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next-generation energy storage

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SIMBA – Deliverable Report

D4.5 Demonstrate a sensor enabled 1Ah pouch cell
containing a liquid electrolyte.

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Publishable summary

This document, corresponding to Deliverable 4.5 (D4.5), is associated with Task 4.7 (T4.7) of Work Package 4 (WP4), i.e., “Incorporation of sensors into developed pouch cells”.

The activities carried out within T4.7 focus on the development of sensors to monitor real-time parameters affecting performance of cells developed in WP4 by WMG.

The activities build on the work carried out in T4.1, T4.4 and T4.5 which enabled the manufacturing of 1Ah sodium-ion pouch cells containing optimized materials developed within the consortium.

The work described in this document highlights the progress on the development of sensors that can track and record temperatures inside and outside the cell. The suitable configuration, layout, and structure of thermistors were investigated, and the related electronics were designed and fabricated.

One of the main targets of this work was to successfully demonstrate the incorporation of the developed sensors into 1Ah pouch cell containing a liquid electrolyte without sacrificing the performance of the cells. In order to achieve the target, protective coatings on sensor have been developed and their interaction with the electrolyte has been identified, measured, and verified, allowing for the identification of the coating able to offer protection against the electrolytic harsh environment and avoid contaminating electrolyte as well as the cell. The developed sensors have been embedded into 1Ah pouch cells tested under different discharge regimes, highlighting changes in the internal temperature of the cells as a function of the discharge rate.

7 Appendix A- Acknowledgement

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Project partners:

#	Partner	Partner Full Name
1	TUDa	TECHNISCHE UNIVERSITAT DARMSTADT
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.
10	JM	JOHNSON MATTHEY PLC
11	Elkem	ELKEM AS
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Appendix D – Disclaimer/Acknowledgement



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