

## EUROPEAN COMMISSION

HORIZON 2020 PROGRAMME - TOPIC H2020-LC-BAT-2020  
Sodium-Ion and sodium Metal BAtteries for efficient and sustainable  
next-generation energy storage

GRANT AGREEMENT No. 963542



SIMBA – Deliverable Report

D6.4 – Demonstrate the reclamation of the anode and  
cathode from a solid-state cell, and the re-use in a  
battery

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## Publishable summary

Sodium-ion batteries (SIBs) as alternatives to lithium-ion batteries (LIBs) have grown much attention in past ten years. The SIMBA project has developed a 1 Ah baseline cell (BLC) and 0.1 Ah solid-state batteries (SSB) which has been shown in D4.1 and D4.7. To achieve ecological sustainability, it is crucial to recycle spent SIBs. However, since sodium-ion batteries have only recently been commercialized, there has been limited research for direct recovery of cathode and anode active materials from SIBs.

This document is associated with T6.2 reclamation and reuse, focusing on the short loop recycling and direct recycling of active materials. A high efficiency, zero-waste and sustainable delamination method for electrodes is demonstrated. The reclaimed hard carbon (HC) from scrap coating and end-of-life (EOL) SSB is calcinated with  $N_2$  flow protection and exhibits comparable electrochemistry performance with pristine HC. Besides, the reclaimed Prussian white (PW) is successfully resodiated. Thus, this report demonstrates a full process to reclaim and reuse active materials from SSB.

## 10 Appendix B- Acknowledgement

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Project partners:

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2	UU	UPPSALA UNIVERSITET
3	UBham	THE UNIVERSITY OF BIRMINGHAM
4	WMG	THE UNIVERSITY OF WARWICK
5	KIT	KARLSRUHER INSTITUT FUER TECHNOLOGIE
6	CEA	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES
7	IFE	INSTITUTT FOR ENERGITEKNIKK
8	SAS	USTAV ANORGANICKEJ CHEMIE SLOVENSKA AKADEMIA VIED (Institute of Inorganic Chemistry, Slovak Academy of Sciences)
9	FHG	FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V.
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## Appendix D – Disclaimer/Acknowledgement



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