#### Supercharging the clean energy transition:

### How can LEAPS facilities collaborate in battery research?

LEAPS-INNOV Battery-Research Forum 29-31 January 2024 Institut d'Estudis Catalans, Barcelona, Spain Room Prat de la Riba



# Programme

# Monday 29<sup>th</sup> January 2024

13:30	14:00	Welcome and introduction to LEAPS and LEAPS-INNOV, Caterina Biscari (ALBA) and Franz Hennies (MAX IV)
14:00	17:30	Hot topics in Battery research
14:00	14:55	Multitechniques Battery Workflows using synchrotron techniques, Sandrine Lyonnard, CEA
14:55	15:25	Accelerating Battery Research using Accelerator based-Photon Sources: Challenges and Opportunities in Energy Storage, Paul Shearing, Faraday Institutions / Oxford University
15:25	15:55	COFFEE BREAK
15:55	16:25	X-ray spectroscopy for battery characterisation, Lorenzo Stievano, ICGM – Univ. Montpellier
16:25	16:55	X-ray diffraction and absorption spectroscopy for a better understanding of battery materials, Marine Reynaud, CIC energiGUNE
16:55	17:25	Zinc-air battery studies: the role of spectroscopy and imaging , Benedetto Bozzini, Politecnico di Milano
17:30	19:00	Poster Session (Room: Room Nicolau d'Olwer)
20:30	22:00	Official Forum Dinner: Xiroi Ca la Nuri restaurant

### Tuesday 30<sup>th</sup> January 2024

- 09:00 12:00 Selected talks on Synchrotrons and FELs capabilities for battery research
- 09.00 09.15 Towards multi-dimensional operando spectroscopy for battery materials at BESSY II, Philipp Hönicke, HZB
- 09.15 09.30 Traceable operando battery characterization using calibrated x-ray spectrometric instrumentation quantitative analysis of the polysulfide driven degradation in lithium-sulfur batteries during cycling , Burkhard Beckhoff, PTB
- 09.30 09.45 Advances in operando soft X-ray spectroscopy for battery research, Andrey Shavorskiy, MAX IV
- 09.45 10.00 Battery research at Diamond Light Source: current status and opportunities, Sofia Diaz-Moreno and Elizabeth Shotton, DIAMOND
- 10.00 10.15 Spatially resolved XPS for operando studies of materials, reactions and devices, Luca Gregoratti, ELETTRA
- 10.15 10.30 Development of operando techniques in zero-excess solid-state batteries, Miguel Angel Nino, ALBA
- 10:30 10:45 COFFEE BREAK
- 10.45 11.00 Standardisation of control, data and metadata provision of in-situ and operando measurements via the Sample Environment Communication Protocol (SECoP), Klaus Kiefer, HZB
- 11.00 11.15 Full field tomography for battery research at Hereon beamlines at PETRA III, Fabian Wilde, DESY/HEREON
- 11.15 11.30 Soft X-ray Scanning Transmission Microscopy at MAX IV, Igor Beinik, MAX IV
- 11.30 11.45 TOMCAT 2.0: multiscale, multimodal dynamic tomographic microscopy, Federica Marone, PSI
- 11.45 12.00 Research opportunities for battery characterization at EuXFEL, Ulrike Boesenberg, EUXFEL
- 12:00 13:30 Transfer & Lunch at ALBA
- 13:30 15:00 Round table discussion on main challenges in battery research
- 15:00 16:00 Visit @ ALBA
- 16:00 16:30 BREAK

16:30	18:00	Industrial perspective discussions (room: Maxwell Auditorium)
16:30	17:00	Industrial - academic collaboration to accelerate battery technology and manufacturing development in Europe, Martin Karlsson, Northvolt
17:00	17:30	High-Throughput Synchrotron X-ray Scattering for the Battery Industry, Bernd Hinrichsen, BASF / Momentum Transfer
17:30	18:00	TEESMAT: A commercial platform to characterise electrochemical systems, Cyril Marino, SERMA TECHNOLOGIES
19:30	21:00	Dinner at own cost

# Wednesday 31<sup>st</sup> January 2024

09:00	11:00	Selected applied research talks
09.00	09.15	UltraBat: Capturing ultrafast electron and ion dynamics in batteries, Christopher Milne, EUXFEL
09.15	09.30	Exploring Li-ion Battery Safety Using Synchrotron High-Speed X-ray Imaging, Matilda Fransson, ESRF
09.30	09.45	Beam effects in synchrotron radiation based operando characterization of battery materials: XRD and XAS study of LiNi0.33Mn0.33Co0.33O2 and LiFePO4 electrodes, Ashley Black, ICMAB-CSIC
09.45	10.00	Understanding Battery Mechanisms through Operando Synchrotron Studies at BESSY II, Sebastian Risse, HZB
10.00	10.15	Charge state distribution in aged electrodes probed by 2D X-ray fluorescence imaging, Giuliana Aquilanti, ELETTRA
10.15	10.30	Elucidating the Influence of Transition-Metal Order and stoichiometry on the Reaction Mechanism of LNMO Cathode Spinel via a multi technique approach., Marcus Fehse, CICenergiGUNE
10.30	10.45	Oxygen Redox Assisted High-Capacity Sodium Transition Metal Oxides for Sodium-Ion Batteries, Seung-Taek Myung, Sejong University
10.45	11.00	Understanding battery performance and degradation by means of spatially-resolved operando X-ray diffraction and X- ray diffraction tomography, Stefano Checchia, ESRF
11:00	11:30	BREAK
11:30	13:00	Panel discussion on challenges and future joint efforts