Technology Offer CSIC/MC/106

Recovery very high purity of Li, Ni and Co from the black mass of batteries



Obtaining valuable metals through a carbon-chemical process from discarded lithium-ion batteries. The metals are obtained with very high yields and purity and can be reused.

Market need

Lithium-ion batteries contain a high percentage of valuable and hazardous heavy metals, making their recovery key to preserving natural resources and the environment

Proposed solution

A procedure has been developed using carbothermic reduction and magnetic separation of the black mass from these batteries, yielding nickel, cobalt, and lithium. This black mass is obtained by separating the anode and cathode mixture from the batteries.

It is also possible to recover the graphite contained in the battery cathode.

Intellectual Property

European patent filed

Stage of development

Development at the laboratory / pilot plant level

discontinuous

Intended Collaboration

Licensing and/or co-development

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Competitive advantages

- Nickel, cobalt, and lithium are obtained with a yield of 98%, 92%, and 99%, respectively.
- The metals are obtained with a purity greater than 98%.
- These metals can be reused in other industrial processes, including battery manufacturing.