

Deliverable D3.1

Report on Reference Cell Definition and Round Robin Test

Public Summary

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Public Summary

Electromobility is one of the major concerns included in the EU community research programme and in this sense, European Commission proposed a 30% reduction in CO₂ emission of vehicles by 2030 compared to 2021 levels, thus intensifying the fight against global warming. After the discovery of lithium-ion batteries (LiBs) in 1990s, different generations of LiB were developed to improve the safety, cycle life and energy density. In fact, the recent development of solid-state battery (SSBs) technology, which is currently a hotspot topic, could improve the energy density and safety of lithium metal materials. Nevertheless, the manufacturing of SSBs is still under research & development phase and to make SSBs to meet the needs of electric vehicle market, a standard process should be developed.

In this regard, PULSELiON project aims to develop the manufacturing process of Generation 4b SSBs based on lithium-metal anode, sulfide solid electrolyte and Ni-rich NMC cathode. A novel pulsed laser deposition (PLD) technique will be adapted and modified into a single step vacuum process for safe and efficient manufacturing of battery components. But before going deeper in this field, it is necessary to define a reference cell as baseline of the project as well as perform an interlaboratory Round Robin Test (RRT) among the different partners.

The deliverable D3.1 is the outcome of Task 3.1 within the work-package 3. In this task, the main purpose was to agree a protocol for safe handling of sulfide-based materials and waste treatment as well as establish a reference cell as a baseline for the project and standardize electrochemical characterization protocol among the partners for the RRT. The RRT proved that all interlaboratory results obtained were well aligned with each other and therefore, the electrochemical performance of the reference cell was fixed which it is going to use as the baseline of SSBs cells developed throughout the PULSELiON project.