



PEPR Batteries



BATTERIES TOMORROW

Editorial

Dear readers,

Four years after its launch, the programme is now delivering results. This issue opens with the first PhD defended within PEPR Batteries: Zacharie Waysenson (BATMAN project, Sorbonne Université), on 11 September. More will follow, including Anna-Maria Habak's on 16 November.

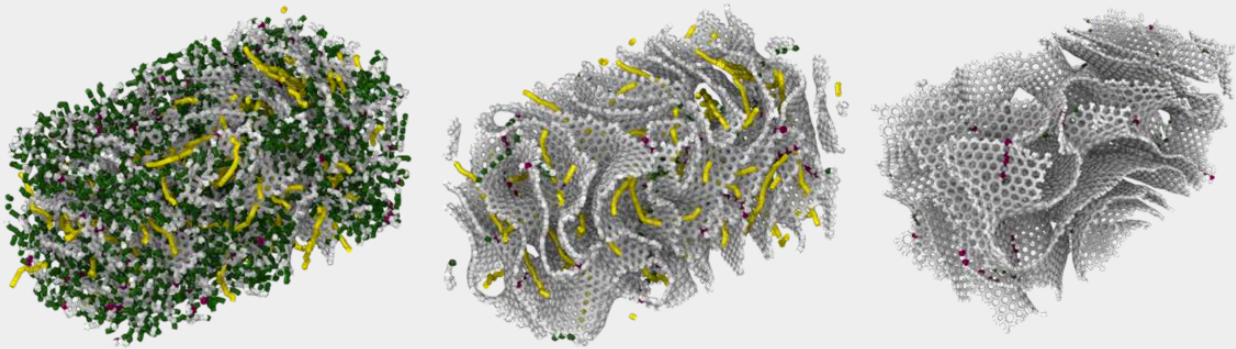
The summer was devoted to training and exchange. Our first summer school, BAT360°, brought the programme's PhD students and postdocs together in La Grande Motte in June, and in Nantes a round table with the Japanese GteX programme continued the dialogue with our international partners.

Finally, save the date: PEPR Batteries Day will take place on 13–14 January 2027 in Paris, where we will present the main results of these four years.

Enjoy your reading !

Hélène Burlet and Patrice Simon

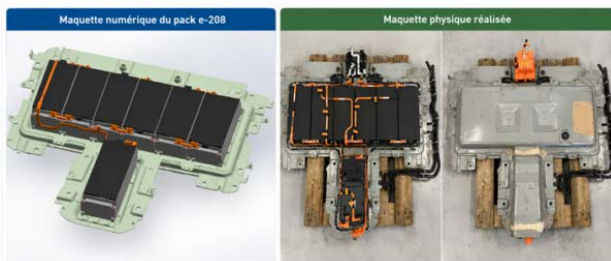
Scientific highlights



The first PhD of PEPR Batteries

On 11 September 2026, Zacharie Waysenson (BATMAN project, Sorbonne Université) defended the first PhD thesis of PEPR Batteries. His work shows how machine-learning potentials overcome the long-standing approximations of molecular simulation. It also opens concrete avenues for designing high-performance nanostructured carbons for electrochemical energy storage.

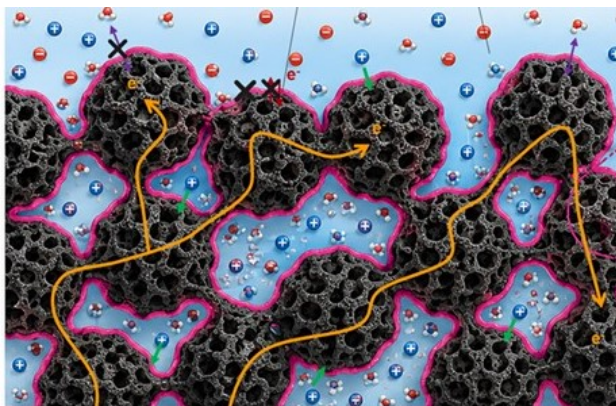
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SCAR: From Battery Disassembly Analysis to Mock-Up Development for Robotic Automation

The SCAR project (Safe and Circular Automated Recycling) aims to make the dismantling of end-of-life electric-vehicle batteries safer and to handle the volumes expected by 2030–2035. Automating this operation still faces several technical hurdles: the diversity of manual operations, the variable condition of the batteries, and the difficulty of reproducing manual tasks with robotic systems. To characterise these challenges and prepare suitable solutions, the consortium built a digital model and a physical mock-up of a battery pack.

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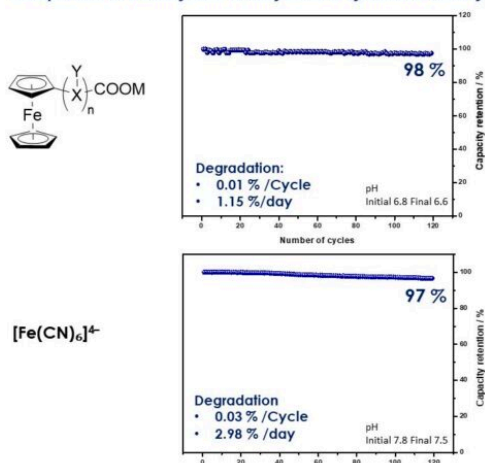


Electrochemical Functionalization of Porous Carbon Materials for Aqueous Supercapacitors

As part of her PhD, Rébecca Bazin (Hipohybat project, CEA-IRAMIS) developed an electrochemical functionalisation strategy for self-standing carbon electrodes. It widens the stability window of aqueous supercapacitors while preserving their capacitive properties, which increases their energy density. An electronically insulating, ionically conducting and hydrophobic film suppresses the parasitic reactions responsible for stability losses.

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Comparison of stability with ferrocyanide in symmetric battery

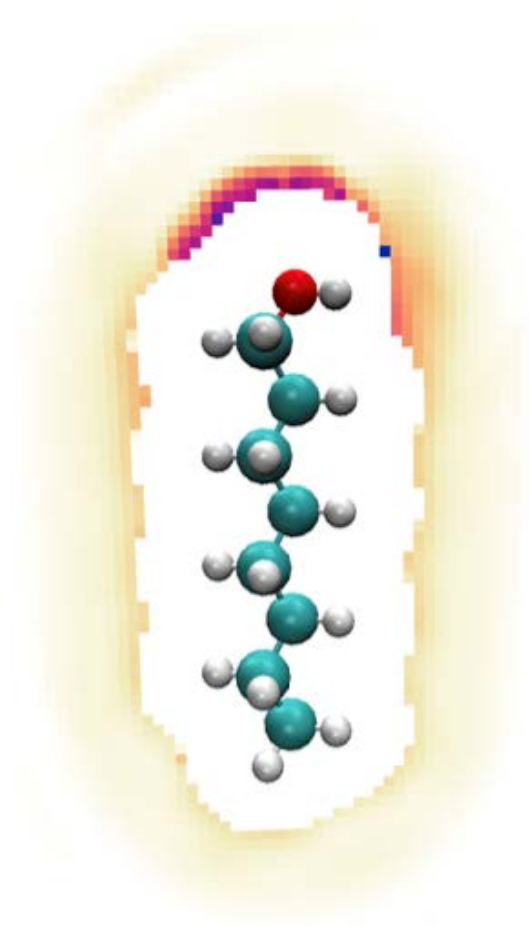


Synthesis of ferrocenes as new electrolytes for energy storage

Anna-Maria Habak (Discovery project, ISCR) will defend her PhD on Monday 16 November 2026. Her thesis focuses on aqueous organic redox flow batteries (AORFBs), a promising technology for stationary energy storage.

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ALF: solvent orientation for redox flow batteries

Within the RADICAL project, researchers at PHENIX have introduced the Angular Localization Function (ALF). ALF measures the local angular order of solvent molecules, computed by molecular density functional theory (MDFT). Until now this information was often overlooked for lack of suitable tools. ALF is now used to compare candidate organic molecules for redox flow batteries.

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Events

Upcoming



PEPR Batteries Day 2027: 13–14 January in Paris

The programme's annual meeting will bring together researchers, academic and industrial partners, and representatives of the supervising bodies. The two days will cover project progress across the three PEPR axes: innovative chemistries, advanced BMS, and tools and methods.

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Summer highlights



DFT Days 2026

DFT Days 2026 took place from 9 to 11 September at the Campus des Cordeliers in Paris. The event drew around fifty participants, an increase of about 30% that reflects its success.

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The Electrochemistry Days 2026

A wide range of research on new battery chemistries was presented at the Journées d'Électrochimie, held in Nancy from 29 June to 3 July.

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France–Japan: PEPR Batteries and GteX round table

A Japanese delegation of 17 scientists and managers from the GteX Battery Storage Area came to Nantes to present their work. They took part in the round table “Crossing Perspectives on Battery Innovation: A Franco-Japanese Roundtable on GteX and PEPR Batteries Programs”.

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BAT360°: looking back at the first PEPR Batteries summer school, a 360° view of battery challenges

From 1 to 4 June 2026, PEPR Batteries held its first summer school, BAT360°, in La Grande Motte, France. Designed for the programme's PhD students and postdocs, it offered a 360° view of the scientific, technological and societal challenges of batteries through lectures, specialised seminars and discussions with experts.

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