WHAT IS CLAIMED IS:

1. A biocompatible battery comprising:

a first and a 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, a separator, and the cathode;

wherein the anode comprises zinc;

wherein the anode is upon the first current collector; and

wherein the first current collector and the anode are sealed upon the laminar structure.

2. The biocompatible battery of claim 1 wherein the anode comprises indium.

3. The biocompatible battery of claim 1 wherein the anode is plated upon the first current collector.

4. The biocompatible battery of claim 3 wherein the anode is plated as a sheet covering one side of the first current collector.

5. The biocompatible battery of claim 3 wherein the anode is plated through a mask, wherein only regions of the first current collector are plated with the anode.

6. The biocompatible battery of claim 3 wherein the anode is plated through the cavity in the laminar structure.

7. The biocompatible battery of claim 1 wherein the anode is vacuum deposited upon the first current collector.

8. The biocompatible battery of claim 1 wherein the anode comprises a metal foil of anode material, wherein the metal foil of anode material is joined to a metal foil comprising the first current collector.

9. The biocompatible battery of claim 1 :

wherein the anode comprises a mixture of zinc and indium; and

wherein a concentration of the indium within the mixture is approximately between 10 and 1000 parts per million.

10. The biocompatible battery of claim 1 wherein the anode is textured in a region of the cavity.

11. The biocompatible battery of claim 10 wherein the texture comprises dimples impressed into the anode.

12. The biocompatible battery of claim 10 wherein the texture comprises dimples impressed into the anode and first current collector.

13. 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; 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, a separator, and the cathode;

wherein the anode comprises zinc;

wherein the anode is upon the first current collector; and

wherein the anode is sealed upon the laminar structure; and

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

14. The apparatus of claim 13 wherein the biomedical device is a contact lens.

15. A method for forming a biocompatible battery, the method comprising:

obtaining a metal foil;

cleaning the metal foil;

protecting one side of the metal foil;

attaching an adhesive to a substrate;

attaching the protected side of the metal foil to the adhesive attached to the substrate;

making an electrical connection to the metal foil;

plating an anode onto the metal foil in a plating bath;

receiving a first substrate film of a first insulating material;

cutting a cavity in the first substrate film to form a cathode spacer layer, wherein an edge of the cavity defines a sidewall of the cavity; and

adhering a first surface of the cathode spacer layer to a first surface of the anode plated upon the metal foil.

16. The method of claim 15 further comprising cleaning the unprotected side in an acid clean.

17. The method of claim 15 further comprising:

placing the biocompatible battery into an insert; and

placing the insert into a biomedical device.

18. The method of claim 17 wherein the biomedical device is an ophthalmic device.

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

20. The method of claim 15 wherein the plating bath comprises zinc chloride.

21. The method of claim 15 wherein the plating bath additionally comprises potassium chloride, boric acid, and indium acetate.

22. The method of claim 15 wherein the plating bath additionally comprises E-Brite Ultra-Chlor NA and E-Brite Ultra-Chlor B.

23. The method of claim 15 wherein the plating bath comprises:

ZnCl2 at approximately 5-10% by weight ;

KCl at approximately 15-25% by weight;

Boric Acid at approximately 2-5 % by weight;

E-Brite Ultra-Chlor NA at approximately 3-5% by weight;

E-Brite Ultra-Chlor B at approximately 0.01 to 0.10 % by weight; and

Indium Acetate at approximately 0.001% to 0.01% by weight.

24. A method for forming a biocompatible battery, the method comprising:

obtaining a metal foil, wherein the metal foil comprises zinc;

cleaning the metal foil;

receiving a first substrate film of a first insulating material;

cutting a cavity in the first substrate film to form a cathode spacer layer, wherein an edge of the cavity defines a sidewall of the cavity; and

adhering a first surface of the cathode spacer layer to a first surface of the metal foil.

25. The method of claim 24 further comprising:

placing the biocompatible battery into an insert; and

placing the insert into a biomedical device.

26. The method of claim 25 wherein the biomedical device is an ophthalmic device.

27. The method of claim 26 wherein the ophthalmic device is a contact lens.

28. A method for forming a biocompatible battery, the method comprising:
obtaining a first metal foil, wherein the metal foil comprises anode material;
cleaning the first metal foil;
obtaining a second metal foil wherein the second metal foil comprises brass;
adhering a first surface of the first metal foil to a first surface of the second metal foil;
receiving a first substrate film of a first insulating material;
cutting a cavity in the first substrate film to form a cathode spacer layer, wherein an edge of the cavity defines a sidewall of the cavity; and
adhering a first surface of the cathode spacer layer to a second surface of the first metal foil.

29. The method of claim 28 wherein adhering a first surface of the first metal foil to a first surface of the second metal foil comprises welding.

30. The method of claim 28 wherein adhering a first surface of the first metal foil to a first surface of the second metal foil comprises gluing with an adhesive, wherein the adhesive is conductive.

31. The method of claim 28 wherein adhering a first surface of the first metal foil to a first surface of the second metal foil comprises pressing the first metal foil and the second metal foil.

32. The method of claim 28 wherein adhering a first surface of the first metal foil to a first surface of the second metal foil comprises soldering the first metal foil and the second metal foil.

CLAIMS

1. A biocompatible battery comprising:

a first and a 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, a separator, and the cathode;

wherein the anode comprises zinc;

wherein the anode is upon the first current collector; and

wherein the first current collector and the anode are sealed upon the laminar structure; and

wherein the anode is textured in a region of the cavity.

2. The biocompatible battery according to claim 1, wherein the anode comprises indium.

3. The biocompatible battery according to claim 1, wherein the anode is plated upon the first current collector.

4. The biocompatible battery according to claim 3, wherein the anode is plated as a sheet covering one side of the first current collector.

5. The biocompatible battery according to claim 3, wherein the anode is plated through a mask, wherein only regions of the first current collector are plated with the anode.

6. The biocompatible battery according to claim 3, wherein the anode is plated through the cavity in the laminar structure.

7. The biocompatible battery according to claim 1, wherein the anode is vacuum deposited upon the first current collector.

8. The biocompatible battery according to claim 1, wherein the anode comprises a metal foil of anode material, wherein the metal foil of anode material is joined to a metal foil comprising the first current collector.

9. The biocompatible battery according to claim 1, wherein the anode comprises a mixture of zinc and indium; and wherein a concentration of the indium within the mixture is approximately between 10 and 1000 parts per million.

10. The biocompatible battery according to claim 1, wherein the texture comprises dimples impressed into the anode.

11. The biocompatible battery according to claim 1, wherein the texture comprises dimples impressed into the anode and first current collector.

12. 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; 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, a separator, and the cathode;

wherein the anode comprises zinc;

wherein the anode is upon the first current collector; and

wherein the anode is sealed upon the laminar structure; and

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

wherein the biomedical device is a contact lens.

13. A method for forming a biocompatible battery, the method comprising:

obtaining a metal foil;

cleaning the metal foil;

protecting one side of the metal foil;

attaching an adhesive to a substrate;

attaching the protected side of the metal foil to the adhesive attached to the substrate;

making an electrical connection to the metal foil;

plating an anode onto the metal foil in a plating bath;

receiving a first substrate film of a first insulating material;

cutting a cavity in the first substrate film to form a cathode spacer layer, wherein an edge of the cavity defines a sidewall of the cavity; and

adhering a first surface of the cathode spacer layer to a first surface of the anode plated upon the metal foil.

14. The method according to claim 13, further comprising cleaning the unprotected side in an acid clean.

15. The method according to claim 13, further comprising:

placing the biocompatible battery into an insert; and

placing the insert into a biomedical device.

16. The method according to claim 15, wherein the biomedical device is an ophthalmic device.

17. The method according to claim 16, wherein the ophthalmic device is a contact lens.

18. The method according to claim 13, wherein the plating bath comprises zinc chloride.

19. The method according to claim 13, wherein the plating bath additionally comprises potassium chloride, boric acid, and indium acetate.

20. The method according to claim 13, wherein the plating bath additionally comprises E-Brite Ultra-Chlor NA and E-Brite Ultra-Chlor B.

21. The method according to claim 13, wherein the plating bath comprises:

ZnCl2 at approximately 5-10% by weight;

KCl at approximately 15-25% by weight;

Boric Acid at approximately 2-5 % by weight;

E-Brite Ultra-Chlor NA at approximately 3-5% by weight;

E-Brite Ultra-Chlor B at approximately 0.01 to 0.10 % by weight; and

Indium Acetate at approximately 0.001% to 0.01% by weight.

22. A method for forming a biocompatible battery, the method comprising:

obtaining a metal foil, wherein the metal foil comprises zinc;

cleaning the metal foil;

receiving a first substrate film of a first insulating material;

cutting a cavity in the first substrate film to form a cathode spacer layer, wherein an edge of the cavity defines a sidewall of the cavity;

adhering a first surface of the cathode spacer layer to a first surface of the metal foil;

placing the biocompatible battery into an insert; and

placing the insert into a biomedical device and

wherein the biomedical device is an ophthalmic device.

23. The method according to claim 22, wherein the ophthalmic device is a contact lens.