CLAIM

1. A terminal assembly for an electrochemical cell comprising:

a conductive cup-shaped member comprising:

a terminal wall in electric communication with a terminal of the electrochemical cell when the terminal wall is in contact with the terminal;

a sidewall; and

a rim separated from the terminal wall by the sidewall; and

a terminal endplate having outer and inner surfaces coplanar with the terminal wall and joining to the rim at the outer surface, the joining enabling bi-directional uniform current flow through the cup-shaped member between the terminal and the terminal endplate when the terminal wall is in contact with the terminal, the terminal endplate having an electrochemically active region comprising a first surface area enclosed by the rim and a remaining second surface area outside an outer periphery of the rim, the first and second surface areas being substantially equal.

2. The terminal assembly of claim 1, wherein the rim is substantially circular.

3. The terminal assembly of claim 1, wherein the rim is substantially elliptical and defined by a major axis and a minor axis perpendicular to the major axis, the major axis and the minor axis intersecting at a center of the rim.

4. The terminal assembly of any one of claims 1-3, wherein the rim defines an opening of an interior region defined by interior surfaces of the terminal wall and the sidewall, the outer surface of the terminal endplate enclosing the opening of the interior region when joined to the rim.

5. The terminal assembly of any one of claims 1-4, wherein the rim is centered within the electrochemically active region of the endplate.

6. The terminal assembly of any of claims 1-5, wherein the sidewall is perpendicular to the terminal wall and the rim.

7. The terminal assembly of any one of claims 1-5, wherein the sidewall extends radially outward from the terminal wall to the rim.

8. The terminal assembly of any one of claim 1-7, further comprising a cathode assembly disposed on the inner surface of the terminal endplate, wherein the cathode assembly comprises a cathode cage, a separator, and a carbon material.

9. The terminal assembly of claim 8, wherein the terminal assembly is a terminal cathode assembly.

10. The terminal assembly of any one of claims 1-7, wherein at least a portion of the inner surface of the terminal endplate is a rough surface.

11. The terminal assembly of claim 10, wherein the terminal assembly is a terminal anode assembly.

12. The terminal assembly of any one of claims 1-11, further comprising:

a compression plate opposed to and releasably fastened in contact with the outer surface of the terminal endplate, the compression plate comprising an aperture configured to receive the conductive cup-shaped member.

13. The terminal assembly of claim 12, wherein at least the terminal wall of the conductive cup-shaped member is exposed through the aperture of the compression plate.

14. The terminal assembly of any one of claims 1-7, further comprising:

a frame member comprising a first side and a second side, the first side opposed to and receiving an inner surface of the terminal endplate on a side opposite the conductive cup-shaped member.

15. The terminal assembly of claim 14, wherein the second side of the frame member opposes a bipolar electrode, the bipolar electrode comprising:

a bipolar electrode plate comprising a front surface fastened to the second side of the frame member; and

a cathode assembly disposed on the front surface of the bipolar electrode plate, the cathode assembly interposed between the front surface of the bipolar electrode plate and the inner surface of the terminal endplate, wherein the cathode assembly comprises a cathode cage, a separator, and carbon material.

16. The terminal assembly of any one of claims 1-15, wherein the rim of the conductive cup-shaped member is joined to the first surface of the terminal endplate by a weld or an adhesive.

17. The terminal assembly of claim 16, wherein the adhesive is electrically conductive.

18. The terminal assembly of any one of claims 1-17, wherein the conductive cup-shaped member is composed of at least one of a copper alloy, a copper/titanium clad, aluminum or electrically conductive ceramics.

19. The terminal assembly of any one of claims 1-18, wherein interior surfaces of the terminal wall and the sidewall comprise copper.

20. The terminal assembly of any one of claims 1-19, wherein exterior surfaces of the terminal wall and the sidewall comprise a titanium material.

21. The terminal assembly of any one of claims 1-17, wherein at least one of the conductive cup-shaped member or the terminal endplate comprises at least one of titanium and copper.

22. The terminal assembly of any one of claims 1-17, wherein the conductive cup-shaped member comprises a first metal and the terminal endplate comprises a second metal.

23. The terminal assembly of any one of claims 1-22, wherein the rim comprises a flange extending radially outward from the sidewall.

24. A battery stack defining a longitudinal axis, the battery stack comprising:

a pair of terminal assemblies at corresponding proximal and distal ends of the electrochemical cell assembly, each terminal assembly comprising:

a conductive cup-shaped member comprising a terminal wall, a sidewall, and a rim separated from the terminal wall by the sidewall; and

a terminal endplate having inner and outer surfaces coplanar with the terminal wall and joining to the corresponding rim at the outer surface, the joining enabling bi-directional uniform current flow through the cup-shaped member between a corresponding terminal and the terminal endplate when the corresponding terminal wall is in contact with the corresponding terminal;

at least one pair of bipolar electrodes arranged in parallel along the longitudinal axis and interposed between the pair of terminal assemblies, each pair of bipolar electrodes comprising:

a first bipolar electrode of at least one pair of bipolar electrodes, the first bipolar electrode comprising:

a first bipolar electrode plate;

a first carbon material;

a first separator; and

a first cathode cage configured to hold the first carbon material in electrical communication with a first front surface of the first bipolar electrode plate; and

a second bipolar electrode of the at least one pair of bipolar electrodes, the second bipolar electrode comprising:

a second bipolar electrode plate;

a second carbon material;

a second separator; and

a second cathode cage configured to hold the second carbon material in electrical communication with a second front surface of the second bipolar electrode plate; and

an aqueous electrolyte interposed between the first bipolar electrode plate and the second bipolar electrode plate.

25. The battery stack of claim 24, wherein each corresponding terminal endplate comprises an electrochemically active region comprising a first surface area enclosed by the corresponding rim and a remaining second surface area outside an outer periphery of the corresponding rim, the first and second surface areas being substantially equal.

26. The battery stack of either of claims 24 or 25, wherein the rim is substantially circular, substantially elliptical, or substantially rectangular.

27. The battery stack of any one of claims 24-26, wherein each terminal wall projects away from the outer surface of the corresponding terminal endplate.

28. The battery stack of claim 27, wherein one of the terminal walls projects away from the outer surface of the corresponding terminal endplate in a proximal direction along the longitudinal axis and the other terminal wall projects away from the outer surface of the corresponding terminal endplate in an opposite distal direction along the longitudinal axis.

29. The battery stack of any one of claims 24-28, wherein each terminal assembly further comprises:

a corresponding compression plate opposed to and releasably fastened in contact with the outer surface of the corresponding terminal endplate, each compression plate comprising an aperture configured to receive the corresponding conductive cup-shaped member.

30. The battery stack of claim 29, wherein the terminal walls of the conductive cup-shaped members are exposed at corresponding ones of the proximal and distal ends of the battery stack.

31. The battery stack of any one of claims 24-30, wherein one of the terminal assemblies further comprises:

a cathode assembly disposed on an inner surface of the corresponding terminal endplate on a side opposite the corresponding conductive cup-shaped member, the cathode assembly

interposed between the inner surface of the terminal endplate and the back surface of the adjacent first bipolar electrode plate.

32. The battery stack of any one of claims 24-31, wherein each rim is centered on an electrochemically active region of the corresponding endplate.

33. The battery stack of any one of claims 24-32, wherein each rim of the conductive cup-shaped members is joined to the outward surface of the corresponding terminal endplate by a weld or an adhesive.

34. The battery stack of claim 33, wherein the adhesive is electrically conductive.

35. The battery stack of any one of claims 24-34, wherein at least one of the conductive cup-shaped members comprises at least one of a copper alloy, a copper/titanium clad, aluminum or electrically conductive ceramics.

36. The battery stack of any one of claims 24-35, wherein interior surfaces of at least one of the conductive cup-shaped members comprises copper.

37. The battery stack of any one of claims 24-36, wherein exterior surfaces of at least one of the conductive cup-shaped members comprises at least one of copper, titanium, and electrically conductive ceramics.

38. The battery stack of any one of claims 24-37, wherein each corresponding terminal contacts a central location of the corresponding terminal wall.

39. The battery stack of any one of claims 24-38, wherein the rim comprises a flange extending radially outward from the sidewall.