# Scientific Program

## Sunday, June 21

18.00-20.00  **Registration** ("Palais des congrès" – Arcachon)
19.00-21.30  **Welcome party**

## Monday, June 22

8.30-9.00   **Opening** - C. Delmas, Chairman

9.00-9.40   **INV1**  The rechargeable lithium battery: where do we go from here?
             *Peter Bruce* - *University of Oxford* (UK)

9.40-10.20  **INV2**  Interface design for advanced oxide-based all-solid-state batteries
             *Yasutoshi Iriyama* - *Nagoya University* (Japan)

10.20-10.50 **Coffee Break**

10.50-12.30 **Posters session**

12.30-14.30 **Lunch break**

14.30-15.30 **SOLID STATE**

(8 min each) **O01**  Sintering of phase pure garnet Li₇La₃Zr₂O₁₂ nanoparticles obtained via a solid state route from a highly reactive precursor
             *M. Senna* - *Keio University* (Japan)

**O02**  All-solid-state Li and Li-ion thin film batteries, miniaturized power sources dedicated to microsystems and internet of things
             *B. Pecquet* - *ICMCB-CNRS, Univ. Bordeaux,* (France)

**O03**  Preparation of Idiomorphic Active Material Crystals/Li₂ₓC₁₋ₓ₋ₓ₋ₓBₓOₓ Glass Hybrids by Using Flux-growth Approaches and Characterization of Their All-solid-state LIBs properties
             *Z. Nobuyuki* - *Shinsu University* (Japan)

**O04**  Structural behavior and fast lithium-ion conduction in Li₄SiO₄-Li₃PO₄ solid electrolytes
             *Y. Deng* - *Laboratoire de Réactivité et Chimie des Solides, Amiens* (France)

>>  **General discussion**

15.30-16.20 **INTERFACES**

(8 min each) **O05**  Cycling-Related Electrolyte (De-)Composition in an EC/EMC Based Battery System
             *P. Novak* - *Paul Scherrer Institute* (Switzerland)

**O06**  What happens at the interface between interphase and electrode? A potential discussion motivated from photoelectron spectroscopy characterizations
             *J. Maibach* - *Ångström Laboratory, Uppsala University* (Sweden)
O07 Development of Novel Pyridine-Boron Trifluoride Electrolyte Additives for Lithium-Ion Batteries
M. Nie - Dalhousie University (Canada)

16:20-16:50 Coffee Break

16:50-17:50 Li-SULFUR
(8 min each)

O08 Improvement of Li-Sulfur batteries with zeolites as polysulfides sorbent: an XPS study
R. K. Chellappan - IPREM-CNRS, University of Pau (France)

O09 Lithium sulfur rechargeable batteries utilizing solid electrolytes
R. P. Rao - National University of Singapore (Singapore)

O10 Revisiting sulfur electrochemistry in non-aqueous electrolytes: Impact on lithium-sulfur cell design and performance.
M. Cuisinier - Qatar Environment and Energy Research Institute (Qatar)

O11 Degradation of LSB Electrodes investigated with X-ray Phase Contrast Tomography
L. Zielke - IMTEK University of Freiburg (Germany)

17:50-19:00 Posters session

19:00 Welcome Cocktail

Tuesday, June 23

8:30-9:10 INV3
The superstructure of the A$_{2/3}$MPO$_4$ phases (A = Li, Na, M = Fe, Co), key intermediates in the reaction mechanism of A$_x$MPO$_4$ systems
Florent Boucher - Institut des Matériaux Jean Rouxel, Nantes (France)

9:10-10:20 OLIVINE
(8 min each)

O12 What is the rate limiting charge transfer mechanism in LiFePO$_4$ electrodes? How do individual LiFePO$_4$ grains transform depending on the cycling rate? Answers from in operando Neutron Depth Profiling and in operando Micro Beam Diffraction
M. Wagemaker - Delft University of Technology (The Netherlands)

O13 Relationship between Reaction Distribution and Ionic Conductivity in LiFePO$_4$ Composite Electrode
Y. Orikasa - Kyoto University (Japan)

O14 Power Hysteresis in LiFePO$_4$ cells
A. Gruhle - Daimler AG, Ulm (Germany)

O15 Phase evolution in single-crystalline LiFePO$_4$ in a micrometer-sized battery followed by in-situ scanning transmission X-ray microscopy
N. Ohmer - Max Planck Institute for Solid State Research, Stuttgart (Germany)

O16 High energy density of binder-free sintered electrodes made by Spark Plasma Sintering
V. Seznec - Laboratoire de Réactivité et Chimie des Solides, Amiens (France)

>> General discussion

10:20-10:50 Coffee Break

10:50-12:00 SPINEL
(8 min each)

O17 Phase Transition Dynamics in LiNiMnO micro-particles
H. Harai - Kyoto University (Japan)

O18 The Mechanism of Mn and Ni Dissolution at the Li$_2$Ni$_{0.5}$Mn$_{1.5}$O$_{4}$ / Organic Carbonate Electrolyte Interface
R. Kostecki - Lawrence Berkeley National Laboratory (USA)

O19 Atomic scale drivers for the order/disorder transition of LiNiMnO and effect on the electrochemical properties
M. Casas-Cabanas - CIC energiGUNE (Spain)

O20 Oxygen partial pressure and temperature dependence of electrical conductivities in LiMnNiTiO (x=0, 0.5 and y=0, 0.5)
S. Abe - Tokyo City University (Japan)

O21 Characterization for the LiNi$_{0.5}$Mn$_{1.5}$O$_{4}$ Prepared at Various Conditions
S. H. Wu - Tatung University (Taiwan)

>> General discussion

12:00-14:00 Lunch break

14:00-14:40 INV4 Related Crystals
Yuichi Ikuhara - The University of Tokyo (Japan)

14:40-16:10 Posters session and Coffee Break

16:10-17:50 POLYANION
(8 min each)

O22 Fe defects control Na$^+$ pathways and power performance in alluaudite-type low cost high voltage cathode material Na$_{2x}$Fe$_{2-4x}$O$_4$(SO$_4$)$_3$
R. P. Rao - National University of Singapore (Singapore)

O23 Na$_3$V$_2$(PO$_4$)$_2$F$_5$: crystal structure and phase transformations upon Na$^+$ extraction of a promising positive electrode
M. Bianchini - Institut Laue-Langevin, Grenoble (France)

O24 Determining performance-limiting mechanisms in fluorophosphate sodium-ion battery cathodes via transition-metal substitution and first-principles calculations
I. Matts - Massachusetts Institute of Technology (USA)

O25 Low-polarization Na-ion battery with chromium-substituted sodium vanadium phosphate cathodes and sodium titanium phosphate anode
P. Lavela - Departamento de Quimica Inorganica e Ingenieria Quimica, Cordoba (Spain)
**Sodium-Ion Diffusion and Voltage Trends in Phosphates Na₄M₃(PO₄)₂P₂O₇ (M = Fe, Mn, Ni, Co) for Possible High Rate Cathodes**
S. Wood - University of Bath (United Kingdom)

**Sodium Intercalation into the Iron Hydroxysulfate NaFe₃(SO₄)₂(OH)₆: a Topotactic Reversible Reaction from a Crystalline Phase to an Inorganic Polymer-like structure**
V. Pralong - Laboratoire de Cristallographie et Sciences des Matériaux, Caen (France)

**Li₂Cu₂O(SO₄)₂: a possible electrode for sustainable Li-based batteries showing a 4.7 V redox activity vs. Li⁺/Li⁰**
M. Sun - Collège de France, Paris (France)

**General discussion**

17:50-19:00 Posters session

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**Wednesday, June 24**

**8:30-9:10**

**IN5 Ion Dynamics in Electrodes and Electrolytes as Characterized by Magnetic Resonance Spectroscopy and Imaging**
Gillian Goward - McMaster University, Hamilton (Canada)

**NEGATIVE-OTHERS**

(8 min each)

**O29 MXene Nanosheets for Negative Electrode Materials of Sodium-Ion Batteries**
M. Okubo - The University of Tokyo (Japan)

**O30 On the high and low temperature performances of Na-ion batteries: Hard carbon a case study**
A. Ponrouch - Institut de Ciencia de Materials de Barcelona (Spain)

**O31 Characterisations and electrochemical performances of hard carbons in sodium ion batteries**
V. Simone - Univ. Grenoble Alpes, CEA, LITEN (France)

**O32 In operando XRD/electrochemistry investigation of lithium insertion into anatase-derived titanium oxyfluoride TiOF₂**
K. Guérin - Institut de Chimie de Clermont-Ferrand (France)

**O33 Hydrides as novel high capacity anodes for lithium batteries**
S. Brutti - Università della Basilicata (Italy)

**O34 Electrochemical mechanism and high performances of Bi and Mg₃Bi₂ as negative electrodes for Mg batteries**
F. Murgia - Institut Charles Gerhardt, Montpellier (France)

**General discussion**

10:40-11:10 Coffee Break

11:10-12:10 Li-AIR

(8 min each)

**O35 Introduction of additives to nonaqueous Li-O₂ cells**
D. Aurbach - Bar Ilan University (Israel)
Thursday, June 25

8:30-9:10  **INV6**

**Improving the rate capability of Li (Na)-ion batteries by constructing porous carbon network**
Yan Yu - University of Science and Technology of China and Max Planck Institute for Solid State Research, Stuttgart (Germany)

9:10-10:30  **CHARACTERIZATION**

(8 min each)

**O39**
Relaxation effects of the negative electrode TiSnSb using $^{119}$Sn Mössbauer and $^7$Li MAS NMR spectroscopies
N. Dupré - Institut des Matériaux Jean Rouxel, Nantes (France)

**O40**
Chemical and electronic properties of thin film layered cathode materials: electron spectroscopy, X-ray diffraction and electrochemical studies
G. Cherkashinin - Technische Universität Darmstadt (Germany)

**O41**
Operando Magnetic Resonance Spectroscopy and Imaging of batteries
E. Salager - CEMHTI, Orléans (France)

**O42**
NAPXPS- a surface sensitive method for studying electrochemical interfaces in operando
M. Hahlin - Ångström laboratory, Uppsala University (Sweden)

**O43**
Operando X-ray Absorption Spectroscopy of NCA Particles
L. Nowack - ETH Zurich (Switzerland)

**O44**
Monitoring of the SEI-Evolution of Uncoated and Carbon-Coated Si Nanoparticles by Transmission Electron Microscopy and Electrochemical Impedance Spectroscopy
K. Van Havenbergh - EMAT - Antwerp (Belgium)

>> General discussion

10:30-11:00  Coffee Break

12:10-20:00  **FREE AFTERNOON**

20:00  **BANQUET**  (« Château Smith Haut Laffite » Martillac)

11:00-11:40 INV7 New High Capacity Electrode Materials for Rechargeable Li/Na Batteries
Naoaki Yabuuchi - Tokyo Denki University (Japan)

11:40-12:30 Na-LAYERED (8 min each)

O45 Irreversible reaction in NaCoO₂ by insertion and extraction of sodium
T. Kobayashi - Central Research Institute of Electric Power Industry (Japan)

O46 P2-type: crystallography, crystal chemistry, and how to avoid Na⁺ ordering
M. Avdeev - ANSTO (Australia)

O47 A Comparison of O3-NaFeₓ(Co₀.₅Ni₀.₅)₁₋ₓO₂ and O3-NaFeₓCo₁₋ₓO₂ for Na-ion Battery Positive electrodes
J. S. Thorne - Dalhousie University (Canada)

O48 Solid-state NMR and DFT: powerful tools for the study of the processes occurring upon cycling of sodium transition metal oxides
R. Clément - University of Cambridge (United Kingdom)

>> General discussion

12:30-14:30 Lunch break

14:30-16:10 Li-LAYERED (8 min each)

O49 Understanding the structure of Li-rich layered oxide for lithium-ion battery
H. Yu - Beijing University of Technology (China)

O50 Developing new electrolyte systems for high voltage cycling and in situ neutron diffraction experiments: Highly concentrated electrolytes
R. Petitbon - Dalhousie University (Canada)

O51 Understanding of Li-rich Layered Oxide Cathode Materials for Lithium Ion Batteries
B-J. Hwang - National Taiwan University of Science and Technology (Taiwan)

O52 Analysis of the voltage decay in Li-Rich materials
J-F. Colin - Univ. Grenoble Alpes, CEA, LITEN (France)

O53 Improvement of the high temperature cyclability of LiNi₀.₅Co₀.₅Mn₀.₃O₂ by flake-shaped Alumina surface coating.
C.E. Liu - Industrial Technology Research Institute (Taiwan)

O54 Redox plateau decay in extended cycling of Li₂Ir₁ₓSnₓO₃ positive electrode materials
E. McCalla –Collège de France, Paris (France)

O55 The role additive on improving performances of Lithium-Rich cathode
M. Anouti - Physico-chimie des Matériaux et des Electrolytes pour l'Energie, Tours (France)

O56 Electrochemical performance of a layered-spinel integrated
Li[Ni1/3Mn2/3]O₂ as a high capacity cathode material for Li-ion batteries
P. K. Nayak - Bar-Ilan University (Israel)

>> General discussion

16:10-16:40 Coffee break
16:40-17:50 NEGATIVE-Si

OS7 Stress-Voltage Coupling in Si Alloys
M. Obrovak - Dalhousie University (Canada)

OS8 Coupling surface imaging, spectroscopy and focused ion beam for a better understanding of lithiation mechanisms of silicon electrodes for Li-ion battery applications.
A. Bordes - Laboratoire de Physico-Chimie des Surfaces, Chimie ParisTech, (France)

OS9 Influence of silicon and carbon contents on the microstructure and electrochemical performances of Si/Ni3.4Sn4/Al/C composites used as negative electrodes for Li-ion batteries
T. Azib - Institut de Chimie et des Matériaux Paris Est (France)

OS10 Benefits of silicon carbonitride matrices on the cycling stability of silicon anodes in LIBs
D. Vrankovic - Technische Universität Darmstadt (Germany)

OS11 Synergistic effects of Ge and Si on the performances and mechanisms of Ge_xSi_{1-x} electrode for Li-ion batteries
D. Duveau - Institut Charles Gerhard, Montpellier (France)

>> General discussion

Friday, June 26

8:30-9:10 INV8 Linking electrode kinetics to crystallography and chemistry
Anton Van der Ven - University of California Santa Barbara (USA)

9:10-9:50 INV9 X-ray Microscopies for Studying Lithium Ion Batteries
Vanessa Wood - ETH Zurich (Switzerland)

9:50-10:10 Coffee break

10:10-12:00 Discussions on transverse topics
Conclusion