Claims:

1. A process for recovering cobalt from lithium-ion batteries (LIBs), the process comprising:

(a) heating: (i) cathodes obtained from the LIBs, the cathodes comprising a first metal foil and a cobalt-containing compound, and (ii) anodes obtained from the LIBs, the anodes comprising a second metal foil and carbon, so as to provide first and second metal foils, a thermal cathode product comprising the cobalt-containing compound, and a thermal anode product comprising the carbon; and

(b) heating a mixture of the thermal cathode product and the thermal anode product for a period of time sufficient to produce the cobalt,

wherein in step (a) the heating is performed at a temperature between 500°C and 650°C, and

wherein in step (b) the mixture is heated at a temperature between 1000°C and 1450°C.

2. The process of claim 1, wherein the LIBs are waste or spent LIBs.

3. The process of claim 1 or claim 2, wherein the carbon is graphite.

4. The process of any one of claims 1 to 3, wherein step (a) is performed in an inert atmosphere.

5. The process of any one of claims 1 to 4, wherein in step (a) the heating is performed for a period of time between 2 minutes and 2 hours, or for a period of time between 5 minutes and 90 minutes, or for a period of time between 5 minutes and 30 minutes, or for a period of time between 20 minutes and 30 minutes, or for 20 minutes.

6. The process of any one of claims 1 to 5, wherein in step (b) the heating is performed for a period of time between 2 minutes and 2 hours, or for a period of time between 5 minutes and 90 minutes, or for a period of time between 10 minutes and 30 minutes, or for 20 minutes, or for 30 minutes.

7. The process of any one of claims 1 to 6, wherein step (b) is performed in an inert atmosphere.

8. The process of any one of claims 1 to 7, wherein the cobalt-containing compound is, or comprises, $LiCoO_2$.

9. The process of any one of claims 1 to 8, wherein the thermal cathode product and the thermal anode product are present in the mixture in the following ratios (w/w): between 1:1 and 8:1, or 5:1.

10. The process of any one of claims 1 to 9, further comprising capturing gas produced from the heating in step (a).

11. The process of any one of claims 1 to 10, further comprising separating the thermal cathode product from the first metal foil and separating the thermal anode product from the second metal foil, and recovering the first and second metal foils.

12. The process of claim 11, wherein the first metal foil and/or the second metal foil recovered have a purity of at least 95%.

13. The process of claim 11 or claim 12, wherein the first metal foil and/or the second metal foil recovered are free, or substantially free, of cathode active materials and/or metal oxides.

14. The process of any one of claims 1 to 13, wherein the first metal foil is aluminium foil and/or the second metal foil is copper foil.

15. The process of any one of claims 1 to 14, wherein the cobalt is recovered in a purity of at least 95%.

16. The process of any one of claims 1 to 15, wherein in step (a) the cathodes and anodes are heated separately from one another.

17. The process of any one of claims 1 to 16, wherein the process does not involve subjecting the cathodes or anodes to solvents.

18. The process of claim 17, wherein the solvents are aqueous solutions, acidic solutions or basic solutions.