We claim :

1. A method of suppressing a battery fire comprising applying an aqueous fire suppressing agent to a battery cell experiencing a thermal event that has resulted in or has a potential of resulting in a fire, the aqueous fire suppressing agent comprising a carboxylate salt.

2. The method of claim 1, wherein:

the carboxylate salt comprises a potassium or sodium salt of lactic acid, acetic acid, citric acid, glycolic acid, butyric acid, or tartaric acid;

the aqueous fire suppressing agent comprising from 30% to 80% by weight of the carboxylate salt; and

the aqueous fire suppressing agent comprising from 20% to 70% by weight water.

3. The method of claim 1, wherein the aqueous fire suppressing agent comprises an anti-hydrofluoric acid agent and/or a colorant.

4. The method of claim 3, wherein the anti-hydrofluoric acid agent comprises one or more members selected from the group consisting of citronella oil, d-limonene, dipentene, p-cumene, β-pinene, oleic acid, and vitamin E.

5. The method of claim 3, wherein aqueous fire suppressing agent comprises from 0.01% to 2% by weight of the anti-hydrofluoric acid agent, and/or from 0.01% to 1% by weight of the colorant.

6. The method of claim 3, wherein the aqueous fire suppressing agent consists essentially of water, the carboxylate salt, optionally an anti-hydrofluoric acid agent, and optionally a colorant.

7. The method of claim 1, wherein the battery cell comprises a lithium-ion battery cell.

8. The method of claim 1, wherein the thermal event is an increase in battery temperature of greater than 30°C in less than 500 seconds.

9. The method of claim 1, further comprising:

detecting a condition within the one or more battery modules associated with a battery thermal event;

initiating a flow of an aqueous fire suppressing agent into the one or more battery modules, the aqueous fire suppressing agent comprising a carboxylate salt; and

contacting at least one of the plurality of battery cells located within the module with the aqueous fire suppressing agent.

10. The method of claim 9, wherein:

the detecting step comprises detecting off gases, smoke, light, or heat resulting from the battery thermal event;

the aqueous fire suppressing agent is contained within a storage vessel, and upon detection of the smoke, light, or heat resulting from the thermal event, the aqueous fire suppressing agent is flowed from the storage vessel and into a piping network that is coupled to the one or more battery modules;

the piping network comprises one or more thermally activated agent delivery devices configured to deliver the aqueous fire suppressing agent from the piping network into the one or more battery modules; and

heat from the thermal event actuates the one or more thermally activated agent delivery devices thereby resulting in the initiation of the flow of the aqueous fire suppressing agent into the one or more battery modules.

11. The method of claim 9, wherein the contacting step comprises flooding the one or more battery modules with the aqueous fire suppressing agent, the flooding of the one or more battery modules displaces substantially all of the gas contained within the battery module.

12. A fire suppression system comprising:

a fire suppressant storage tank containing a quantity of a pressurized aqueous fire suppressing agent comprising a carboxylate salt; and

a conduit network connected with the fire suppressant storage tank and extending into one or more battery containers, the one or more battery containers comprising one or more battery modules, each of the one or more battery modules comprising a plurality of battery cells,

the conduit network being configured to deliver a flow of the aqueous fire suppressing agent to at least one of the one or more battery modules upon detection of a thermal event within the at least one of the one or more battery modules.

13. The fire suppression system of claim 12, wherein the conduit network is configured to deliver a sufficient quantity of the aqueous fire suppressing agent into the one or more battery modules to flood the one or more battery modules with the aqueous fire suppressing agent.

14. The fire suppression system of claim 12, wherein the conduit network is configured to deliver a sufficient quantity of the aqueous fire suppressing agent into the one or more battery modules to displace substantially all gas contained within the battery module.

15. The fire suppression system of claim 12, wherein:

the carboxylate salt comprises a potassium or sodium salt of lactic acid, acetic acid, citric acid, glycolic acid, butyric acid, or tartaric acid;

the aqueous fire suppressing agent comprises from 30% to 80% by weight of the carboxylate salt; and

the aqueous fire suppressing agent comprises from 20% to 70% by weight water.

16. The fire suppression system of claim 12, wherein the aqueous fire suppressing agent comprises an anti-hydrofluoric acid agent and/or a colorant.

17. The fire suppression system of claim 16, wherein the anti-hydrofluoric acid agent comprises one or more members selected from the group consisting of citronella oil or one or more components thereof, d-limonene, dipentene, p-cumene, β-pinene, oleic acid, and vitamin E.

18. The fire suppression system of claim 16, wherein aqueous fire suppressing agent comprises from 0.01% to 2% by weight of the anti-hydrofluoric acid agent, and/or from 0.01% to 1% by weight of the colorant.

19. The fire suppression system of claim 12, wherein the aqueous fire suppressing agent consists essentially of water, the carboxylate salt, optionally an anti-hydrofluoric acid agent, and optionally a colorant.

20. An aqueous fire suppressing agent comprising a carboxylate salt dispersed in water, the aqueous fire suppressing agent comprising less than 0.01% by weight of a fluorosurfactant and/or a foaming agent.

21. The aqueous fire suppressing agent of claim 20, wherein:

the carboxylate salt comprises a potassium or sodium salt of lactic acid, acetic acid, citric acid, glycolic acid, butyric acid, or tartaric acid;

the aqueous fire suppressing agent comprises from 30% to 80% by weight of the carboxylate salt;

the aqueous fire suppressing agent comprises from 20% to 70% by weight water; and

the aqueous fire suppressing agent is essentially free of surfactants.

22. The aqueous fire suppressing agent of claim 20, wherein the aqueous fire suppressing agent comprises an anti-hydrofluoric acid agent and/or a colorant.

23. The aqueous fire suppressing agent of claim 22, wherein the anti-hydrofluoric acid agent comprises one or more members selected from the group consisting of citronella oil or one or more components thereof, d-limonene, dipentene, p-cumene, β-pinene, oleic acid, and vitamin E.

24. The aqueous fire suppressing agent of claim 22, wherein the aqueous fire suppressing agent comprises from 0.01% to 2% by weight of the anti-hydrofluoric acid agent, and/or from 0.01% to 1% by weight of the colorant.

25. The aqueous fire suppressing agent of claim 20, consisting essentially of, water, a carboxylate salt, optionally an anti-hydrofluoric acid agent, and optionally a colorant.