***Preliminary Program***

*(October 8, 2024)*

**Nonstoichiometric Compounds VIII**

**November 3-7, 2024**

**Tainan, Taiwan**

**Conference Chairs**

**William C. Chueh**

Stanford University, USA

**Kuan-Zong Fung**

National Cheng Kung University, Taiwan

**Hitoshi Takamura**

Tohoku University, Japan

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**Engineering Conferences International**

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**Sunday, Nov 3, 2024**

17:30 – 19:00 Conference Check-in (Shangri La Hotel)

19:00 – 21:30 Reception & Dinner (Shangri La Hotel)

**Monday, Nov 4, 2024**

08:45 – 09:00 **Welcome Remarks**

William Chueh, Stanford University, USA

Kuan-Zong Fung, National Cheng Kung University, Taiwan

Hitoshi Takamura, Tohoku University, Japan

Manfred Martin, RWTH Aachen University, Germany

**Session 1**

Chairs: **TBD**

09:00 – 09:40 **Transient state methods to determine all the mass/charge transport properties of a mixed conducting compound**

Han-Ill Yoo, Seoul National University, South Korea

09:40 – 10:20 **Diffusion and conduction over two sites with inherent partial occupancy**

Truls Norby, University of Oslo, Norway

10:20 – 11:00 **Controlling anion nonstoichiometry in mixed anion compounds**

Hiroshi Kageyama, Kyoto University, Japan

11:00 – 11:20 Coffee Break

11:20 – 12:00 **Mixed electronic-protonic conductors for electrochemical synapses**

Bilge Yildiz, Massachusetts Institute of Technology, USA

12:00 – 12:40 **Ionic nanoarchitectonics to enhance various functional electronic device**

Kazuya Terabe, National Institute for Materials Science, Japan

12:40 – 13:40 Lunch

**Session 2**

Chairs: **TBD**

13:40 – 14:20 **Design of mixed conducting organic semiconductors for electrochemical transistors**

Iain McCulloch, Princeton University, USA

14:20 – 15:00 **Dry and *operando* structural characterization of organic mixed conductors**

Alberto Salleo, Stanford University, USA

15:00 – 15:40 **Optical tracking of mixed ionic-electronic transport in conjugated polymers**

Scott Keene, Rice University, USA

15:40 – 16:00 Coffee Break

16:00 – 16:40 **Oxygen reduction on organic mixed ionic-electronic conducting polymers**

Tyler Mefford, University of California Santa Barbara, USA

16:40 – 17:20 **Effects of electrolyte composition on the electrochemistry of organic mixed conducting polymers**

Ana de la Fuente Duran, Stanford University, USA

17:30 – 18:30 Poster session

18:30 – 20:30 Dinner

**Tuesday, Nov 5, 2024**

**Session 3**

Chairs: **TBD**

09:00 – 09:40 **Memristive devices: from materials science to neuromorphic computing**

Qiangfei Xia, University of Massachusetts Amherst, USA

09:40 – 10:20 **Computing with drift and diffusive memristors**

Joshua Yang, University of Southern California, USA

10:20 – 11:00 **From nanoionic effects in valence change memories to neuromorphic computing**

Regina Dittman, Forschungszentrum Juelich, Germany

11:00 – 11:20 Coffee Break

11:20 – 12:00 **The role of substantial point defects in Ni-rich layered oxides as cathode materials in Li-ion and solid state batteries**

Juergen Janek, University of Giessen, Germany

12:00 – 12:40 **A new relaxation-focused approach and statistical analysis for an accelerated GITT**

David Mebane, West Virginia University, USA

12:40 – 13:40 Lunch

**Session 4**

Chairs: **TBD**

13:40 – 14:20 **Mixed ion-electron transport in composite electrodes**

Chia-Chin Chen, National Taiwan University, Taiwan

14:20 – 15:00 **Kinetics of unmixing caused by electrochemical potential gradients**

Manfred Martin, RTWH Aachen University, Germany

15:00 – 15:40 **Halide ion demixing during illumination of highly crystalline Cesium Lead Bromide Iodide thin film: A combined cryo-EM, cathodoluminescence and phase field modelling study**

Paul McIntyre, Stanford University, USA

15:40 – 16:00 Coffee Break

16:00 – 16:40 **Photoionics: monitoring and manipulating ion and defect fluxes with UV vis light**

Nicola Perry, University of Illinois Urbana-Champaign, USA

16:40 – 17:20 **High temperature UV response of CeO2 system and its origin**

Mina Yamaguchi, Tohoku University, Japan

18:30 – 21:00 “Night Market” Dinner

**Wednesday, Nov 6, 2024**

**Session 5**

Chairs: **TBD**

09:00 – 09:40 **Hydrogen in Bulk and Grain-boundaries of ABO3-d Perovskites**

Chris Wolverton, Northwestern University

09:40 – 10:20 **Proton mobility in triple conductors: similarities and differences to electrolytes**

Rotraut Merkle, Max Planck Institute, Germany

10:20 – 10:40 Coffee Break

10:40 – 11:20 **Influence of oxygen nonstoichiometry change in the electrolyte on the impedance response of proton conducting ceramic cell air electrode**

Koji Amezawa, Tohoku University, Japan

11:20 – 12:00 **ScO6 octahedral networks weaken proton trapping in 70at% Sc-doped barium stannate**

Yoshihiro Yamazaki, Kyushu University, Japan

12:00 – 12:30 Pick up lunch

12:30 – 21:00 Half-day excursion in Tainan & Banquet (drop off at hotel)

**Thursday, Nov 7, 2024**

**Session 6**

Chairs: **TBD**

08:00 – 08:40 **The surface defect chemistry of ceria: Exploiting the power of angle-resolved X-ray absorption spectroscopy for in situ characterization**

Sossina Haile, Northwestern University, USA

08:40 – 09:20 **Defect complexion induced electrostriction in doped ceria: Origin and implications**

Yue Qi, Brown University, USA

09:20 – 10:00 **Atomistic insight into low-temperature cation ordering of Fe-added ceria-zirconia-based oxides**

Hitoshi Takamura, Tohoku University, Japan

10:00 – 10:20 Coffee Break

10:20 – 11:00 **Effect of dopants on the local distortion and its relaxation in CeO2 matrix**

Shu Yamaguchi, National Institution for Academic Degrees, Japan

11:00 – 11:40 **Insights into oxygen ion transport kinetics using isotope exchange Raman spectroscopy**

Mónica Burriel, Université Grenoble Alpes, France

11:40 – 12:40 Lunch

**Session 7**

Chairs: **TBD**

12:40 – 13:20 **Revisiting the electrode polarization modeling on solid oxide electrolytes**

Tatsuya Kawada, Tohoku University, Japan

13:20 – 14:00 **Revealing the surface termination effect of LFO for oxygen exchange reaction**

Di Chen, Tsinghua University, China

14:00 – 14:40 **Electrochemical value of metal nanocatalysts supported on conductive oxide electrodes for oxygen exchange reactions**

WooChul Jung, KAIST, South Korea

14:40 – 15:00 Coffee Break

15:00 – 15:40 **Surface modification of perovskite electrodes for solid oxide cells**

Pei-Chen Su, Nanyang Technological University, Singapore

15:40 – 16:20 **Design of artificial mixed-conducting composites by surface modification using atomic layer deposition**

Matthias Thomas Elm, University of Giessen, Germany

**Session 8**

Chairs: **TBD**

16:20 – 17:00 **Designing advanced energy materials: multiscale simulations of interfacial mechanisms in batteries and photocatalysts**

Hong-Kang Tian, National Cheng Kung University, Taiwan

17:00 – 17:40 **Impact of nonstoichiometry on performance of cathode materials for Na-ion batteries**

Payam Kagahzchi, Forschungszentrum Juelich, Germany

17:40 – 18:00 **Closing Remarks**

William Chueh, Stanford University, USA

Kuan-Zong Fung, National Cheng Kung University, Taiwan

Hitoshi Takamura, Tohoku University, Japan