WHAT IS CLAIMED IS:

1. A biocompatible battery containing an electrolyte formulation, wherein the biocompatible battery comprises:

    a first and second current collector;

    a cathode

    an anode; and

    a laminar structure;

    wherein at least one layer of the laminar structure has a volume removed to form a cavity, wherein the cavity contains an electrolyte solution, wherein the electrolyte solution comprises:

        an ionizing salt; and

        a solvent.

2. The biocompatible battery of claim 1 wherein the ionizing salt is zinc chloride.

3. The biocompatible battery of claim 1 wherein the ionizing salt is ammonium chloride.

4. The biocompatible battery of claim 1 wherein the ionizing salt is zinc acetate.

5. The biocompatible battery of claim 1 wherein the ionizing salt is zinc sulfate.

6. The biocompatible battery of claim 1 wherein the ionizing salt is zinc bromide.

7. The biocompatible battery of claim 1 wherein the ionizing salt is zinc gluconate hydrate.

8. The biocompatible battery of claim 1 wherein the ionizing salt is zinc nitrate.

9. The biocompatible battery of claim 1 wherein the ionizing salt is zinc iodide.

10. The biocompatible battery of claim 1 wherein the solvent is water.

11. The biocompatible battery of claim 1 further comprising indium +3 ion supplied as indium acetate.

12. The biocompatible battery of claim 1 further comprising indium sulfate.

13. The biocompatible battery of claim 1 further comprising a gelling agent.

14. The biocompatible battery of claim 1 further comprising agar.

15. The biocompatible battery of claim 1 further comprising carboxymethyl cellulose.

16. The biocompatible battery of claim 1 further comprising hydroxypropyl methyl cellulose.

17. The biocompatible battery of claim 1 further comprising sodium chloride.

18. The biocompatible battery of claim 1 further comprising sodium borate.

19. The biocompatible battery of claim 1 wherein the electrolyte solution further comprises a surfactant.

20. The biocompatible battery of claim 19 wherein the surfactant is Triton™ QS44.

21. A biocompatible battery containing an electrolyte formulation, wherein the biocompatible battery comprises:

a first and second current collector;

a cathode

an anode; and

a laminar structure; and

wherein at least one layer of the laminar structure has a volume removed to form a cavity, wherein the cavity is filled with an electrolyte, wherein the electrolyte comprises:

$ZnCl_2$;

a surfactant;

indium +3 ion; and

water.

22. A biocompatible battery containing an electrolyte formulation, wherein the biocompatible battery comprises:

a first and second current collector;

a cathode

an anode; and

a laminar structure; and

wherein at least one layer of the laminar structure has a volume removed to form a cavity, wherein the cavity is filled with an electrolyte, wherein the electrolyte comprises:

approximately 10 to 20 percent $ZnCl_2$;

approximately 250 to 500 ppm Triton™ QS44;

approximately 100 to 200 ppm indium +3 ion supplied as indium acetate; and

water.

23. A biocompatible battery containing an electrolyte formulation, wherein the biocompatible battery comprises:

a first and second current collector;

a cathode

an anode; and

a laminar structure;

wherein at least one layer of the laminar structure has a volume removed to form a cavity, wherein a gelled electrolyte is formed within at least a portion of the cavity, wherein the gelled electrolyte comprises:

calcium nitrate;

carboxymethylcellulose; and

silicon dioxide.

24. A biocompatible battery containing an electrolyte formulation, wherein the biocompatible battery comprises:

a first and second current collector;

a cathode

an anode; and

a laminar structure;

wherein at least one layer of the laminar structure has a volume removed to form a cavity, wherein a gelled electrolyte is formed within at least a portion of the cavity, wherein the gelled electrolyte comprises:

approximately 2 molar calcium nitrate ($Ca(NO_3)_2$) in deionized water;

approximately 1 percent weight by weight carboxymethylcellulose (CMC); and

approximately 10 percent weight by weight silicon dioxide (SiO_2).

25. A biomedical device apparatus comprising:

an insert device comprising:

an electroactive element responsive to a controlling voltage signal;

a biocompatible battery

wherein the biocompatible battery comprises:

a first and second current collector;

a cathode;

an anode;

a separator;

a laminar structure, wherein at least one layer of the laminar structure has a volume removed to form a cavity;

an electrolyte, wherein the electrolyte comprises:

an ionizing salt; and

a solvent; and

wherein a circuit electrically connected to the biocompatible battery provides the controlling voltage signal.

26. The apparatus of claim 25 wherein the biomedical device is a contact lens.

27. A biomedical device apparatus comprising:

an insert device comprising:

an electroactive element responsive to a controlling voltage signal;

a biocompatible battery

wherein the biocompatible battery comprises:

a first and second current collector;

a cathode;

an anode;

a separator;

a laminar structure, wherein at least one layer of the laminar structure has a volume removed to form a cavity; and

an electrolyte, wherein the electrolyte comprises:

approximately 10 to 20 percent $ZnCl_2$;

approximately 250 to 500 ppm Triton™ QS44;

approximately 100 to 200 ppm indium +3 ion supplied as indium acetate; and

water; and

wherein a circuit electrically connected to the biocompatible battery provides the controlling voltage signal.

28. The apparatus of claim 27 wherein the biomedical device is a contact lens.

29. A biomedical device apparatus comprising:

an insert device comprising:

an electroactive element responsive to a controlling voltage signal;

a biocompatible battery

wherein the biocompatible battery comprises:

a first and second current collector;

a cathode;

an anode;

a separator;

a laminar structure, wherein at least one layer of the laminar structure has a volume removed to form a cavity; and

an electrolyte, wherein the electrolyte comprises:

$ZnCl_2$;

Triton™ QS44;

indium +3 ion supplied as indium acetate;

balance with water; and

wherein a circuit electrically connected to the biocompatible battery provides the controlling voltage signal.

30. The apparatus of claim 29 wherein the biomedical device is a contact lens.

31. A biocompatible battery, wherein the biocompatible battery comprises:

a first and second current collector;

a cathode

an anode; and

a laminar structure;

wherein at least one layer of the laminar structure has a first volume removed to form a first cavity and a second volume removed to form a second cavity;

an electrolyte formulation, wherein the electrolyte formulation is contained within the first cavity;

a channel between the first cavity and the second cavity; wherein an electroactive element controls flow through the channel; and

wherein an external signal activates the electroactive element allowing electrolyte to flow from the first cavity to the second cavity.

32. The biocompatible battery of claim 31 wherein the at least one layer of the laminar structure has a third volume removed to form a third cavity; and wherein the third cavity comprises electrodes; and whereas electrolyte solution may diffuse into the third cavity from an external location.

33. The biocompatible battery of claim 32 wherein diffusing of electrolyte into the third cavity from the external location into the third cavity activates a reserve cell in the third cavity.

34. The biocompatible battery of claim 33 wherein a light signal interacts with a photocell connected to an electronic circuit powered by the reserve cell in the third cavity; and wherein the interaction of the signal activates the electroactive element allowing electrolyte to flow into the second cavity.

CLAIMS:

1. A biocompatible battery containing an electrolyte formulation, wherein the biocompatible battery comprises:

a first and second current collector;

a cathode;

an anode; and

a laminar structure;

wherein at least one layer of the laminar structure has a volume removed to form a cavity, wherein the cavity contains an electrolyte solution, wherein the electrolyte solution comprises:

an ionizing salt; and

a solvent.

2. The biocompatible battery of claim 1 wherein the ionizing salt is one or more of zinc chloride, ammonium chloride, zinc acetate, zinc sulfate, zinc bromide, zinc gluconate hydrate, zinc nitrate and zinc iodide.

3. The biocompatible battery of claim 1 wherein the solvent is water.

4. The biocompatible battery of claim 1 further comprising indium +3 ion supplied as indium acetate.

5. The biocompatible battery of claim 1 further comprising indium sulfate.

6. The biocompatible battery of claim 1 further comprising a gelling agent.

7. The biocompatible battery of claim 6 wherein the gelling agent includes one or more of agar, carboxymethyl cellulose, and hydroxypropyl methyl cellulose.

8. The biocompatible battery of claim 1 further comprising sodium chloride.

9. The biocompatible battery of claim 1 further comprising sodium borate.

10. The biocompatible battery of claim 1 wherein the electrolyte solution further comprises a surfactant.

11. The biocompatible battery of claim 10 wherein the surfactant is Triton™ QS44.

12. A biocompatible battery containing an electrolyte formulation, wherein the biocompatible battery comprises:

a first and second current collector;

a cathode;

an anode; and

a laminar structure; and

wherein at least one layer of the laminar structure has a volume removed to form a cavity, wherein the cavity is filled with an electrolyte, wherein the electrolyte comprises:

$ZnCl_2$;

a surfactant;

indium +3 ion; and

water.

13. A biocompatible battery containing an electrolyte formulation, wherein the biocompatible battery comprises:

a first and second current collector;

a cathode;

an anode; and

a laminar structure; and

wherein at least one layer of the laminar structure has a volume removed to form a cavity, wherein the cavity is filled with an electrolyte, wherein the electrolyte comprises:

approximately 10 to 20 percent $ZnCl_2$;

approximately 250 to 500 ppm Triton™ QS44;

approximately 100 to 200 ppm indium +3 ion supplied as indium acetate; and

water.

14. A biocompatible battery containing an electrolyte formulation, wherein the biocompatible battery comprises:

a first and second current collector;

a cathode;

an anode; and

a laminar structure;

wherein at least one layer of the laminar structure has a volume removed to form a cavity, wherein a gelled electrolyte is formed within at least a portion of the cavity, wherein the gelled electrolyte comprises:

calcium nitrate;

carboxymethylcellulose; and

silicon dioxide.

15. A biocompatible battery containing an electrolyte formulation, wherein the biocompatible battery comprises:

a first and second current collector;

a cathode;

an anode; and

a laminar structure;

wherein at least one layer of the laminar structure has a volume removed to form a cavity, wherein a gelled electrolyte is formed within at least a portion of the cavity, wherein the gelled electrolyte comprises:

approximately 2 molar calcium nitrate ($Ca(NO_3)_2$) in deionized water;

approximately 1 percent weight by weight carboxymethylcellulose (CMC); and

approximately 10 percent weight by weight silicon dioxide (SiO_2).

16. A biomedical device apparatus comprising:

an insert device comprising:

an electroactive element responsive to a controlling voltage signal;

a biocompatible battery as claimed in claim 1 and further comprising;

a separator; and

wherein a circuit electrically connected to the biocompatible battery provides the controlling voltage signal.

17. The apparatus of claim 16 wherein the biomedical device is a contact lens.

18. A biomedical device apparatus comprising:

an insert device comprising:

an electroactive element responsive to a controlling voltage signal;

a biocompatible battery as claimed in claim 1 and further comprising

a separator; and

wherein the electrolyte comprises:

approximately 10 to 20 percent $ZnCl_2$;

approximately 250 to 500 ppm Triton™ QS44;

approximately 100 to 200 ppm indium +3 ion supplied as indium acetate; and

water; and

wherein a circuit electrically connected to the biocompatible battery provides the controlling voltage signal.

19. The apparatus of claim 18 wherein the biomedical device is a contact lens.

20. A biomedical device apparatus comprising:

an insert device comprising:

an electroactive element responsive to a controlling voltage signal;

a biocompatible battery as claimed in claim 1 and further comprising

a separator; and

wherein the electrolyte comprises:

$ZnCl_2$;

Triton™ QS44;

indium +3 ion supplied as indium acetate;

balance with water; and

wherein a circuit electrically connected to the biocompatible battery provides the controlling voltage signal.

21. The apparatus of claim 20 wherein the biomedical device is a contact lens.

22. A biocompatible battery, wherein the biocompatible battery comprises:

a first and second current collector;

a cathode;

an anode; and

a laminar structure;

wherein at least one layer of the laminar structure has a first volume removed to form a first cavity and a second volume removed to form a second cavity;

an electrolyte formulation, wherein the electrolyte formulation is contained within the first cavity;

a channel between the first cavity and the second cavity; wherein an electroactive element controls flow through the channel; and

wherein an external signal activates the electroactive element allowing electrolyte to flow from the first cavity to the second cavity.

23. The biocompatible battery of claim 22 wherein the at least one layer of the laminar structure has a third volume removed to form a third cavity; and wherein the third cavity comprises electrodes; and whereas electrolyte solution may diffuse into the third cavity from an external location.

24. The biocompatible battery of claim 23 wherein diffusing of electrolyte into the third cavity from the external location into the third cavity activates a reserve cell in the third cavity.

25. The biocompatible battery of claim 24 wherein a light signal interacts with a photocell connected to an electronic circuit powered by the reserve cell in the third cavity; and wherein the interaction of the signal activates the electroactive element allowing electrolyte to flow into the second cavity.