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**OPINCHARGE**

## Newsletter #4 – Open Science in Action: The OPINCHARGE Approach!

Dear reader,

Welcome to the OPINCHARGE Newsletter #4!

At the heart of the **OPINCHARGE project** lies a firm commitment to **Open Science** and the responsible dissemination of research. The OPINCHARGE **consortium** is dedicated to ensuring full and immediate Open Access to all peer-reviewed scientific publications resulting from our research. By doing so, we aim to make our findings widely accessible to the scientific community, industry, policymakers, and the public.

In line with best practices in Open Science, we systematically apply the **FAIR Data Principles**—ensuring that all data generated is **findable, accessible, interoperable, and re-usable**. We also embrace Responsible Research and Innovation methodologies to enhance the quality, transparency, and societal impact of our work.

OPINCHARGE promotes the early sharing and transfer of research outputs among relevant stakeholders, from the moment they are generated. This approach not only supports ongoing research and collaboration. But it also accelerates innovation, increases reproducibility, and reduces time-to-market for battery-based solutions. By embedding Open Science throughout the research lifecycle, OPINCHARGE lays the groundwork for more efficient and impactful scientific advancement in the energy sector.



## Open Science Drives Innovation

Thank you for joining our growing community of researchers, industry professionals, and battery enthusiasts.

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## Project News

### OPINCHARGE Launches Battery2030+ Webinar Series on Operando Techniques

The OPINCHARGE project launched a new [Battery2030+](#) webinar series on 23 October 2025, jointly organised with sister projects **OPERA** and **ULTRABAT**. The first session featured **Dr. Sandrine Lyonnard (CEA Grenoble, SyMMES)**, who presented SAXS/WAXS techniques for tracking structural changes in battery materials across multiple length scales. The webinar highlighted how operando X-ray methods support a deeper understanding of battery degradation and interface processes.

# Seeing Inside Batteries

*A look back at the first webinar series session*

**Basic principles of SAXS/SANS**

**Note 3. SAXS is analytical (sometimes)**

Intensity  $I(Q)$  is the absolute scattering cross section  $d\sigma(Q)/d\Omega$  in units of  $\text{cm}^{-1}$  = probability of a neutron of wavelength  $\lambda$  being scattered, per unit solid angle, at that  $Q$ .

Differential cross-section = scattered intensity  $I(Q)$

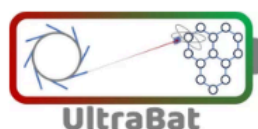
$$\frac{d\sigma}{d\Omega}(Q) = \frac{1}{N} \left| \int d\mathbf{r} \rho(\mathbf{r}) e^{i\mathbf{Q}\cdot\mathbf{r}} \right|^2 = \frac{1}{N} I(Q)$$

$I(Q) \approx N \Delta\rho(\mathbf{r})^2 F(Q,r)^2 S(Q)$

**Scattering contrast  $\Delta\rho$**   
Scattering length  $b$  of element  $i$  concentration  $c_i$ , density  $\rho_i$

$$\Delta\rho(\mathbf{r}) = \sum_i (b_i c_i \rho_i)_{\text{matrix}} - \sum_j (b_j c_j \rho_j)_{\text{particle}}$$

**Form factor  $F(Q)$**  size, shape of particle (we note  $P(Q)=F(Q)^2$ )  
**Structure factor  $S(Q)$**  arrangement of particles



Check out the article

## Second Webinar of the Battery2030+ Series Explores Advanced X-ray Interface Studies

The second webinar of the Battery2030+ series organised by **OPINCHARGE**, **OPERA**, and **ULTRABAT** took place on 20 November 2025.

**Prof. Hans-Georg Steinrück (Forschungszentrum Jülich)** presented surface-sensitive and coherent X-ray methods for studying battery materials and interfaces. The session showcased how advanced operando techniques help link interfacial processes to battery performance, lifetime, and safety.

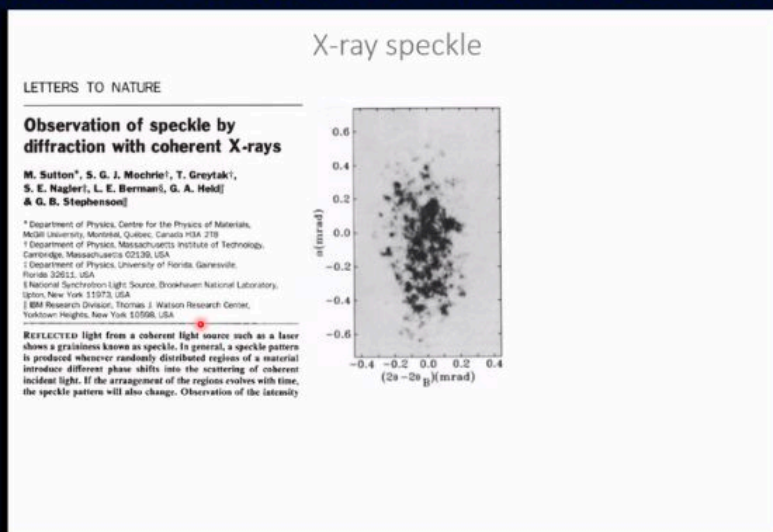
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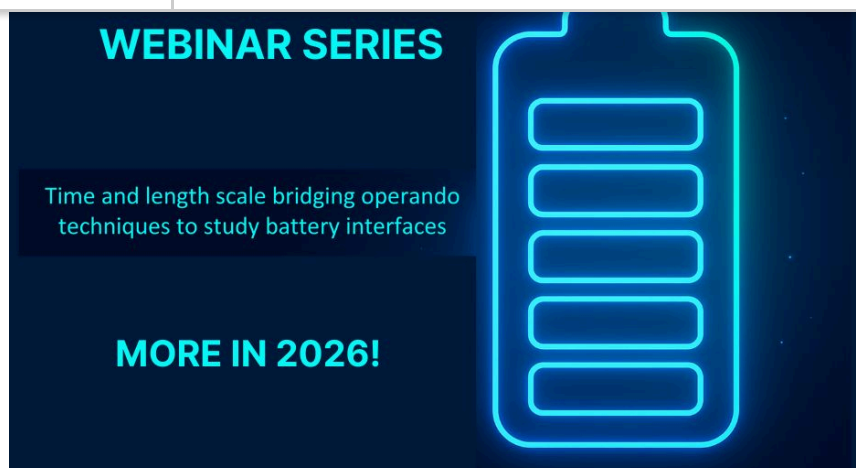
# Seeing Inside Batteries

*A look back at the second webinar series session*



Check out the article

**Join us for the next webinar in the series in 2026!**  
 Stay informed about upcoming sessions via our website and social media channels.

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The webinars are part of the ongoing Battery2030+ series “*Time and Length-Scale Operando Bridging Techniques to Study Battery Interfaces*”, which will continue with further sessions introducing complementary operando techniques and their application to battery interface research.

[LinkedIn](#)[Website](#)

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## OPINCHARGE Month-30 General Meeting in San Sebastián

The OPINCHARGE consortium met for its Month-30 General Meeting on **27–28 November 2025** at CIDETEC Energy Storage in San Sebastián, Spain.

Project partners reviewed progress across all work packages and aligned priorities for the **final six months of the project**, with a strong focus on exploitation and impact.

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 **OPINCHARGE**  
**GENERAL**  
**Meeting**

 **The final stretch begins here!**  
CIDETEC Energy Storage  
San Sebastián, Spain  
27–28 November 2025

[Check out the article](#)

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## OPINCHARGE at Battery Innovation Days 2025

OPINCHARGE participated in **Battery Innovation Days 2025**, held on 2–3 December 2025 in Graz, Austria.

The project was represented by **Dr. Elixabete Ayerbe (CIDETEC)**, who presented an automatic EIS analysis tool developed within OPINCHARGE.

The innovation was selected for the **Battery2030+ Innovation Uptake Session finals**, highlighting its relevance for scalable battery diagnostics.



Check out the article

## New Open Access Research Article

**Open Access Research Article**

Operando visualization of Li distribution in solid-state batteries using focused ion beam-secondary ion mass spectrometry imaging

### Operando visualization of Li distribution in solid-state batteries using focused ion beam-secondary ion mass spectrometry imaging

A thorough understanding of lithium transport pathways through electrode/electrolyte during battery operation is crucial for ...

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## Welcome to the OPINCHARGE Media Corner

Discover the OPINCHARGE Media Corner – your central hub for project presentations, brand assets, reports, and scientific publications. Stay informed and access everything you need to share, support, or learn more about our work!

[Media Corner](#)

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## Merry Christmas and a Happy New Year from OPINCHARGE!

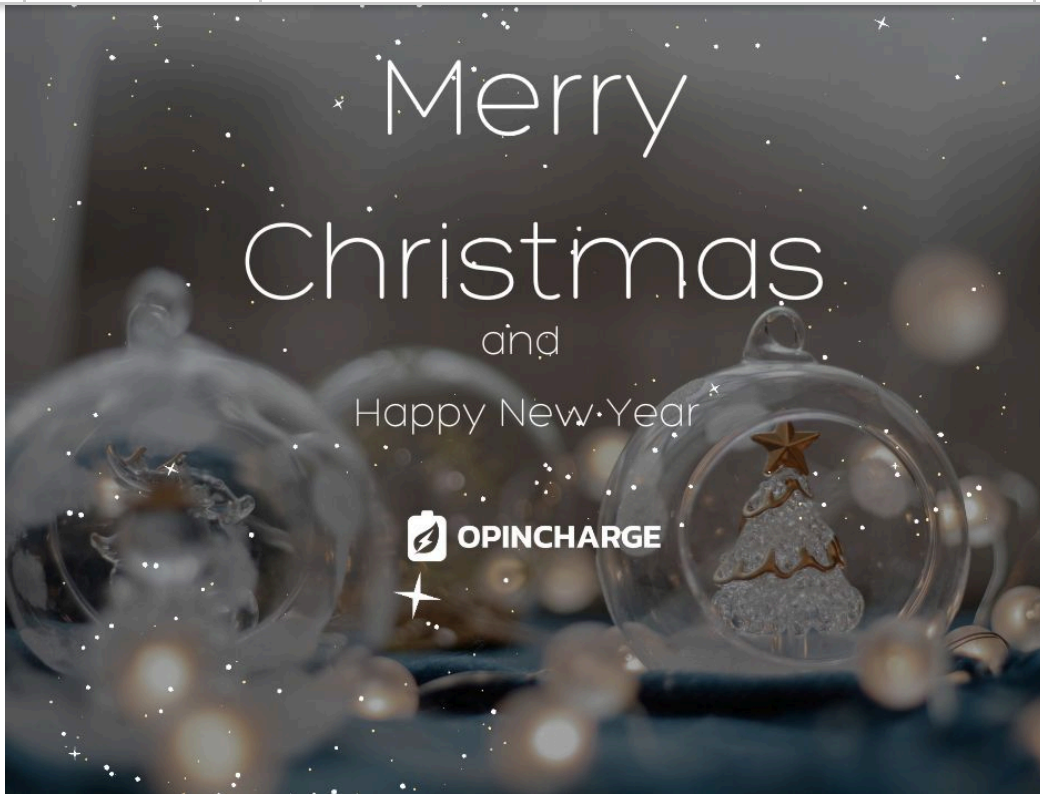
As the year comes to a close, we would like to thank our partners, collaborators, and the entire battery research community for their trust, cooperation, and shared dedication throughout this exciting year.

2025 brought important scientific progress, strong collaboration, and growing impact across Europe. We now look forward to the final phase of OPINCHARGE and to shaping the future of battery research together.

We wish you peaceful holidays, joyful moments with your loved ones, and a successful New Year full of new ideas and innovations.

Warm wishes,

**The OPINCHARGE Consortium.**



## Our Network

### Battery 2030+

The ambition of the Battery 2030+ is to make Europe a world-leader in the development and production of the batteries of the future. These batteries need to store more energy, have a longer life, and be safer and more environmentally friendly than today's batteries in order to facilitate the transition to a more climate-neutral society. This initiative is led by Uppsala University, started on 1st of September 2020.



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## BEPA (Batteries European Partnership Association)

BEPA is the private side association of the Batteries European Partnership under Horizon Europe. They gather more than 140 stakeholders of the European battery community who strive towards a competitive European industrial battery value chain for stationary applications and e-mobility.

[Read more](#)

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## OPINCHARGE - Reinventing The Way We Invent Batteries!



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