Claims

1. An ophthalmic lens comprising:

a three dimensionally formed ophthalmic insert device;

an energization element fixedly attached to the ophthalmic insert device;

a thin film transistor comprising an organic semiconductor layer also fixedly attached to the ophthalmic insert device; and

a conductive trace providing electrical communication between the energization element and the thin film transistor.

2. The ophthalmic lens of claim 1, additionally comprising a hydrogel layer encapsulating the ophthalmic insert device.

3. The ophthalmic lens of claim 2 additionally comprising: an active optical device capable of changing the optical characteristics of the ophthalmic lens.

4. The ophthalmic lens of claim 3 wherein: the active optical device comprises a liquid meniscus lens element.

5. The ophthalmic lens of claim 4 additionally comprising: an activation element.

6. The ophthalmic lens of claim 5 wherein: the activation element comprises a pressure sensitive switch.

7. The ophthalmic lens of claim 1 wherein: the thin film transistor comprises a n-type organic semiconductor layer.

8. The ophthalmic lens of claim 7 wherein: the n-type organic semiconductor layer comprises copper hexadecafluorophthalocyanine ($F_{15}CuPc$).

9. The ophthalmic lens of claim 1 wherein: the thin film transistor comprises a p-type organic semiconductor layer.

10. The ophthalmic lens of claim 9 wherein: the p-type organic semiconductor layer comprises pentacene.

11. The ophthalmic lens of claim 7 additionally comprising: a second organic thin film transistor comprising an organic semiconductor layer.

12. The ophthalmic lens of claim 11 wherein: the second organic thin film transistor comprises a p-type organic semiconductor layer.

13. The ophthalmic lens of claim 12 wherein: the p-type organic semiconductor layer of the second organic thin film transistor comprises pentacene.

14. The ophthalmic lens of claim 1 wherein: the first conductive trace comprises a transparent electrode.

15. The ophthalmic lens of claim 14 wherein: the transparent electrode comprises indium tin oxide.

16. The ophthalmic lens of claim 1 wherein: the energization element is comprised of more than one electrochemical cell which are connected at least in part in a series manner.

17. A three dimensionally formed ophthalmic insert device comprising: an energization element, at least a first conductive trace and a thin film transistor comprising an organic semiconductor layer fixedly attached to the ophthalmic insert device.

18. The ophthalmic insert device of claim 17 wherein: the thin film transistor comprises an n-type organic semiconductor layer.

19. The ophthalmic insert device of claim 18 wherein: the n-type organic semiconductor layer comprises copper hexadecafluorophthalocyanine ($F_{15}CuPc$).

20. The ophthalmic insert device of claim 17 wherein: the thin film transistor comprises a p-type organic semiconductor layer.

21. The ophthalmic insert device of claim 20 wherein: the p-type organic semiconductor layer comprises pentacene.

Claims

1. An ophthalmic lens comprising:
   a three dimensionally formed ophthalmic insert device;
   an energization element fixedly attached to the ophthalmic insert device;
   a thin film transistor comprising an organic semiconductor layer also fixedly attached to the surface of the ophthalmic insert device; and
   a conductive trace providing electrical communication between the energization element and the thin film transistor;
   wherein the ophthalmic insert device is within the ophthalmic lens.
2. The ophthalmic lens of Claim 1, additionally comprising a hydrogel layer encapsulating the ophthalmic insert device.
3. The ophthalmic lens of Claim 2, additionally comprising an active optical device capable of changing the optical characteristics of the ophthalmic lens.
4. The ophthalmic lens of Claim 3, wherein the active optical device comprises a liquid meniscus lens element.
5. The ophthalmic lens of Claim 4, additionally comprising an activation element.
6. The ophthalmic lens of Claim 5, wherein the activation element comprises a pressure sensitive switch.
7. The ophthalmic lens of Claim 1, wherein the thin film transistor comprises a n-type organic semiconductor layer.
8. The ophthalmic lens of Claim 7, wherein the n-type organic semiconductor layer comprises copper hexadecafluorophthalocyanine ($F_{16}CuPc$).
9. The ophthalmic lens device of Claim 1, wherein the thin film transistor comprises a p-type organic semiconductor layer.
10. The ophthalmic lens of Claim 9, wherein the p-type organic semiconductor layer comprises pentacene.
11. The ophthalmic lens of Claim 7, additionally comprising a second organic thin film transistor comprising an organic semiconductor layer.
12. The ophthalmic lens of Claim 11, wherein the second organic thin film transistor comprises a p-type organic semiconductor layer.

13. The ophthalmic lens of Claim 12, wherein the p-type organic semiconductor layer of the second organic thin film transistor comprises pentacene.
14. The ophthalmic lens of Claim 1, wherein the conductive trace comprises a transparent electrode.
15. The ophthalmic lens of Claim 14, wherein the transparent electrode comprises indium tin oxide.
16. The ophthalmic lens of Claim 1, wherein the energization element is comprised of more than one electrochemical cell which are connected at least in part in a series manner.
17. A three dimensionally formed ophthalmic insert device comprising:
    an energization element;
    at least a first conductive trace; and
    a thin film transistor comprising an organic semiconductor layer fixedly attached to the surface of the ophthalmic insert device.
18. The ophthalmic insert device of Claim 17, wherein the thin film transistor comprises an n-type organic semiconductor layer.
19. The ophthalmic insert device of Claim 18, wherein the n-type organic semiconductor layer comprises copper hexadecafluorophthalocyanine (F16CuPc).
20. The ophthalmic insert device of Claim 17, wherein the thin film transistor comprises a p-type organic semiconductor layer
21. The ophthalmic insert device of Claim 20, wherein the p-type organic semiconductor layer comprises pentacene.