnect.

26. The device according to any one of Claims 1-17, the or each interconnection structure further comprises one or more interconnection nodes.

27. Flaps for a powered ophthalmic device as claimed in any one of the preceding Claims, the flaps comprising:

a surface region deployed along the circumference of an ophthalmic device having an optic zone, a peripheral zone surrounding the optic zone, where in the surface region is occupying at least a portion of the peripheral zone of the ophthalmic device;

one or more interconnection structures are connected to the surface region; and

one or more flexible electrical components are mounted on top of the surface region.

28. The flaps according to Claim 27, wherein the surface region comprises a flexible insulating substrate.

29. The flaps according to Claim 27, wherein the surface region comprises flexible thin polymer.

30. The flaps according to Claim 27, wherein the surface region comprises a polyimide film.

31. The flaps according to Claim 27, wherein the surface region comprises a metallized polyimide film.

32. The flaps according to Claim 27, wherein the surface region is planar.

33. The flaps according to Claim 27, wherein the surface region is non-planar.

34. The flaps according to Claim 33, wherein the non-planar surface region extend with variation in both a radial direction of the ophthalmic device and in a tangential direction of the ophthalmic device.

35. The flaps according to Claim 27, further comprising a skirt zone surrounding the peripheral zone.

36. The flaps according to Claim 35, wherein the flaps occupy at least a portion of the skirt zone.

37. The flaps according to Claim 27, wherein one or more interconnection structures further comprise one or more flexible mechanical interconnects.

38. The flaps according to Claim 27, wherein one or more interconnection structures further comprise one or more thin flexible electrical traces.

39. The flaps according to Claim 27, wherein one or more interconnection structures further comprise one or more interconnection nodes.

40. The flaps according to Claim 27, wherein a portion of the surface region is perforated.