SOLiD4B

Going solid for safer batteries

Collaborative Pathways to Solid-State Battery Breakthroughs

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Why Solid-State Battery?

Designed for higher **energy density**

Solid electrolytes allow the use of lithium metal anodes, which can achieve up to 2–3 times the energy density of conventional lithium-ion batteries.

Potential for **long-range** applications

This roughly translates to a longer range for EVs (with some studies claiming up to 1000 km) and more compact designs for electronics.

Improving safety from the electrolyte perspective

Solid electrolytes are non-flammable, eliminating risks of leakage and thermal runaway that are common in liquid electrolyte systems.

Potential for **fast charging** goal

Solid-state designs can support higher current densities, enabling faster charging without compromising safety.

Introduction

The **Solid4B Cluster** aims to enhance research collaboration among the European-level projects working on solid-state batteries (Lithium-based and beyond), translating research results into valuable knowledge for diverse stakeholders. The Solid4B Cluster was built to synchronise and conjointly promote the R&D topics in the battery use in electric vehicles, energy storage systems, marine, aviation, extreme applications, and many other related to battery and electrochemistry scopes.

The SPINMATE project initiated the Solid4B Cluster in October 2022, and currently, it consists of 12 projects across H2020 and HEU projects:

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Solid4B Cluster Timeline

2022 – Initiation of the Solid4B Cluster: **SPINMATE**, **ADVAGEN**, **AM4BAT**, **HIDDEN**, **PULSELiON**, **SEATBELT**, and **SOLiD** projects are the first members.

2023 – **PSIONIC** joins Solid4B Cluster.

1. The 1st Webinar hosted by SPINMATE project
2. The 1st Hybrid Workshop hosted by the SPINMATE project in Liége, Belgium.

2024 – **SOLVE** project joins Solid4B Cluster.

1. We have 9 projects in total.
2. The 2nd Hybrid Workshop hosted by the SPINMATE project in Ninove, Belgium.
3. Kick off the regular meeting for the project members' representative.
4. The 2nd Webinar hosted by the PSIONIC project.

2025 – Solid4B Cluster is expanding the scope to Li-metal, Na-, Li-S, and beyond.

1. **SPRINT**, **STELLAR**, and **ANGeLiC** projects join Solid4B Cluster.
2. Internal workshop for project members' representatives about Standardisations and EU Booster (conducted during regular meeting).
3. The 3rd Hybrid Workshop hosted by PULSELiON in Brussels, Belgium.
4. Initiating a collaboration booth in the Battery Innovation Days 2025, on December 2nd-3rd in Graz, Austria.

2026 – Planned to have another event hosted by the SOLiD project, either offline in Neuchâtel, Switzerland, or hybrid.

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Solid4B Cluster Partners…

Designed for projects that work on one of the solid-state/quasi-solid-state electrolytes, in any cathode/anode system.

It could be:

- **Polymer**-based SSE
- **Oxide**-based SSE
- **Sulfide**-based SSE
- **Halide**-based SSE
- **Hybrid** (polymer and one of the inorganic compounds)-based SSE
- Low liquid content (**quasi-solid state**) in the electrolyte

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Current Cluster Partners

- SPINMATE (the Cluster initiator)
- ADVAGEN
- AM4BAT
- HIDDEN (ended last year)
- PULSELiON
- SEATBELT
- SOLiD
- PSIONIC
- SOLVE
- SPRINT
- STELLAR
- ANGeLiC

Because the Solid4B Cluster is expanding, every collaboration request will go through the following phases: (1) send an e-mail request; (2) presentation; (3) voting from current partners; (4) announcement.

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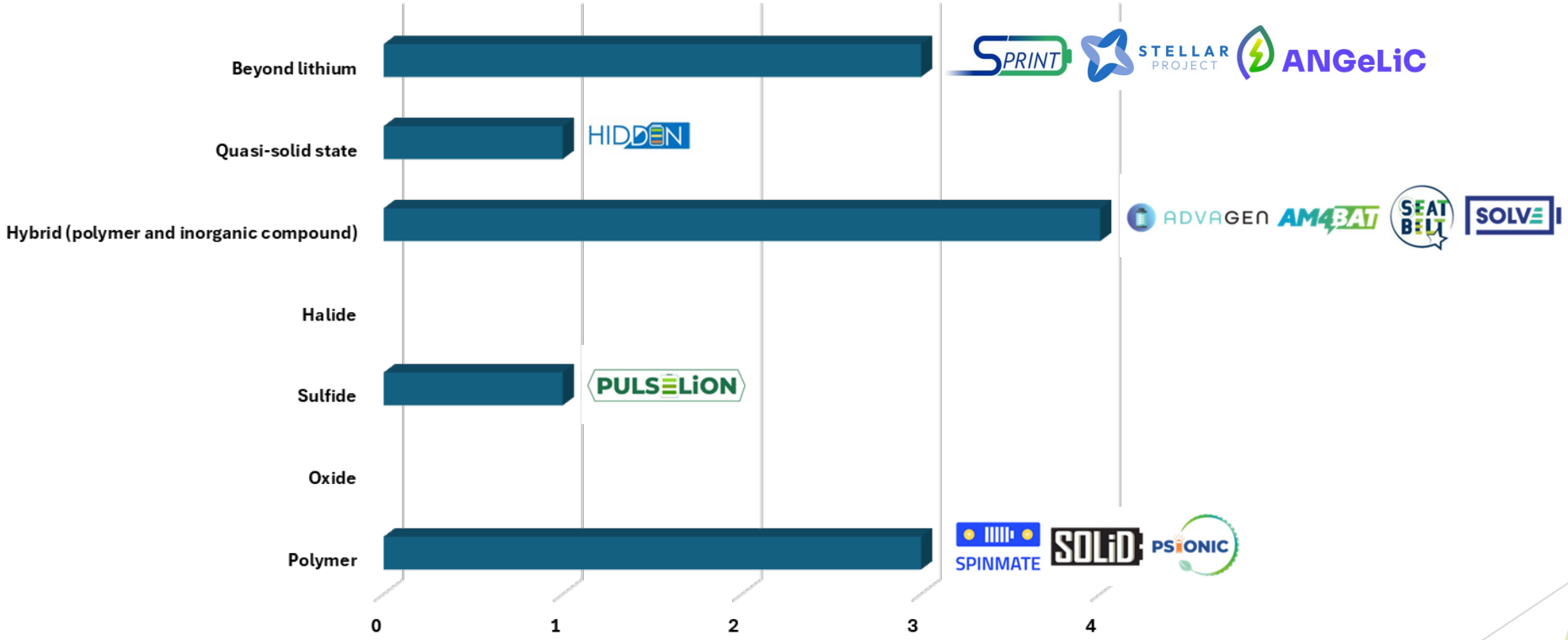
Electrolyte Technology in the Solid4B Cluster



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Possible Technical Collaborations

Knowledge sharing through internal and public events helps to understand the bottlenecks of each project, which can be potentially addressed with an outside perspective.

Involving the Solid4B Cluster partners as an **External Advisory Board Member** of a project to help monitor and evaluate the particular project on a periodic basis.

Cross-collaboration in scientific article writing and sharing the authorship for interesting and similar topics from different projects.

The Solid4B Cluster enables **talent fostering** across Europe. It also supports **technical scope scouting** by aligning research priorities within clusters, revealing emerging technologies and collaboration opportunities that guide **future collaboration** and strategic investment.

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Summary

1. The **Solid4B Cluster** has not only collaborated with the sister-projects (that sometimes are determined by the EC/CINEA in the project call scope), but also other similar concerned projects, especially that is working with the next-gen battery (Li-metal and beyond, e.g. Li-S, Na-ion, etc.) and solid-state system, whether it is a hybrid or an all-solid-state system.
2. The Cluster partners have a chance to conduct the event together under the **Solid4B Cluster** umbrella.
3. The **Solid4B Cluster** is possible to join conferences and exhibitions with the sharing sponsorship fee, which is encouraged by the EC/CINEA to optimise the budget spending for the project C&D activities.
4. Expanding the communication and dissemination (C&D) impact of the projects to the wider audiences based on the **Solid4B Cluster** networks.

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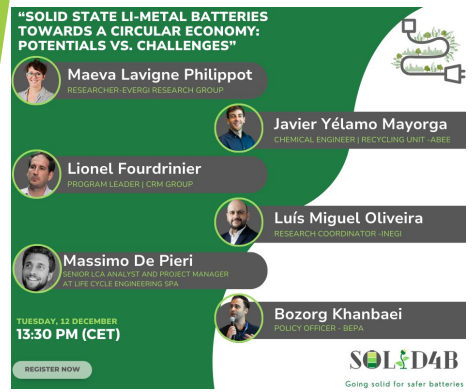
Previous Events



- Hybrid Events (Brussels 2023 & Ninove 2024) hosted by AVESTA
- Online workshop (2023) hosted by AVESTA and INOVA (SPINMATE project)

Solid4B and SPINMATE Project in Battery Innovations Day 2024 and BEPA Brokerage Event, Barcelona, November 2024.

Solid4B Cluster in RTR Conference 2025 Brussels, February 2025.

Webinar (2025) hosted by PSIONIC

Hybrid Events (Brussels, September 2025 hosted by PNO and TechConcepts (PULSELiON and ADVAGEN projects)

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