CLAIMS

What is claimed is:

1. A method for securing an electrolyte solution upon emergency in an electrolyte electrochemical cell(s) compartment(s) of a battery and optionally in an electrolyte compartment connected to said battery ~~upon emergency~~, said method comprises adding a reagent to said electrolyte solution, wherein said reagent and said electrolyte interact in said cell(s) compartment(s) / in said electrolyte compartment(s), such that following said interaction, said electrolyte cannot flow.

2. The method of claim 1, wherein said reagent comprises a foam, a gel, a porous material, or a precursor thereof.

3. The method of claim 1, wherein said reagent forms a porous solid or semi-solid material such that said electrolyte solution is contained in the pores of said material.

4. The method of claim 3, wherein said reagent is a polymer or a polymer precursor.

5. The method of claim 4, wherein said polymer or polymer precursor comprises isocyanate or polyisocyanate, isocyanourate or polyisocyanourate, ~~and~~ polyols or compositions thereof, polyisocyanate prepolymer or polyisocyanourate prepolymer.

6. The method of claim 5, wherein said porous solid material formed from said isocyanate or polyisocyanate, isocyanourate or polyisocyanourate, polyols, and compositions thereof, polyisocyanate prepolymer or polyisocyanourate prepolymer is polyurethane foam.

7. The method of claim 1, wherein prior to addition of said reagent to said electrolyte, said electrolyte is kept in said electrolyte electrochemical cell(s) compartment(s) and optionally in ~~a first~~ said electrolyte compartment, and said reagent is kept in a reagent ~~second~~ compartment.

8. The method of claim 7, wherein said electrolyte electrochemical cell(s) compartment(s) and optionally said ~~first~~ electrolyte compartment are placed in contact or are connected by a connection to ~~and~~ said ~~second~~ reagent compartment ~~are placed in contact or are connected by a connection~~.

9. The method of claim 8, wherein the area of said contact between said electrolyte electrochemical cell(s) compartment(s) and optionally said electrolyte compartment ~~the first compartment~~ and between said ~~the~~ reagent ~~second~~ compartment or a portion thereof is opened upon emergency such that materials from said ~~two~~ compartments are mixed.

10. The method of claim 8, wherein said connection between said ~~first compartment and said second~~ compartment(s) can assume an open position or a closed position.

11. The method of claim 8, wherein upon opening of said connection, said reagent is transferred to said electrolyte.

12. The method of claim 8, wherein said reagent ~~second~~ compartment further comprises a gas propellant, said gas propellant facilitating transfer of said reagent from said reagent ~~second~~ compartment to said electrolyte electrochemical cell(s) compartment(s) and optionally to said electrolyte compartment ~~first compartment~~.
13. The method of claim 1, wherein said reagent is absorbent.
14. The method of claim 13, wherein said reagent forms a gel upon contact with said electrolyte.
15. The method of claim 13, wherein said reagent comprises superabsorbent polymers.
16. The method of claim 15, wherein said superabsorbent polymers comprise cellulose-based polymers, polyacrylate-based polymers, polyacrylonitrile-based polymers, combinations thereof and compositions thereof.
17. The method of claim 13, wherein said absorbent reagent comprises ~~solution~~ polymerizable polymers or compositions thereof.
18. The method of claim 17, wherein said ~~solution~~ polymerization comprises crosslinking of said polymers/polymer precursors.
19. A system comprising:
    - a battery comprising ~~an~~ electrochemical cell(s) compartment(s) and optionally an electrolyte compartment; and
    - a ~~storage unit~~ reagent compartment for storing a reagent;

    wherein said ~~storage~~ reagent compartment ~~unit~~ is in contact with or is connected by a connection to said electrochemical cell(s) compartment(s), to said electrolyte compartment or to a combination thereof.
20. The system of claim 19, wherein said connection can assume an open or a closed position.
21. The system of claim 19, wherein the area or portions thereof of said contact between said reagent compartment ~~storage unit~~ and said electrochemical cell(s) compartment(s), said electrolyte compartment or a combination thereof, is opened upon emergency such that material from said reagent compartment ~~storage unit~~ is mixed with electrolyte within ~~from~~ said electrochemical cell(s) compartment(s), within said electrolyte compartment or within a combination thereof.
22. The system of claim 19, wherein said ~~storage unit~~ reagent compartment further comprises a gas propellant.

23. The system of claim 19, wherein said connection is normally-closed and upon an emergency or accident, said connection is turned open.

24. The system of claim 23, wherein said emergency or accident condition is sensed by a sensor within said system or external to said system, and wherein said connection is turned open upon receiving a signal from said sensor.

25. The system of claim 24, wherein said signal is processed by a processor, and wherein said processor activates or controls activation of the opening of said connection.

26. The system of claim 23, wherein upon opening of said connection, said reagent is transferred spontaneously into said electrochemical cell(s) compartment(s), to said electrolyte compartment or to a combination thereof.

27. The system of claim 22, wherein said ~~storage unit~~ reagent compartment comprises said reagent and said gas propellant, such that said gas propellant facilitates ejection of said reagent from said reagent compartment ~~storage unit~~ and into said electrochemical cell(s) compartment(s), to said electrolyte compartment or to a combination thereof.

28. The system of claim 27, wherein the pressure of said gas propellant in said ~~storage unit~~ reagent compartment is higher than the gas pressure in said electrochemical cell(s) compartment(s), in said electrolyte compartment or in combination thereof.

29. The system of claim 19, wherein upon opening of said connection, said reagent is transferred using a transferring means into said electrochemical cell(s) compartment(s), to said electrolyte compartment or to a combination thereof.

30. The system of claim 29, wherein said transferring means comprising a pump~~, a syringe, or a rotating screw~~.

31. The system of claim 19, wherein said electrochemical cell(s) compartment(s), said electrolyte compartment or a combination thereof, comprises an inner layer and an outer layer, said inner layer comprises said electrolyte and said outer layer comprises said reagent compartment ~~storage unit~~ for storing said reagent.

32. The system of claim 31, wherein said reagent is mixed with said electrolyte upon a break or puncture in said electrochemical cell(s) compartment(s), in said electrolyte compartment or a combination thereof.

33. The system of claim 19, wherein said reagent forms a porous solid or semi-solid material, a gel or foam upon contact with said electrolyte, and wherein said foam is a quickly-setting foam.

34. The system of claim 19, wherein said system further comprises a container comprising a blowing agent.
35. The system of claim 34, wherein said blowing agent is transferred with said reagent into said electrochemical cell(s) compartment(s), to said electrolyte compartment or to a combination thereof, such that said blowing agent blows up said reagent or products thereof thus forming a porous material.
36. The system of claim 19, further comprising control sensors selected from the group consisting of a temperature gauge, a pressure gauge, a humidity gauge, a position gauge, an accelerometer or a combination thereof.
37. The system of claim 19, wherein said system is activated in response to signals from external controllers such as a car controller, an accelerometer, an air bag activator or a combination thereof.

~~38. The system of claim 19, wherein said electrochemical cell further comprises a cathode and an anode.~~

~~39.~~38. A method for securing an electrolyte solution in a battery upon emergency, the method comprising:

- providing a battery comprising:
  - ~~an~~ electrochemical cell(s) compartment(s) comprising an electrolyte;
  - optionally an electrolyte compartment comprising an electrolyte;
- providing a ~~storage unit~~ reagent compartment for storing a reagent;

wherein said ~~storage unit~~ reagent compartment is in contact with or is connected by a connection to said electrochemical cell(s) compartment(s), to said electrolyte compartment or to a combination thereof;

- bringing into contact said reagent from said ~~storage unit~~ reagent compartment with said electrolyte in said electrochemical cell(s) compartment(s), optionally with said electrolyte in said electrolyte compartment ~~compartment(s)~~, or with a combination thereof, thus securing said electrolyte.

~~40.~~39. The method of claim 38~~39~~, wherein said contact between said reagent and said electrolyte is achieved by opening said connection, or by opening at least a portion of the contact area between said reagent compartment ~~storage unit~~ and said electrochemical cell(s) compartment(s), said electrolyte compartment ~~compartment(s)~~ or a combination thereof ~~comprising said electrolyte~~.

40. The method of claim 1, wherein said securing said electrolyte comprises keeping the electrolyte in a safe form/environment, capture the electrolyte, arrest the electrolyte, confine it within the pores of a porous material or within a gel, consume the electrolyte into another material, break apart, divide into small portions, use of the electrolyte in the production of a solid/semi solid/gel material, lock, protect, close, fix, attach, seize from moving/flowing, make use of, detain, encapsulate, trap or grab hold of the electrolyte.

41. The method of claim 2, wherein said foam comprises a rigid or semi-rigid polymer foam and wherein said porous material comprises porous solid or semi solid material.

42. The method of claim 41, wherein said foam or said porous solid or semi solid material comprises a quickly setting foam/polymer.