WHAT IS CLAIMED IS:

1. A method of obtaining a metal salt from a spent lithium-ion (Li-ion) battery, the method comprising:

separating an electrode portion from a crushed Li-ion battery;

contacting a leaching solvent to the separated electrode portion to form an electrode dispersion;

heating the first dispersion to a temperature in a range from 50 ^{o}C to 90 ^{o}C by applying microwave radiation;

maintaining the temperature of the first dispersion in the range from 50 ^{o}C to 90 ^{o}C for a period in a range from 10 seconds to 5 minutes by further applying microwave radiation to the heated first dispersion;

filtering the electrode dispersion to obtain the metal.

2. The method of claim 1, wherein the metal comprises one or iron, aluminum, and copper.

3. The method of any of claims 1-2, wherein the leaching solvent comprises sulfuric acid.

4. The method of claim 3, wherein the leaching solvent further comprises an oxidizing agent.

5. The method of claim 4, wherein the oxidizing agent is hydrogen peroxide.

6. The method of any of claims 1-5, wherein the leaching solvent has a pH in a range from 0 to 7.0.

7. The method of any of claims 1-6, wherein heating the electrode dispersion further comprises stirring the electrode dispersion while applying the microwave radiation.

8. The method of any of claims 1-7, wherein maintaining the temperature of the electrode dispersion comprises controlling application of the microwave radiation using a controller.

9. The method of any of claims 1-8, wherein heating the electrode dispersion comprises heating the electrode dispersion to a temperature in a range from 60 ^{o}C to 80 ^{o}C.

10. The method of any of claims 1-9, wherein maintaining the temperature comprises maintaining the temperature of the electrode dispersion in a range from 60 ^{o}C to 80 ^{o}C, for a period in a range from 30 seconds to 5 minutes.

11. The method of any of claims 1-10, wherein the electrode portion comprises the electrode metal, and a black mass comprising graphite and metal oxides.

12. The method of claim 11, wherein filtering the electrode dispersion comprises filtering the electrode dispersion through a sieve to obtain a graphite powder.

13. The method of any of claims 1-12, wherein heating the electrode dispersion further comprises continuously stirring the electrode dispersion while applying the microwave radiation.

14. The method of any of claims 1-13, wherein maintaining the temperature of the electrode dispersion further comprises continuously stirring the electrode dispersion while applying the microwave radiation.