Press release

Würzburg, January 24, 2023

Reducing batteries' environmental footprint – RecyLIB project aims to save resources and energy

Electromobility continues to gain momentum. Accelerated by high fuel prices, more and more buyers are switching to hybrid or pure electric vehicles, as shown by the latest statistics of new registrations. As the number of traction batteries increases, the question of environmentally friendly manufacturing and recycling processes is also becoming louder. One key aspect is the function-preserving recycling of lithium-ion batteries. The "RecyLIB" project launched in 2022 - funded via ERA-MIN by the European Union and national funding organizations - aims to set an example with new processes for battery electrode production, direct recycling and integrated functional material cycles.

To save primary raw materials and enable a circular economy, functional materials must be recovered and efficiently reused as much as possible. "RecyLIB" aims at an integrated lithium-ion battery electrode manufacturing process, where the production process is already designed to allow the use of recycled material. This allows the active functional material to be recovered after the battery's end-of-life with high yield becoming available for direct reuse in the remanufacturing of electrodes.

The recycled electrode material should be able to be reintroduced directly into the electrode manufacturing process without affecting cell performance. Moreover, critical process aids, such as toxic solvents, are to be eliminated. "The RecyLIB team wants to take a big step toward sustainable battery production in Europe," said Dr. Michael Hofmann of the Fraunhofer Institute for Silicate Research, who is coordinating the project. "Battery production and battery recycling must go hand in hand so that energy and resource consumption in production and also CO_2 emissions and other environmental impacts are as low as possible."

To achieve this, the RecyLIB consortium is relying on water-based separation (electrohydraulic fragmentation and centrifugation) and sorting processes to recover the battery materials as gently as possible, as well as on a melting process-based electrode manufacturing which allows the waiver of toxic solvents. The performance and aging behavior of battery cells made from primary raw materials and recycled functional material are also being investigated and evaluated as part of the project. RecyLIB, with its integrative approach and consistent focus on resource-conservation and energy-efficient processes, is therefore an important building block for a sustainable, circular battery ecosystem in Europe.

ERA-MIN has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 101003575 (ERA-MIN3)

Contact:
Dr. Michael Hofmann, project co-ordinator, michael.hofmann@isc.fraunhofer.de
Marie-Luise Righi, project dissemination officer, marie-luise.righi@isc.fraunhofer.de
Project website: https://recylib.eu

The Project at a Glance

RecyLIB – Direct Recycling of Lithium-Ion Batteries

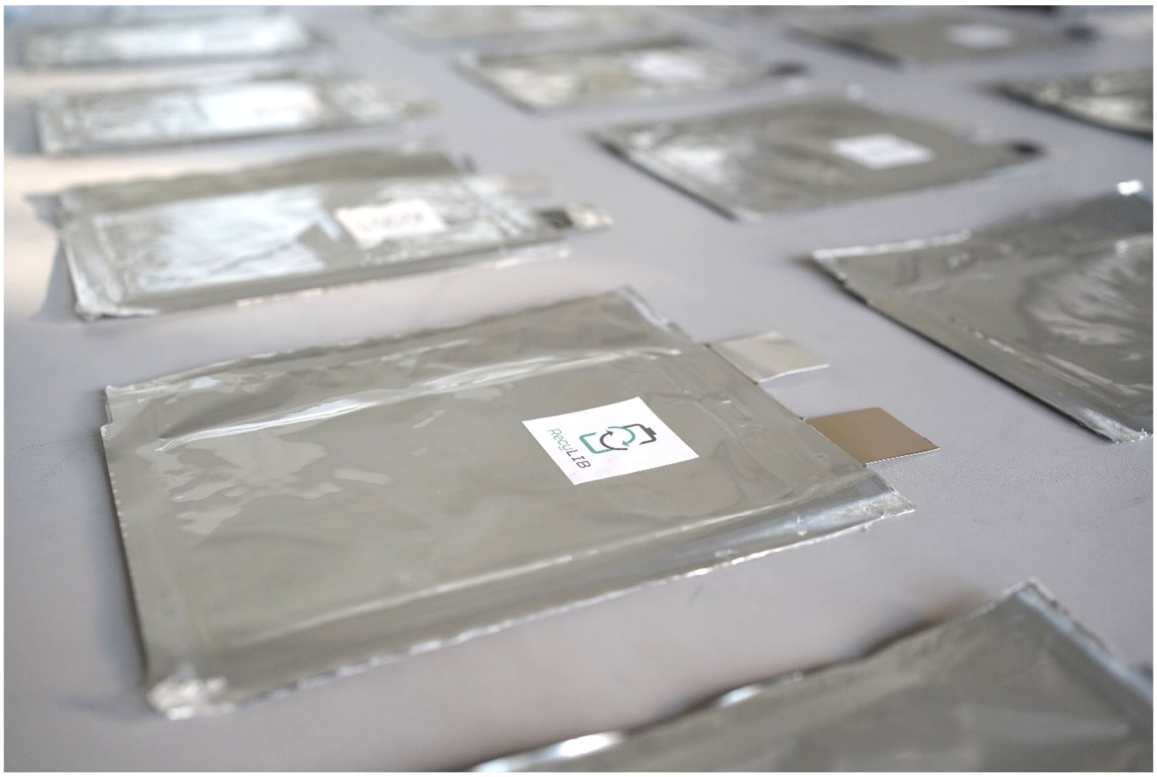
Funding Institutions

Bundesministerium für Bildung und Forschung, Germany
FWO, Fonds Wetenschappelijk Onderzoek, Belgium
ADEME, Agence de la transition écologique, France

Partners

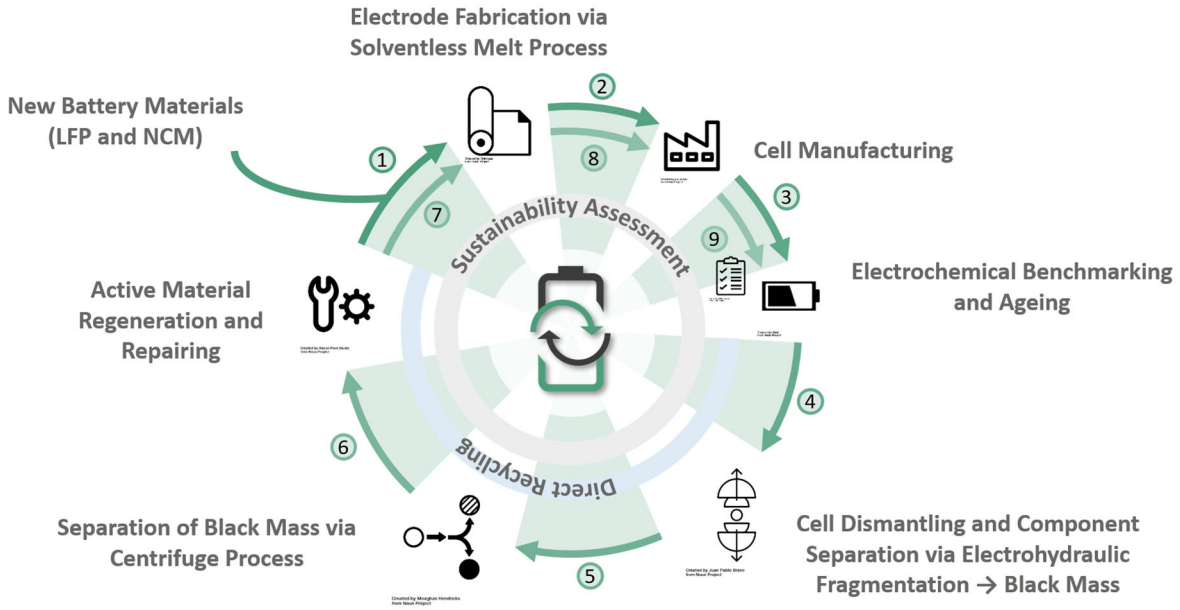
Fraunhofer Institute for Silicate Research ISC (Coordinator, Germany)
HUTCHINSON SA, France
Ghent University, Belgium
ImpulsTec GmbH, Germany
Bavarian Research Alliance GmbH, Germany
Carl Padberg Zentrifugenbau GmbH, Germany

Footage:



RecyLIB battery cells – alternative processing for direct reuse of recycled battery materials © Fraunhofer ISC

Contact:
Dr. Michael Hofmann, project co-ordinator, michael.hofmann@isc.fraunhofer.de
Marie-Luise Righi, project dissemination officer, marie-luise.righi@isc.fraunhofer.de
Project website: https://recylib.eu



RecyLIB – how to make battery production more sustainable © Fraunhofer ISC

Contact:
Dr. Michael Hofmann, project co-ordinator, michael.hofmann@isc.fraunhofer.de
Marie-Luise Righi, project dissemination officer, marie-luise.righi@isc.fraunhofer.de
Project website: https://recylib.eu