

Meet the SPINMATE Partners!

MEET: **cidetec** >
energy storage



Introducing Fundación CIDETEC: CID is a private research center founded in 1997 with overall workforce of 215 employees. The CID Energy Storage institute involves up to 82 researchers and is specialized in creating new battery technologies (including Lithium metal solid-state batteries, SSBs) according to specific challenges, and its ultimate transference to the industry. The institute has the capacity to develop both products and processes throughout the battery value chain, offering material validation, pilot manufacturing, pack engineering and battery testing services.

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Hello Oihane García! Thank you for this opportunity to meet you and talk about SPINMATE. To kick-off, could you give us, in your own words, a short introduction to CIDETEC, and your role there?

CID Energy Storage is a R&D organization with a strong focus in advance battery technologies, designing, developing, and testing the batteries of the future.

Oihane has been working at CID Energy Storage since July 2016, where she is a senior researcher in the Solid-State Battery Team within the Materials for Energy Unit, taking care of a wide range of projects from a technical and managerial point of view, including SPINMATE.

To someone reading this who is still not familiar with SPINMATE, how would you describe it in simple terms, and how do you distinguish it from other projects or initiatives?

SPINMATE is a European project focused on the manufacture and industrialization of solid-state batteries for automotive applications. Compared with other projects or initiatives, SPINMATE will provide advanced component materials, sustainable and cost-effective technological manufacturing processes.

CIDETEC will take a key role on the development and optimisation of cell components by optimising and developing positive electrodes in SPINMATE. Can you tell us about the catholyte preparation process for its upscaling? Which performance tests will be running during the manufacturing stage?

The catholyte is a key component in solid-state cathodes. In our case, it is formed by a mix of PVdF-HFP, a Lithium salt and plasticizers, which must be chemically compatible with the cathode active material within the cathode formulation. Once this is optimized at lab-scale, materials and preparation process must be developed and adapted to pilot plant level. During the manufacturing stage, electrochemical characterization tests, e.g. cyclability and C-rate tests, will be performed in order to select the most promising cathode formulation.

CIDETEC will contribute to maximize electrochemical performances and ensure reproducibility on cell manufacturing at the digital-driven pilot line. Can you give us more details on the parameters to be measured during this activity in SPINMATE

To ensure reproducibility on cell manufacturing, several key parameters will be measured such as cathode thickness, loading and catholyte ratio. During the coating deposition, we also need to monitor and optimize the application speed, target wet film thickness, solvent drying rate (temperature and time); as well as its post-processing treatment, such as calendaring, which include different pressure and temperature rates.

CIDETEC will highly contribute to ensure SSB cells' performance, durability, and safety and to meet the requirements and standards of the EV industry. On project's fourth and last year, ageing tests on cells will be conducted. Which conditions will be considered on cell testing and validation in SPINMATE to make it relevant and suitable for the EV market?

The project is currently on its first year, so a lot of exciting work is ahead of us. We have already done an initial assessment to establish key requirements of the EV industry – Very interesting discussions with our partner TOYOTA.

In summary, and to meet these requirements and standards, ageing tests will be run for around 100 cycles and C-rate capability tests will be performed at different temperatures and pressures. Reference performance test with low current density and special tests will be implemented to evaluate capacity loss. Also, smart sensors embedded on small cells (optical fibers and/or strain gauges) will be used to measure temperature/strain during cycling in the most severe conditions. Finally, an external sensor will be used on a large cell to validate the behaviour in large formats.

What are you personally most enthusiastic about achieving during SPINMATE?

A lot of challenges still need to be overcome in the field of solid-state batteries to be fully implemented in the industry. In this sense, the advances of **SPINMATE** will contribute to the development of a sustainable and competitive large-scale production of SSBs, which will turn into achieving a mass electrification of the automotive sector in the near future.

CIDETEC is specialized in creating new battery technologies, including lithium metal solid state batteries. How your role on the development and optimisation of the cathode electrodes in SPINMATE will strengthen your position?

Our role in **SPINMATE** represents a unique opportunity to fill the gap between academia and industry on solutions devoted to the manufacture of cathodes for next generation batteries guided by the market needs. The technologies developed in **SPINMATE** will be key assets for our team and will strongly contribute to our technology portfolio and manufacturing know-how, especially on lithium metal solid-state cells.

Certainly, there will be readers interested to meet you and discuss your experience in SPINMATE. Which events will be possible to meet CIDETEC in the upcoming months (name of the event, date, location)?

CID is very committed to disseminate our achievements. We will attend the following events:

- The Battery Show Europe (May 23-25, 2023 | Stuttgart, Germany)
- AABC Europe 2023 (June 19-22, 2023 | Mainz, Germany)
- 244th ECS Meeting (October 8-12, 2023 | Gothenburg, Sweden)
- Battery Innovation Days 2023 (Nov 14-15, 2023 | Bordeaux, France)



Dr Oihane García

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INOVA+ – responsible for implementing the communication and dissemination activities in SPINMATE – conducted a series of interviews to the SPINMATE partners. If you would like to know more about the project partners, visit our online channels.

SPINMATE Website: www.spinmate.eu

SPINMATE Social media channels:



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