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Strongly improved, highly performant and safe all solid-state batteries for
electric vehicles.

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SAFELiMOVE – Deliverable Report

D4.2 – High throughput testing on micro full cells for
materials and deposition screening and optimization

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Publishable summary

High throughput test (HTT) cell design is the approach to simultaneously screen cathode active materials and binders as well as combinations of electrodes and electrolyte membranes. In this method, arrays of 8 to 32 cells are fabricated on a planar substrate and electrically connected to a battery cycling station or multi-channel potentiostat. Substrate materials can be glass or ceramic. It has the flexibility to use various metallic substrates (like aluminum, nickel, copper or gold) as a current collector. The temperature control unit is integrated in the down plate where to heat up the overall cell to a maximal temperature of 80 °C. This method is beneficial to speed up the process of battery materials research and gain insightful results.

For this investigation, an 8 cells substrate was coated with various electrode compositions of NMC811 through automated ink dispensers. On the top, a thin film of solid-state electrolyte membrane was applied, and thin lithium metal foil served as anode. A pre-defined testing protocol was used for the screening of NMC811 materials. HTT screening experiments were conducted at 60 °C, where materials selection and most relevant electrochemical measurement were conducted as defined within the framework of SAFELiMOVE project. After careful analysis of data, the optimized results of the material, binder, and catholyte screening were forwarded to the respective work package where after further adaption, the results can be used for the fabrication of pouch cells.

Appendix B- Acknowledgement

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Project partners:

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