

# Emerging synchrotron techniques for characterization of energy materials and devices

23 – 25 September 2019



## Preliminary Programme



### Monday, 23<sup>rd</sup> September – 12:00 → 20:30

12:00 – 14:00	<i>Registration at the ESRF Central building and lunch at the EPN Campus restaurant</i>	
14:00 – 14:10	Introduction by the organizers	
14:10 – 14:20	Introduction by scientific Director, J. Susini	
14:20 – 15:05	Invited talk New opportunities for the investigation of thermoelectric materials and devices with extremely brilliant high-energy synchrotron radiation.	O. Oeckler
15:05 – 15:30	Piezoelectricity in centrosymmetric $\text{Sr}_{1-x}\text{Pr}_x\text{TiO}_3$ : a diffraction study under electric field	M. Scavini
15:30 – 15:55	Understanding lithium storage mechanism in nanostructured $\text{MnO}_2$ @CNT hybrid by <i>in-situ</i> synchrotron X-ray scattering study	M. Rana
15:55 – 16:25	<i>Coffee break</i>	
16:25 – 17:10	Invited talk Chemical imaging of catalytic materials under process conditions.	A. Beale
17:10 – 17:35	Quantifying state of charge and Li plating heterogeneities during fast charging of Li-ion cells	D. Finegan
17:35 – 18:00	Emerging synchrotron techniques for thermodynamic characterization of metastable phases across electrochemical reactions	D. Bessas

18:00 – 20:30 *Poster session and Wine & cheese*

### Tuesday, 24<sup>th</sup> September – 9:00 → 17:40

9:00 – 9:45	Invited talk XRD/PDF computed tomography and how to get the best possible <i>operando</i> data from ion batteries.	D. Wragg
9:45 – 10:10	Analysing <i>operando</i> spectroscopy data in battery studies: a chemometric approach	L. Stieviano
10:10 – 10:35	Probing inhomogeneous lithiation of graphite electrodes using <i>operando</i> micro X-ray diffraction	S. Tardif
10:35 – 11:00	<i>Coffee break</i>	
11:00 – 11:45	Invited talk Understanding the structure-derived function of metal-organic frameworks and their application in separations.	W. L. Queen
11:45 – 12:10	Studying $\text{In}_2\text{O}_3$ catalyst for $\text{CO}_2$ hydrogenation to methanol at work: an <i>operando</i> XAS-XRD study	P. M. Abdala
12:15 – 14:00	<i>Lunch</i>	

14:00 – 14:45	Invited talk Developments in Synchrotron Techniques to Accelerate the Development of Electrochemical Devices	P. Shearing
14:45 – 15:10	Operando investigation of the lithium/sulfur battery by coupled X-ray absorption tomography and X-ray diffraction computed tomography	C. Barchasz
15:10 – 15:35	<i>Operando</i> synchrotron X-ray diffraction and Mössbauer spectroscopy of the cathode materials for Li-ion and Na-ion batteries	O. A. Drozhzhin
15:35 – 16:05	<i>Coffee break</i>	
16:05 – 16:50	Invited talk High temporal and spatial resolution hard x-ray imaging for <i>in operando</i> study of real world fuel-based engineering systems.	P. Hutchins
16:50 – 17:15	Characterising evolving solid oxide fuel cell and electrolysis cell components with <i>ex-situ</i> and <i>in-operando</i> X-ray experiments	J. R. Bowen
17:15 – 17:40	Probing water distribution and ionomer nanostructure in operating Proton Exchange Membrane Fuel Cells thanks to X-Ray synchrotron source	A. Morin
	<i>Free time</i>	
19:00	<i>Transport to town by tram</i>	
19:30 – 22:00	Workshop dinner in town, at “L’Epicurien”, <a href="http://www.lepicurien-grenoble.com">www.lepicurien-grenoble.com</a>	
<b>Wednesday, 25<sup>rd</sup> September – 9:00 → 12:20</b>		
9:00 – 9:45	Invited talk Straining to be Black: On the Metastability of Lead Triiodide Perovskite Thin Film Devices.	J. Steele
9:45 – 10:10	<i>In situ</i> and <i>operando</i> structural evolution of single metallic nanoparticle model catalysts under ambient pressure reaction conditions	M.-I. Richard
10:10 – 10:35	Probing the electron density at electrochemical interfaces with <i>in-situ</i> surface resonant X-ray diffraction	Y. Gruender
10:35 – 11:00	<i>Coffee break</i>	
11:00 – 11:45	Invited talk Multifunctional metal hydrides for energy applications.	B. C. Hauback
11:45 – 12:10	X-ray Raman Scattering study of energy storage materials based on metal hydride nanocomposites	P. Ngene
12:10 – 12:20	Conclusions by the organizers	
12:20 – 14:00	<i>Lunch and end of the meeting</i>	