

Lithium from spent electric car batteries: Public funding for research consortium

June 14, 2023

- Evonik is involved in a project funded by the Federal Ministry for Economic Affairs and Climate Action
- Objective is an economically viable method of recovering lithium
- The total budget for the EarLi project exceeds €5 million

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Essen. Evonik is involved in a research project to recover high-purity lithium from recycled batteries from electric vehicles (EV). Led by ACCUREC Recycling GmbH, various partners from science and industry are working on the EarLi project so that lithium from batteries can be returned to the supply chain. EarLi stands for extraction and purification of lithium hydroxide monohydrate from spent lithium-ion EV batteries for reuse in the production of battery cells. The total project volume is over €5 million and is funded by the project partners and the Federal Ministry for Economic Affairs and Climate Action (BMWK). The research project is scheduled to run for three years.

While metals such as nickel and cobalt can already be recovered from batteries in high yields, this is not yet possible for lithium because the process is technically more demanding. “Researchers around the world are looking for economically viable methods of recovering this valuable raw material for batteries in high quality,” explains Dr. Ralph Marquardt, chief innovation officer at Evonik. “Evonik wants to play its part in finding a solution that drives forward e-mobility with the lowest possible environmental impact.”

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To this end, an innovative process chain is to be set up on an industrial-type scale to convert the lithium from the black mass—a mixture of different active battery materials—into soluble compounds using a special thermochemical process and subsequently extract the lithium. The lithium will then be separated in an electrochemical process using a highly selective ceramic membrane and isolated as battery-grade lithium hydroxide monohydrate. The innovative membrane process should enable cost- and energy-efficient isolation of high-purity lithium hydroxide and thus close the lithium loop in the battery market. Evonik has been working for some years on the development of selective ceramic ion conductors for lithium ions and their application as separation membranes in an electrochemical process.

ACCUREC Recycling GmbH specializes in the recovery of raw materials from lithium-ion batteries. “With the EarLi project and especially with Evonik as our partner, we want to significantly shorten the process chain in the lithium cycle to ensure the circularity of battery applications,” says Dr. Reiner Sojka, managing director of ACCUREC. Alongside Evonik, the other partners in the consortium are the Oeko-Institut in Darmstadt and the IME Process Metallurgy and Recycling Institute at RWTH Aachen. The consortium has also received a boost from the EU: Under EU legislation, the recovery of lithium and the use of recycled raw materials will be mandatory from 2027.

To support research into the manufacture of battery cells, the Federal Ministry for Economic Affairs and Climate Action has approved over €150 million for around 200 sub-projects at almost 40 research consortia. EarLi is one of these sub-projects. Funding reference: 6BZF305.

You will find photos to this press release here:
<https://evonik.canto.global/b/MRN5K>

Company information

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